MATHEMATICS SYLLABUS

FOR UPPER PRIMARY (P4-P6)

Second Edition

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FOREWORD

Dear educators,

The Rwanda Basic Education Board (REB) is pleased to present the second edition of the upper Primary Mathematics syllabus (P4-P6).

This document serves as the official guide for teaching and learning under the Competence-Based Curriculum (CBC), ensuring coherence and consistency in the delivery of quality basic education across Rwanda.

Developed by a team of subject specialists, educators, and curriculum developers, this syllabus stands as a key resource in advancing the Competence-Based Curriculum (CBC). It reflects our continued commitment to nurturing knowledge, skills, values, and positive attitudes in every learner.

This syllabus is aligned with Rwanda Vision 2050 and the National Strategy for Transformation (NST2) and supports the national goal of building a resilient, innovative, and globally competitive knowledge-based economy. It emphasizes critical thinking, creativity, inclusiveness and holistic development. By prioritizing learner-centered pedagogy and the practical application of knowledge, it aims to prepare pupils not only for academic success but also to become responsible, ethical, and productive citizens.

This syllabus reflects our determination to equip learners with essential 21st century skills, foster innovation and instill values of integrity, social responsibility, and lifelong learning.

The success of this syllabus depends on the dedication of our teachers and school leaders. We call upon all educators to embrace the outlined methodologies and assessment strategies with passion, transforming classrooms into dynamic spaces of curiosity and inspiration.

On behalf of REB, I extend our deepest gratitude to everyone who contributed to developing this syllabus. Your expertise has been instrumental in creating a curriculum that meets the needs of our learners and supports Rwanda's national aspirations. Together, we can ensure education remains a powerful driver of our nation's sustainable development and prosperity.

Dr. MBARUSHIMANA Nelson

Director General, REB

ACKNOWLEDGEMENT

The development of this syllabus has been a collective effort that reflects the dedication, expertise, and commitment of many stakeholders. On behalf of the Curriculum, Teaching and Learning Resources Department of the Rwanda Basic Education Board (REB), I wish to express my deepest appreciation to all who contributed to the successful preparation of this Upper Primary Mathematics syllabus.

Special thanks go to the subject experts, curriculum developers, teachers, and education partners whose insights, feedback and professional contributions have been invaluable in shaping this syllabus. Your collaboration has ensured that the syllabus is not only aligned with Rwanda's Competence-Based Curriculum but also responsive to the aspirations of Vision 2050 and the National Strategy for Transformation (NST2).

We also acknowledge the invaluable support of development partners and education stakeholders who have consistently provided technical assistance in curriculum adaptation. Your partnership has greatly contributed to strengthening the quality of Rwanda's education system.

Finally, we call upon teachers, school leaders, and all education practitioners to use this syllabus with commitment and professionalism, ensuring that classrooms become vibrant learning environments that nurture knowledge, skills, values, and positive attitudes among learners. Through your dedication, this syllabus will fulfil its purpose of empowering learners to realize their full potential and contribute meaningfully to Rwanda's sustainable development.

MURUNGI Joan

Head of Curriculum, Teaching and Learning Resources Department

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1. GENERAL INTRODUCTION

The adaptation of the Mathematics syllabus for Upper Primary reflects Rwanda's ongoing commitment to strengthening the Competence-Based Curriculum (CBC), first rolled out in 2015. Continuous feedback from teachers, school leaders and education partners highlighted the need for improvements in content delivery, time allocation and responsiveness to learner needs.

This second edition incorporates the Ministerial directive to harmonize school periods to five per day and 33 weeks of learning annually and ensures greater coherence, inclusiveness and alignment with national priorities such as *Vision 2050* and the *National Strategy for Transformation (NST2)*, which emphasize a knowledge-based economy, responsible citizenship and sustainable development.

The new Upper Primary Mathematics syllabus guides the interaction between the teacher and the learner through the learning processes and highlights the essential practical skills and competences a learner should acquire during and at the end of each unit of learning. Through this subject, pupils acquire knowledge, skills, attitudes, and values that prepare them to address real-life challenges, make sound judgments, and grow into responsible, productive citizens.

2. Teaching and learning Mathematics

2.1 Rationale of Teaching and Learning Mathematics

Teaching mathematics in upper primary (P4-P6) builds directly upon the foundation laid in lower primary but shifts towards greater abstraction, formal application and preparation for future academic and life paths.

The primary rationale is to solidify Mathematical competence and transition students from concrete, hands-on learning to more abstract reasoning and problem-solving. This involves mastering complex operations with whole numbers, diving deeply into fractions, decimals, percentages and being introduced to the formal language of

geometry. The goal is to ensure students achieve numerical fluency which is a prerequisite for secondary level mathematics and practical daily tasks like financial planning and data interpretation.

Furthermore, upper primary mathematics is explicitly geared towards equipping students with the analytical tools needed for Rwanda's socio-economic development. This includes a strong emphasis on mathematics, such as data handling and likelihood of events, to create informed citizens who can critically evaluate data, assess risks, and contribute to a data-driven society. The curriculum also intensifies its focus on developing problem-solving skills, preparing students for the demands of secondary education and ultimately fostering the future innovators, technicians, and critical thinkers central to achieving Rwanda's Vision 2050.

2.1.1 Mathematics and Society

The upper Primary Mathematics syllabus emphasizes integrated skills and an integrated approach across all disciplines. Mathematics is an excellent vehicle for developing and improving a person's intellectual competence in logical reasoning, spatial visualization, analysis, and abstract thought. Learning mathematics fosters numeracy, logical reasoning, critical thinking, and problem-solving skills. This results in the application of mathematics to many daily activities, thereby making it an important tool for society.

Therefore, mathematics plays an important role in society through counting, calculation, measurement, and the systematic study of shapes and motion. It is also essential in fields such as natural sciences, engineering, medicine, finance, and the social sciences. Applied mathematics, including statistics and probability, plays a vital role in games of chance, the national census process, scientific research, and more. Furthermore, cross-cutting issues like financial literacy are incorporated into mathematics units to improve the social and economic welfare of Rwandan society.

2.1.2 Mathematics and Pupil

Pupils require fundamental Mathematical competences such as counting, measuring, financial management, and data interpretation to function effectively as citizens in Rwanda. These skills are essential for daily tasks,

critically evaluating news, and making informed decisions, such as interpreting health graphs to monitor a child's development.

Furthermore, mathematics provides the knowledge, skills and attitudes needed to thrive in an era of rapid technological and socio-economic change. Mastery fosters confidence in problem-solving and provides a foundation for understanding the world, reasoning logically, and appreciating the subject's value.

To achieve this, the syllabus mandates that teachers make mathematics relevant through practical, experiential learning. Instruction should emphasize exploration and problem-solving, allowing pupils to conduct investigations and build competence. The integration of ICT applications is also crucial to reflect technology's impact on modern life.

2.2 Competences

A competence is the ability to use an appropriate combination of knowledge, skills, attitudes, values, and behaviours to accomplish a task successfully. In this syllabus, competences reflect a holistic blend of these elements, enabling learners to apply them confidently and appropriately in diverse real-life situations.

By acquiring these competences, learners become better equipped to handle challenges, make informed decisions, act responsibly, and contribute positively as active members of society. The competences are embedded in the broad subject competences, yearly objectives, and unit-specific learning competences. Both generic competences and basic competences must be emphasized and consistently reflected in the teaching and learning process.

Teachers are encouraged to design learning experiences that engage learners in meaningful tasks, allowing them to practice and demonstrate competences both during and at the end of the learning process.

2.2.1 Generic competences

Critical and problem-solving skills: Learners use different techniques to solve mathematical problems related to real life situations. They are engaged in mathematical thinking, they construct, symbolize, apply and generalize ideas.

The acquisition of such skills will help learners to think imaginatively and broadly to evaluate and find solutions to problems encountered in all situations.

Creativity and innovation: The acquisition of such skills will help learners to take initiatives and use imagination beyond the knowledge provided to generate new ideas and construct new concepts. Learners will improve these skills through mathematics contests, and mathematics competitions, etc.

Research: This will help learners find answers to questions based on existing information and concepts as well as explain phenomena based on findings from information gathered.

Communication in official languages: Learners communicate effectively their findings through explanations, construction of arguments and drawing relevant conclusions.

Mathematics teachers, irrespective of not being teachers of language, will ensure the proper use of the language of instruction by learners. This will help learners communicate clearly and confidently and convey ideas effectively through speaking and writing and use the correct language structure and relevant vocabulary.

Cooperation, interpersonal management and life skills: Learners are engaged in cooperative learning groups to promote higher achievement rather than competitive and individual work.

This will help learners to co-operate with others as a team in whatever task are assigned and to practice positive ethical moral values and respect for the rights, feelings and views of others. Leaners will perform practical activities related to environmental conservation and protection. They will also advocate for personal, family and community health, hygiene and nutrition and respond creatively to the variety of challenges encountered in life.

Lifelong learning: The acquisition of such skills will help learners update their knowledge and skills with minimum external support and to cope with the evolution of advances in knowledge for personal fulfillment in areas that need improvement and development.

2.2.2 Mathematics and broad competences

At the end of the upper primary level, the learners should be able to;

- Promote problem solving in life situations;
- Develop and enrich their aesthetic and linguistic experiences;
- Promote scientific, technical and cultural knowledge, skills and positive attitudes needed to promote development, self- sufficiency and wealth;
- Apply acquired mathematics knowledge and skills in future training;
- Work in a systematic way to develop clear, logical, coherent, and creative reasoning;
- Develop imagination, initiative and flexibility of mind;
- Describe, explain, interpret, and analyze information;
- Use acquired knowledge and skills to succeed in an era of rapid technological growth and socio-economic development;
- Use ICT tools to solve mathematical problems.

2.2.3 Mathematics and Developing Competences

The national policy documents based on national aspirations identify some 'Basic Competencies' alongside the 'Generic Competencies'' that will develop higher order thinking skills and help learners learn subject content and promote the application of acquired knowledge and skills.

Through observations, constructions, hands-on manipulations, generalizations, and presentations of information during the learning process, the learner will not only develop deductive and inductive skills but also acquire co-operation, communication, critical thinking and problem solving skills. This will be realized when learners make presentations leading to inferences and conclusions at the end of the learning unit. This will be achieved through

group work activities and cooperative learning which in turn will promote interpersonal relations and teamwork.

The acquired knowledge in learning mathematics should develop a responsible citizen who adapts to scientific reasoning, attitudes and develops confidence in reasoning independently.

2.2.4 Values (Suggested definition)

Values are enduring beliefs, principles, and dispositions that influence how individuals think, feel, make decisions, interact with others, and apply knowledge, skills, and attitudes in different situations. Within the Competence-Based Curriculum, values provide the ethical, social, and cultural foundation for learning and responsible citizenship. The Rwanda Curriculum Framework recognizes two complementary categories of values: Curriculum Values, which guide the philosophy, design, and implementation of education, and Basic Values, which represent the moral, civic, and character attributes that learners are expected to internalize and demonstrate in their daily lives. Together, these values shape the development of competent, responsible, self-reliant, and socially engaged citizens.

2.2.4.1 Curriculum Values

Excellence: Striving for the highest standards in learning, behaviour, and performance by consistently producing quality work, using feedback for improvement, and taking pride in achievement. It is reflected in accuracy, continuous growth, and encouraging excellence in others.

Aspiration and Optimism: Believing in one's potential and pursuing ambitious goals with confidence, perseverance, and a positive outlook. It involves viewing challenges as opportunities for growth and inspiring hope in oneself and others.

Equity and Inclusiveness: Valuing the dignity and worth of every individual by promoting fairness, equal participation, and opportunities for all. It is demonstrated through respect for diversity, support for others, and opposition to discrimination and exclusion.

Openness and Transparency: Acting honestly, ethically, and accountably while fostering trust and participation. It is reflected in clear communication, responsible decision-making, openness to feedback, and fairness in interactions with others.

Importance of Family, Rwandan culture and heritage: Recognizing the role of family, culture, and heritage in shaping identity, values, learning, and social development. It is demonstrated through respect for family relationships, participation in community life, and appreciation of cultural traditions and responsibilities.

Learner-centredness: Placing learners at the heart of education by recognizing their needs, interests, abilities, and experiences while promoting active engagement and ownership of learning. It is reflected in inclusive, supportive learning environments where learners participate, explore, collaborate, reflect, and take responsibility for their learning.

2.2.4.2 Basic Values

Dignity and Integrity: Upholding self-worth and acting consistently according to moral and ethical principles. It is demonstrated through honesty, responsibility, respect for self and others, and doing what is right even when unsupervised.

Self-Reliance: Taking responsibility for one's learning, decisions, and wellbeing through initiative, confidence, and independent action. It involves solving problems, managing resources effectively, and making informed choices.

National and Cultural Identity: Appreciating and promoting Rwanda's heritage, values, language, traditions, and national aspirations. It is reflected in national pride, respect for cultural heritage and institutions, and commitment to unity and social cohesion.

Peace and Tolerance: Living harmoniously with others by respecting differences and resolving conflicts constructively. It is demonstrated through empathy, respectful dialogue, reconciliation, and support for peaceful coexistence.

Justice: Promoting fairness, equity, and respect for rules, rights, and responsibilities. It is reflected in impartial decision-making, ethical judgement, consistent application of rules, and opposition to unfair treatment.

Respect for Others and Human Rights: Recognizing and upholding the dignity, rights, and freedoms of every person. It is demonstrated through courtesy, active listening, inclusion, respect for diversity, and protection of the rights of others.

Solidarity and Democracy: Working collaboratively for the common good while respecting participation, shared responsibility, and collective decision-making. It is reflected in teamwork, community service, social responsibility, and respect for diverse views.

Patriotism: Demonstrating love, loyalty, and commitment to the wellbeing and development of Rwanda. It is expressed through civic responsibility, community participation, promotion of national unity, and positive representation of the country.

Hard Work: Applying consistent effort, diligence, and responsibility in pursuing goals and fulfilling duties. It is demonstrated through persistence, productive use of time, initiative, and commitment to quality outcomes.

Commitment and Resilience: Remaining dedicated to goals and continuing to make progress despite difficulties and setbacks. It is reflected in perseverance, adaptability, learning from mistakes, emotional self-control, and determination to succeed.

3. Pedagogical Approach

The change to a competence-based curriculum is about transforming learning to ensure that learning is deep, enjoyable and habit-forming.

IT in general and particularly ICT should be used as a pedagogical tool to facilitate teaching and learning of mathematics. Various teaching strategies and approaches such as direct instruction, discovery learning, investigation, guided discovery, guided practice or other methods must be incorporated. Among the approaches that can be given consideration include the following:

- Learner-centred learning;
- Different learning abilities and styles of learners (individualization);
- Use of relevant, suitable and effective teaching materials;
- Formative evaluation to determine the effectiveness of teaching and learning processes.

The choice of a suitable approach will stimulate the teaching and learning environment inside or outside the classroom. Suitable approaches include the following: Co-operative learning, Contextual learning, Mastery learning and Constructivism.

3.1 Role of the Teacher

Teachers act as facilitators and guides, shifting away from traditional rote instruction. They organize learners individually, in pairs, or in groups, and design purposeful tasks that promote inquiry, collaboration, and autonomy. Teachers apply pedagogical principles of progression: moving from simple to complex, concrete to pictorial and abstract, and from learners' experiences to broader knowledge rooted in Mathematic contexts. They integrate cross-cutting issues such as peace, gender equality, environmental conservation, financial education, and cultural values, while ensuring sensitivity to learners' diverse backgrounds. Teachers adopt an inclusive approach by encouraging respect of ideas from colleagues.

3.2 Role of the Learner

In the competence-based curriculum, the learner is the principal actor of his/her education. He/she is not an empty bottle to fill. Considering the initial capacities and abilities of the learner, the activities of the learner are indicated against each learning unit and reflect appropriate engagement of the learner in the learning process. The teaching-learning process will be tailored towards creating a learner friendly environment based on capabilities, needs, experience and interests.

Therefore, the following are some of the roles of learners:

- Learners construct the knowledge either individually or in groups in an active way. From the learning theory, learners move in their understanding from concrete through to pictorial to abstract. Therefore, the opportunities should be given to learners to manipulate concrete objects and to use models.
- Learners will be encouraged to do research and present their findings through group work activities.
- A learner is co-operative: learners work in heterogeneous groups to increase tolerance and understanding.
- Learners are responsible for their own participation and for making sure others participate.
- Help is sought from within the group and the teacher is asked for help only when the whole group agrees to ask a question.
- Consensus on the answer is required from the whole group.
- The group evaluates its own strategies and ideas rather than relying on the teacher for this evaluation.
- The learners who learn at a faster pace do not do the task alone and then the others merely sign off on it.
- Participants ensure the effective contribution of each member, through clear explanation and articulation of constructive arguments, to improve their English literacy, develop a sense of responsibility and to increase their self-confidence, and public speaking ability, etc.

3.3 Inclusive and Special Needs Education

In line with Rwanda's inclusive education policy, all learners regardless of ability have the right to access quality education. Teachers adapt teaching methods, materials, and assessment strategies to meet diverse needs, including those of learners with disabilities. Differentiated instruction, assistive technologies, peer support, and individualized approaches are used to ensure equitable participation and achievement of learning outcomes. This inclusive approach recognizes learners' varied paces, experiences, and abilities, creating an environment where every learner can thrive.

4. Assessment Approach

Assessment within the CBC is a fundamental component of the teaching and learning process. It is designed to evaluate learners' progress across knowledge, skills, attitudes, and values, while simultaneously supporting continuous learning and development. Unlike traditional models, CBC assessment emphasizes real-life problem-solving, requiring learners to apply acquired competences to complex, everyday situations.

Assessment entails the systematic collection and interpretation of evidence to measure learner performance against established standards. Beyond measuring achievement, it informs instructional improvement and provides constructive feedback to learners, parents, and educators, thereby fostering accountability and guiding educational decision-making.

4.1 Levels of assessment across terms and national examinations

To provide a comprehensive picture of learner achievement and development, assessment is conducted at multiple levels:

i) **Diagnostic**: Conducted before instruction to identify learners' prior knowledge and skills; administered at the beginning of a unit or lesson to guide teaching.

ii) **Formative / Continuous**: Carried out during the learning process to track progress and provide feedback; implemented continuously through quizzes, projects, class activities, and teacher observations.

iii) Summative assessment:

This is administered in form of comprehensive assessment under different authorities.

- **End Term I:** Administered after instruction to evaluate learners' achievement of Term I content; conducted at the end of the first term as a school-based assessment.
- **End Term II**: District-coordinated assessment designed to measure achievement of Term II content; developed by schools and quality-checked at district level.
- **End Term III**: National assessment to evaluate mastery of the entire year's content; prepared, set, and moderated by NESA at the end of the third term.
- **National Examinations (NESA)**: High-stakes assessments for certification, selection, and accountability; administered nationally at the end of key education cycles (P6, S3, S6) under NESA's authority. This examination integrates objective questions, structured responses, and applied tasks aligned with CBC principles to holistically measure learner achievement.

Average scores from school, district, and comprehensive summative assessments will be weighted and included in the final national examination grading, with the percentage gradually increasing as teachers gain experience and confidence in assessment practices.

4.2 Record keeping

Accurate record keeping is essential for monitoring learner progress and informing instructional decisions. Teachers use tools such as portfolios, checklists, and report books to collect evidence of learning. Portfolios include samples of learners' work, test results, projects, and self-reflections, serving as both a record of achievement and a diagnostic tool for guiding remedial action. These records provide data for feedback to learners, teachers, and parents, and contribute to final evaluations. Results/marks for summative/comprehensive assessment will be uploaded in Comprehensive Assessment Management Information System (CAMIS).

4.3 Item writing in summative assessment

Summative assessment items must be valid, fair, reliable, and aligned with CBC principles. They should test a range of competences, including knowledge recall, application, analysis, and values integration, while reflecting real-life contexts. Item writers follow a structured process that involves:

- Identify topic areas to be tested from the subject syllabus.
- Outline subject matter content to be considered as the basis for the test.
- Identify learning outcomes to be measured by the test.
- Preparing a test blueprint or table of specifications;
- Using verbs that require higher-order thinking beyond memorization;
- Applying transparent and consistent marking schemes.
- Greater weight is given to higher-order cognitive skills.

4.4 Structure and format of national examinations

At the completion of primary education, learners undertake a national examination designed to evaluate literacy, numeracy, and competences in core subjects. The paper for the exam will be comprised of two sections. The first section will be composed of short answer items or items with short calculations which include questions testing for knowledge and understanding, investigation of simple patterns, quick calculations and applications of mathematics in real life through simple word problems. The second section will be composed of long answer items or answers with constructions, simple demonstrations, investigation of simple patterns and generalization, interpretation and explanations. The items for the second section will emphasize the mastering of mathematical facts, the understanding of mathematical concepts and their application in real life situations. In this section, the assessment will find out not only what skills and facts have been mastered, but also how well learners understand the process of solving a mathematical problem and whether they can link the application of what they have learned to the context or to the real life.

In this level, the following topic areas must be assessed: Numbers and operations, missing numbers, measurements and money; 2D shapes, angles and data handling. Topic areas with more weight will have more emphasis in the second section where learners should have the right to choose to answer to a given number of questions.

4.5 Reporting to parents

Regular communication with parents is an essential component of the CBC. This is achieved through progress reports, parent–teacher meetings, and school community activities. Since the CBC emphasizes a wide range of learning outcomes: knowledge, skills, attitudes, and competences—a single mark is insufficient to capture learner progress. Effective reporting should highlight areas where learners are excelling as well as those requiring improvement. Using descriptive feedback or simple rating scales (e.g., meeting expectations very well, meeting expectations, not meeting expectations) across knowledge, subject-specific skills, and competences provides a clearer and more comprehensive picture than numerical grades alone. This approach fosters meaningful parental involvement and supports learners' continued growth.

5. Resources

The effective implementation of the Mathematics syllabus requires the provision and utilization of appropriate resources. These resources include both teaching and learning materials and qualified human personnel, without which the delivery of the syllabus would be ineffective.

5.1 Materials needed for implementation of this syllabus

The use of teaching resources and teaching materials is crucial in guiding learners to develop mathematical ideas.

Teachers should use real or concrete materials to help learners gain experience, construct abstract ideas, make inventions, build self-confidence, encourage independence and inculcate the spirit of cooperation. Some resources that can be used are:

Reference books. Manila cards, Geometrical instruments like rulers, pair of compasses, rubbers, pencils, dividers, sharpeners etc.

In addition, Computers, Projectors, abacus, calculators, counters, and graph paper are some of items found in the mathematics kit delivered to schools.

These resources should be adapted to the learners' context, ensuring inclusivity and accessibility for learners with special educational needs.

Mathematics teachers can source materials from official, digital, and local channels to align with the Competence-Based Curriculum. The most critical sources are the Rwanda Basic Education Board (REB) portal and district education offices, which provide the official syllabus, teacher guides, and approved textbooks. To supplement these, a wealth of digital resources is available on the REB's e-learning platform, international educational sites, and professional teacher networks on platforms where educators can share lesson plans and ideas.

Equally important is the utilization of low-cost, practical resources from the local environment and community. Teachers can create effective hands-on learning aids using natural items like stones and seeds, recyclable materials like bottle caps, and objects from local markets to teach measurement and money. Furthermore, materials and strategies are often shared through professional development workshops and collaborations with fellow teachers, ensuring methods remain practical, experiential, and relevant to pupils' daily lives.

5.2 Human Resource

The successful implementation of this syllabus relies heavily on qualified, competent, and motivated human resources. The following are key personnel required:

- **Teachers:** Professional and well-trained teachers with subject expertise and strong pedagogical skills in learner-centered, participatory, and inclusive methods. Teachers should model integrity, tolerance, respect, and responsibility, and apply effective assessment strategies.

- **Community resource persons:** Mathematics leaders, cultural leaders, and professionals from different sectors who can be invited as guest speakers, mentors, or facilitators to enrich classroom learning with practical, authentic perspectives and contextual insights.
- **Parents and guardians:** Partners in education who provide moral support, monitor learner progress, and collaborate with teachers to reinforce values, attitudes, and competences at home, thereby ensuring holistic learner development.

Effective collaboration among these stakeholders fosters an enabling learning environment, equipping learners not only with academic knowledge but also with values and competences required for responsible citizenship, ethical conduct, and social harmony.

5.3 Skills Required for the Teacher of Mathematics

Effective teaching of Mathematics requires teachers to possess a broad set of professional, pedagogical, and interpersonal skills. These competencies enable them to deliver accurate subject content, promote values and attitudes, and foster holistic learner development in line with the Competence-Based Curriculum. The essential skills include:

a) Subject matter expertise

- Strong mastery of Mathematics content, ethics, and cultural practices to ensure accurate and comprehensive content delivery.
- Ability to make meaningful connections between Mathematics and other disciplines, linking classroom learning to real-life contexts.

b) Pedagogical and instructional skills

- Capacity to design and implement learner-centered, participatory, and inclusive lessons using debates, role-plays, storytelling, projects, and discussions.

- Competence in integrating cross-cutting issues such as financial education, peace, gender, human rights, and environmental sustainability.
- Creativity and innovation in developing and applying diverse teaching resources, including ICT tools and community-based materials.
- Ability to adjust instruction to learners' levels, ensuring inclusivity and engagement for all.

c) Assessment skills

- Proficiency in designing and applying formative and summative assessments aligned with curriculum competencies.
- Effective use of rubrics, portfolios, checklists, and performance tasks to monitor knowledge, skills, and values acquisition.
- Skill in giving constructive feedback that motivates learners and guides improvement.

d) Classroom management and facilitation

- Ability to establish a respectful, safe, and inclusive learning environment that promotes tolerance and values diversity.
- Proficiency in managing group work, discussions, and collaborative learning activities.
- Sensitivity and neutrality in addressing religious, ethical, and cultural issues.

e) Communication and interpersonal skills

- Strong oral and written communication to simplify complex ideas, stimulate dialogue, and foster critical reflection.
- Active listening and empathy to respond effectively to learners' academic and personal needs.

- Collaboration with colleagues, parents, school leaders, and community stakeholders to support holistic learner growth.

f) Guidance and counseling skills

- Ability to provide moral, spiritual, and emotional guidance to learners, supporting their ethical development and social well-being.
- Demonstrating passion, impartiality, and genuine care for children in the teaching and learning process.

g) Professional and ethical competence

- Commitment to continuous professional development through reflective practice, training, and peer collaboration.
- Integrity, impartiality, and ethical conduct, serving as a role model for learners.
- Capacity to balance academic instruction with the cultivation of values and responsible citizenship.

h) Research and innovation skills

- Engagement in reflective practice and classroom-based research to improve teaching and learning.
- Adaptation of innovative approaches and ICT tools to enhance learner participation.
- Ability to contextualize global mathematics knowledge within Rwanda's socio-cultural and environment.

5.4 Use of AI in Mathematics teaching and learning

AI became a powerful tool in mathematics education when used thoughtfully. The key is viewing AI as a tool in our educational toolkit, not as a threat to genuine mathematical understanding.

Here is how teachers and students can ask a question to AI at different stages of the learning process.

1. Ways in which Mathematics teachers can use AI

a) Lesson planning and content creation

- Generate practice activities: "Create 10 problems on quadratic equations with varying difficulty levels".
- Develop worksheets: "Make a worksheet on Pythagorean theorem with real-world applications".
- Create alternative explanations: "Explain complex numbers in 3 different ways for visual, auditory, and kinesthetic students".
- Generate assessment items: "Create a quiz on derivatives with answer key and scoring rubric".

b) Differentiation and individualization

- Adapt problems: "Modify this calculus problem for a student who's struggling with algebraic manipulation".
- Create assignments: "Provide this geometry proof at basic, proficient, and advanced levels".
- Generate enrichment: "Create challenging problems about geometric sequences for advanced students".

c) Assessment and feedback

- Analyze common errors: "Identify common misconceptions in solving linear equations and suggest addressing strategies".
- Generate rubrics: "Create a grading rubric for the activities on quantifiers and their negation".
- Provide feedback templates: "Suggest specific, constructive feedback for a student who made a sign error in solving inequalities".

d) Professional development

- Stay current: "What are recent research-based strategies for teaching fractions?"
- Plan interventions: "Suggest interventions for students struggling with word problems".
- Designing projects to be assigned to students: "Help me design a project-based learning unit on exponential growth".

2. Ways in which Mathematics students can use AI

a) Personalized tutoring and explanation

- Get multiple explanations: "Explain the chain rule in calculus using simple expressions to be understood by a S4 student".
- Clarify concepts: "Why do we 'invert and multiply' when dividing fractions? Explain visually".
- Step-by-step guidance: "Walk me through solving this simultaneous equations step by step using matrices, but don't give me the answer".

b) Practice and problem-solving

- Generate similar problems: "Give me more problems like this one about probability".
- Check understanding: "Create a self-check quiz on trigonometric identities".
- Explore variations: "What if this geometry problem had different given information?"

c) Conceptual deepening

- Make connections: "How is the concept of slope related to real-world applications?"
- Explore why: "Why does the quadratic formula work? Derive it for me".
- Historical context: "What's the history behind the development of calculus?"

3. Best Practices and guidelines

For Teachers, use AI as a Co-planner, not replacement. Verify and edit AI-generated content for accuracy. Teach students HOW to use AI responsibly. Create AI-use policies for your classroom so that they focus on process over answers.

For Students, use AI as a tutor, not an answer key. Show your work and ask for feedback on process. Ask "why" and "how" not just "what's the answer". Do not copy AI solutions directly but use AI to understand methods. Do not depend solely on AI but use AI to supplement learning. Do not trust AI blindly but verify answers and methods.

In conclusion, the most effective mathematics classrooms will be those where teachers use AI to enhance their expertise and reach more students. Students use AI to get immediate, personalized support. Human connection between teachers and students remains central for motivation and deep understanding. This means that AI won't replace mathematics teachers, but teachers who use AI effectively will replace those who don't.

6. SYLLABUS UNITS

6.1 Presentation of the structure of the syllabus

The Mathematics syllabus is designed as a single, integrated syllabus implemented uniformly across all grades. Its structure follows a logical progression that ensures clarity, consistency, and alignment with the Competence-Based Curriculum approach.

At each grade level, the syllabus is organized into **Topic Areas**, which are further broken down into **Sub-Topic Areas**. Each Sub-Topic Area is composed of **Units**, and every unit is characterized by the following features:

1. **Alignment with Lessons**: Each unit corresponds to a specified number of lessons, ensuring effective time allocation and instructional planning.
2. **Key Unit Competence**: Every unit is built around a *Key Unit Competence* that guides all teaching and learning activities. This competence represents the overall learning goal to be achieved by both teacher and learners.
3. **Learning Objectives**: Each key unit competence is translated into specific learning objectives, categorized as follows:
    - **Type I (Knowledge and Understanding):** Focused on foundational knowledge and comprehension, often referred to as *Lower Order Thinking Skills (LOTS).*
    - **Type II and Type III (Skills, Attitudes, and Values):** Aimed at developing practical skills, critical thinking, ethical values, and positive attitudes. These objectives, known as *Higher Order Thinking Skills (HOTS),* form the core focus of the adapted Competence-Based Curriculum.

4. **Content Specification:** Each unit outlines the scope of content to be taught and learned, ensuring that teachers and learners work within the boundaries set by the stated learning objectives.
5. **Learning activities**: Each Unit suggests a non-exhaustive list of learning activities that are expected to engage learners in an interactive learning process as much as possible (learner-centred and participatory approach).
6. **Link to other subjects**: Finally, each Unit is linked to other subjects, the assessment criteria and the materials (or resources) that are expected to be used in the teaching and learning process.

The mathematics syllabus for upper primary level has got 37 units: 17 units in P4, 15 units in P5 and 15 units in P6.

6.2 SYLLABUS UNITS FOR GRADE FOUR (P4)

6.2.1 Key competences at the end of grade four (P4):

At the end of Primary Four, learners can:

- Read, write, compare and calculate whole numbers up to 100,000.
- Solve mathematical problems involving time, length, mass, capacity, money, area or perimeter.
- Solve simple problems involving fractions and decimals.
- Solve missing number problems involving addition and subtraction.
- Collect, represent and interpret data using bar graphs and tables.
- Explain the concept of games of chance by playing games of chance and deciding on whether or not they are fair. lume of cuboids and cubes; draw and construct different angles.

6.2.2 Mathematics units for primary four

TOPIC AREA: NUMBERS NUMBERS	SUB-TOPIC AREA: OPERATIONS ON WHOLE	
P4 MATHEMATICS	**UNIT 1:** Mathematical operations on whole numbers up to 100,000.	**Number of periods:** 48
Key Unit Competence: Pupils will be able to read, write, compare and make calculations on whole numbers up to 100,000.		

Learning Objectives			Contents	Learning activities
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Name all place values through to 100,000, in both spoken and written form in English. – Identify the place values in written numerals. – Read written numerals correctly in English. – Explain the process of addition of Two numbers of 5 digits with or without carrying.	– Apply place value to compare numbers of any size. – Accurately translate between written numerals and spoken English. – Apply number comparison in daily life. – Carry out addition and subtraction of 2 or more whole numbers.	– Develop personal confidence in the use of numbers. – Appreciate the importance of addition, subtraction, multiplication and division of whole numbers in daily life. – Practice sharing, respecting others, and working together in group activities to build teamwork and a	– Reading and writing whole numbers up to 100,000 in words and figures – Place value and comparing whole numbers up to five-digit numbers. – Addition of 2 or more whole numbers, with or without carrying, whose sum does not exceed 100,000.	– Each learner in Groups, gets a little slip of paper with his or her own large number. The learners arrange themselves in order, and read their numbers out loud. – Using number cards to form and read numbers up to 100,000 – Dictation: Learners write the words or numerals from the teacher's dictation. – Matching game: Learner accurately matches large numbers written in numerals with their corresponding word forms.

– Explain the process of subtraction of 2 numbers of 5 digits with or without borrowing. – Explain process of multiplication of 2 numbers or more with or without carrying. – Explain the process of division of 2 digit numbers with or without remainders. – Explain the process of solving mathematical word problems involving 4 operations on 2 or more numbers of 2 digits or more.	– Carry out multiplication of 2 or more whole numbers whose product does not exceed 100,000. – Solve daily life mathematical problems involving addition, subtraction, multiplication or division.	positive learning environment.	– Subtraction of whole numbers up to 100,000 with or without borrowing. – Multiplying whole numbers by two-digit numbers. – Product of a two-digit number by 10; 100;1,000 or 10,000. – Multiply whole numbers by 5 using quick multiplication. – Divide numbers by a one-digit number, with or without a remainder – Solve mathematical problems involving the addition, subtraction,	– Using different digits in a group, learners create two numbers of 5 digits and arrange them from largest to smallest number and vice versa. This activity can be done using flashcards or cutouts. – Use local abacus to introduce the addition of numbers. – Observation of worked examples on charts and carrying out addition or subtraction in groups using abacus or objects of different colors. – Group work activity on mathematics word problems involving addition, subtraction, multiplication or division. – Using flashcards in pairs, form two (2) different numbers and carry out operations. – Using the practical method of division to find the quotient and show the proof by showing

			multiplication, or division of whole numbers.	the relationship between multiplication and division.
Links to other subjects: *English: Contribution to the development of spoken and written English language skills through explanation of steps, use of mathematical vocabulary, and presentation of solutions.*				
Generic skills to be developed: critical thinking and problem-solving, effective communication, interpersonal management and life skills, as well as creativity and innovation.				
Values to be developed: Equity and inclusiveness, openness and transparency, and excellence in all learning activities.				
Crosscutting issues to be addressed: Gender balance, Inclusive education, Peace and values education, Financial education.				
Assessment criteria: Learners should be able to accurately compare whole numbers by their size, carry out addition, multiplication, division and subtraction of 2 or more whole numbers, cooperate in solving problems involving addition, multiplication, division and subtraction in groups and make a presentation in official language.				
***Materials*:** *Manila cards or slips of paper; abacus, textbooks; and objects of different colours. Scissors to make cut outs of numbers. Markers to write numbers that can be seen from back of the room.*				

TOPIC AREA: NUMBERS	SUB-TOPIC AREA: INTEGERS	
P4 MATHEMATICS	**Unit 2:** Positive and negative integers.	**Number of periods:** 16

Key Unit Competence: Pupils will be able to solve problems related to comparing, ordering, and finding the distance between negative and positive integers.

Learning Objectives			Contents	Learning activities
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Explain that on a number line, the number located to the right is always greater than the number to the left.	– Locate positive and negative numbers on the number line – Identify and compare two numbers using their positions on a number line. – Calculate the distance between integers.	– Appreciate the importance of positive and negative numbers in real-life situations and develop confidence in locating them on a number line. – Enjoy sharing, respecting others, and working together in group activities to strengthen cooperation and support when learning.	– The meaning of negative and positive numbers in contexts like temperature, buying and selling, etc. – Location of positive and negative numbers on a number line. – Distance between integers on a number line – Comparing and ordering negative and positive numbers using a number line.	– In groups: Learners can use numbers on cards and place them on a number line backwards and forwards (on the board or using other material made of hard paper). – Game: In a large play area (schoolyard or field), mark a number line from -24 to 24 (for a 48-child class, or -30 to 30 for a 60-child class, to allow all children to play). Each player is "named" and labelled as a number (not including 0) and stands on his or her number on the line. The teacher calls out a command like "Negative 8, run to 2" or "12, run to 4." The child runs, and then says how far, and in

			– Solve problems involving integers, including computing distance between integers.	which direction, positive or negative. – Mental activities: learners picture the number line and state the distance between the numbers on either side (For example: Distance between -3 and 10, or -30 and -10, or -25 and 20). – Puzzles: A number gives clues about where it is (For example: "I am exactly 10 steps away from 7. I am odd. I am more than 5 steps away from 12. Where am I?") and the learner must find the number on the number line. 10 steps away from 7 could be in either direction, so it could be 17 or –3, but only –3 is more than 5 steps away from 12 . So, the number is –3.
Links to other subjects: *Science and Geography: introduction of negative numbers in the context of temperatures in different locations in Rwanda.*				
Generic skills to be developed: critical thinking and problem solving skills, cooperation, interpersonal relations and life skills, effective communication skills, creativity and innovation.				

Values to be developed: learner-centredness, equity and inclusiveness, excellence, peace and tolerance, solidarity and democracy.
Crosscutting issues to be addressed: gender balance, inclusive education, peace and values education, and financial education.
Assessment criteria: Learners should accurately locate, order, and compare pairs of integers (e.g., correctly identifying that -3 is greater than -7 because it lies to the right on the number line), calculate the distance between positive and negative numbers, and apply these skills to solve real-life contextual problems and logic puzzles.
Materials: *Masking tape to mark number line on floor; manila cards for number line; and string marked off evenly with knots (same distance between knots on a rope).*

TOPIC AREA: NUMBERS	SUB-TOPIC AREA: TYPES OF NUMBERS, MULTIPLES, AND FACTORS.	
P4 MATHEMATICS	**Unit 3:** Classifying numbers by their properties.	Number of periods: 16
Key Unit Competence: Pupils will be able to classify numbers flexibly, seeing them as belonging to various sets.		

Learning Objectives			Content	Learning activities
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Explain the meaning of odd, even, square numbers, square root, prime numbers, multiples of numbers, factors of numbers. – List the types of numbers in each number family and explain the defining properties of each family. – List the multiples and	– Classify numbers as odd, even, square numbers, prime numbers, multiples of a given number, factors of a given number. – Calculate the square of a number and find the square root of a square number ≤ 100. (that is less than or equal) – Calculate the Least Common Multiple (LCM)	– Recognize the value of squares and square roots in daily life and build confidence in placing positive and negative numbers on the number line. – Develop a cooperative spirit, actively engage in problem-solving with creativity, and remain attentive to support collective learning	– Natural numbers – Odd numbers and even numbers – Prime numbers – Multiples and factors of a number. – Square numbers less than or equal to 100 – Exact square root of a number less than or equal to 100 – Calculating the Least Common Multiple (LCM and **Greatest Common Factor (GCF)**	– Different sets of numbers can be introduced through games, role plays, etc. **Example:** Each learner receives a card with a different number, from 0 to the number of learners in the class. They arrange themselves in a large circle. The teacher has cards naming various families of numbers: odd, even, square, prime, multiples of 5, numbers that are not multiples of 3, etc. The teacher gives the card to a learner, the learner calls out the family of numbers, and all learners with numbers in that family run to a line marked on the ground, and arrange themselves in order. When they are done, they call out their

factors of a given number less than or equal 100.	– of two numbers using list of multiples. – Calculate the Greatest **Common Factor (GCF)** of two numbers using list of factors.			number names, in order, and the remaining learners check to see if they all belong. Then they go back to the circle and a new family of numbers is called. (Note: this game obviously follows some instruction on the properties of the family of numbers and the English names for them). – Learners work in groups to discover more numbers belonging to a particular type/family of numbers ((For example: even, odd, square...) – Let learners suggest more numbers in each type/family of numbers, and explain why they suggest so.
Links to other subjects: *English: new English vocabulary.*				
Generic skills to be developed: Critical Thinking and Problem Solving skills, Cooperation, Interpersonal Relations and Life Skills, Communication skills, Creativity and Innovation.				
Values to be developed: Learner-centredness, equity and inclusiveness, hard work and perseverance, peace and tolerance.				
Crosscutting issues to be addressed: Gender balance, Inclusive education, Peace and values education.				
Assessment criteria: *Learners should classify a given number by naming at least three categories or sets it belongs to, such as odd/even, square, prime/composite, multiple/factor (for example: 36 is a square number, even number, multiple of 3).*				
Materials: *Manila cards or slips of paper for labeling numbers.*				

TOPIC AREA: FRACTIONS, DECIMALS AND PROPORTIONAL REASONING		SUB-TOPIC AREA: OPERATIONS ON FRACTIONS		
P4 MATHEMATICS	**Unit 4:** Fractions with the same denominator.			**Number of periods:** 24
Key Unit Competence: Pupils will be able to explain the meaning of fractions, add and subtract fractions with the same denominator, multiply and divide fractions accurately.				
Learning Objectives			Content	Learning activities
Knowledge and understanding	Skills	Attitudes and values		
– Read, write, and recognise fractions, including the roles of the numerator and denominator in determining size. – Explain and demonstrate how adding or subtracting fractions with the same denominator is like adding any other unit: metres, grams.	– Compare two fractions with the same denominator. – Add and subtract fractions that have the same denominator. – Apply the knowledge of fractions to solve mathematical problems that involve	– Appreciate the importance of accuracy in carrying out operations on fractions. – Show confidence when performing out operations on fractions. – Develop a supportive attitude by sharing knowledge and working collaboratively	– The meaning of fractions – Reading and writing fractions – Simplifying fractions – Comparing fractions with the same denominator by the use of real materials such as circle set fractions – Comparing fractions with the same denominator, including mixed fractions.	– Using real materials such as circle set fractions to discover the meaning of a fraction and comparing fractions of the same denominator – Given a fraction, learners can find a fraction with the same denominator, so that the two fractions add to 1. – In groups Learners can write and read fractions on flashcards, reflecting the given English names (a half, a third, a quarter, a fifth, a sixth, etc.). – Learners compare fractions like: 3/5, 2/5, 4/5, 1/5 etc. and discover that the bigger the numerator, the bigger the fraction when they have the same denominator.

– Explain how to multiply fractions by whole numbers and by fractions. – Explain how to divide fractions by whole numbers and by fractions. – Explain the process of solving problems involving the addition, subtraction, multiplication and division of fractions.	operations on fractions.	in mathematical activities.	– Addition and subtraction of fractions with the same denominator. – Problems involving addition and subtraction of fractions. – Multiplication of fractions by whole numbers. – Multiplication of fractions by fractions, conceptually (not an arbitrary rule). – Division of fractions by a whole number. – Problems involving multiplication and division of fractions.	– Using a circle, or a number line or other length images of fractions, help learners to see equivalence of fractions. – Learners can multiply fractions by whole numbers using repeated addition. for example: $3 \times \frac{1}{2}$ to mean $\frac{1}{2}+\frac{1}{2}+\frac{1}{2}$. Let them arrive at –. Write more of these fractions on the manila cards and let learners practice in their groups. – Through drawings or simple examples (For example: $\frac{1}{2} \div 6 = \frac{1}{2} \text{x} \frac{1}{6} = \frac{1}{12}$, learners can divide fractions by a whole number and discover that the answer is a smaller fraction than the previous one.

Links to other subjects: *Geography: representation of fractions when calculating scales of maps.*
Generic skills to be developed: critical thinking and problem solving, life skills, effective communication skills, creativity and innovation.
Values to be developed: learner-centredness, equity and inclusiveness, excellence, dignity and integrity.
Crosscutting issues to be addressed: gender balance, inclusive education, peace and values education.
Assessment criteria: Learners should compare, add, subtract, multiply and divide fractions with the same denominator accurately.
Materials: *Concrete objects like oranges, paw paws, sugar canes; wall charts to show fractions; scissors, knives, plain papers or manila cards for learners to cut.*

TOPIC AREA: FRACTIONS, DECIMALS AND PROPORTIONAL REASONING		SUB-TOPIC AREA: OPERATIONS ON DECIMALS.
P4 MATHEMATICS	**Unit 5:** Decimal numbers.	**Number of periods:** 16

Key Unit Competence: Pupils will be able to add, subtract and compare decimal numbers using place values of decimals up to 2 decimal places.

Learning Objectives			Content	Learning activities
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Explain the concept of decimal numbers using place values up to 2 decimal places. – Correctly read and write decimal numbers in figures and in words. – Identify the place values in written decimals.	– Compare 2 or more decimal numbers using greater than, less than or equal (>, < or =). – Accurately translate between written decimals and their spoken English forms. – Carry out addition or subtraction of decimal numbers up to 2 decimal places. – Apply decimal concepts in solving daily life math problems.	– Develop personal confidence in the use of decimal numbers. – Appreciate the importance of decimal numbers in comparing and sharing. – Develop the spirit of sharing of ideas during discussions in groups.	– The concept of decimal numbers through examples, and through "zooming in" on the number line. – Place value of decimals up to 2 decimal places – Comparing decimal numbers. – Addition and subtraction of decimal numbers.	– Locating decimals on the number line and show how it works the same way as integers. Each time we zoom in, we make 10 new spaces. • What is exactly halfway between 0 and 100? • What is exactly halfway between 0 and 10? • What is exactly halfway between 0 and 1? – Mental activity: learners can develop the idea of decimal numbers through the following "zooming in" activities: **Activity 1:** Learners can review multiplying and dividing by 10 through the given example like:

			– Problems involving addition and subtraction of decimals numbers.	1400 → 140 → 14 → 1.4. Then they discover that 14 ÷ 10 is a number (1.4) that is more than 1 and less than 2 **Activity 2:** When we "zoom in" to create 10 smaller equal-sized intervals, we find them separated by nine new numbers. When we zoom in to create 2 smaller equal-sized intervals, we find one number separating them, half way between the two endpoints of the original interval (for example: we find 45 halfway between 40 and 50, and we find 4½ halfway between 4 and 5). – Through the observation of worked examples on addition or subtraction of decimal numbers, learners should be given exercises to be completed and presented by groups.
Links to other Subjects: *Science: components of air for example: carbon dioxide and rare gases use decimals.* *History: decimals are linked to the time line* *Geography uses decimal scales.*				
Generic skills to be developed: critical thinking and problem solving skills, cooperation skills, interpersonal relations skills, life skills and effective communication skills.				
Values to be developed: learner-centredness, equity and inclusiveness, excellence, self-reliance, peace and tolerance.				

Crosscutting issues to be addressed: financial education, gender balance, inclusive education, peace and values education.
Assessment criteria: *Learners should accurately add, subtract and compare decimal numbers, and represent decimals up to two decimal places on a number line.*
Materials: *A ruler, a rope; charts (with number line, worked examples on place values up to two decimal places), and textbooks.*

TOPIC AREA: METRIC MEASUREMENT		SUB-TOPIC AREA: LENGTH		
P4 MATHEMATICS		**Unit 6:** Length measurements.		**Number of Periods: 24**
Key unit Competency: Pupils will be able to convert between units of length and apply this knowledge in solving mathematical problems related to daily life situations, including perimeters.				
Learning Objectives			Content	Learning Activities
Knowledge and understanding	Skills	Attitudes and values		
– Build on knowledge and understanding of measurement of length. – State different units of length measurements. – Explain the relationship between the units of length measurements. – Explain the perimeter of a shape as the distance around it.	– Appropriately estimate length and provide a justification. – Select and use appropriate instruments/tools/ materials to measure lengths, using and interpreting scales correctly. – Read and write units of length measurements. – Accurately convert length measurements between different units.	– Appreciate the importance of metric measures in daily life. – Foster a sense of care and precision in metric measurement, ensuring reliable and accurate results in their activities.	**Distance/length:** – The concept of length – Estimating length of different small distances. – Measuring the length and perimeter of various objects in different units; example: metres, centimetre, decametre, etc. using a ruler, a rope, sticks, foot, or hand span. – Reading and writing measurements of length: km, dam, m, cm, and mm. – Addition and subtraction of length measurements of whole and decimal numbers	– Using observation, estimate the length of different distances (distance between the opposite wall of the classroom etc.). – In groups, measure different distances: less than or up to 1 metre using different tools (foot, metre ruler, rope, stick, etc.) to discover the standard unit of length that is a metre. – Learners will use a variety of measurement units to design real-world problems for one another,

	– Apply the knowledge of addition or subtraction and multiplication by a whole number in solving mathematical problems involving length measurements.		up to two (2) decimal places in meaningful contexts. – Conversion of length measurements with application problems in meaningful contexts.	requiring the use of mixed units and appropriate conversions to solve.
Links to other Subjects: *Social studies: geographical distances between places.* *ES: metric units for measurement of length.*				
Generic skills to be developed: critical thinking and problem solving, communication skills, creativity and innovation.				
Values to be developed: learner-centredness, equity and inclusiveness, self-reliance.				
Crosscutting issues to be addressed: gender balance, inclusive education, environment and sustainability, standardization culture, peace and values education.				
Assessment criteria: *Learners should be able to accurately select, convert, add, subtract and compare length measurements through solving problems related to daily life situations, including, measuring lengths accurately in practical contexts.*				
Materials: *Metre, decameter, ruler, rope, sticks, charts (with a conversion table, worked examples on length measurement), and textbooks.*				

TOPIC AREA: METRIC MEASUREMENT	SUB-TOPIC AREA: CAPACITY	
P4 MATHEMATICS	**Unit 7:** Capacity Measurements.	**Number of periods: 8**

Key Unit Competence: Pupils will be able to convert between units of capacity and apply this knowledge in solving mathematical problems related to daily life situations.

Learning Objectives			Content	Learning activities
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Distinguish between the capacities of different liquid containers through observation. – State the different units of capacity measurement. – Explain the relationship between units of capacity measurement. – Show the process for solving	– Estimate the capacity of a liquid container through observation. – Select and use an appropriate tool/material to measure the capacities of different liquid containers. – Accurately convert different capacity measurements – Apply knowledge of mathematical operations to solve problems	– Demonstrate the ability to properly use a range of materials to measure different liquids in daily life. – Be honest and trustworthy when measuring different capacities. – Show respect to one another when working in groups.	– The concept of capacity and its units. – Estimating and measuring different capacities in litres. – Read and write measurements of capacity from (kiloliters (kL) to milliliters (mL). – Conversion of capacity measurements, with including application problems in meaningful contexts. – Addition and subtraction of capacity measurements involving whole and decimal	– Through observations of different liquid containers, learners will estimate their capacities. – In a group, learners measure liquids using different liquid containers (bottle of 1 litre, cup, bucket, jag, jerry can, etc.) to understand units of capacity. – In groups or individually, solve problems involving the addition or subtraction of capacity measurements. – In pairs, learners compare the capacities of various containers in litres. Then, through explanations based

mathematical problems involving capacity measurement.	involving capacity measurement.		numbers up to two (2) decimal places in meaningful contexts. – Application: Compare capacities of containers and solving real life problems involving capacity measurement.	on their observations, learners deduce that all liquid containers are made using a litre as the standard unit of capacity measurement.
Links to other Subjects: *Physics: capacity measurement is linked to the states of matter.* *EST: capacity of liquids in containers which are used in scientific experiments.*				
Generic skills to be developed: critical thinking and problem solving, cooperation, interpersonal relations and life skills, communication, creativity and innovation.				
Values to be developed: learner-centredness, equity and inclusiveness, dignity and integrity.				
Crosscutting issues to be addressed: gender balance, inclusive education, environment and sustainability, peace and values education.				
Assessment criteria: *Learners should be able to accurately convert, add, subtract and compare capacity measurements through solving problems related to daily life situations.*				
Materials: *Bottles of different capacities, bucket, charts (with a conversion table, worked examples on capacity measurement), and textbooks.*				

TOPIC AREA: METRIC MEASUREMENT	SUB-TOPIC AREA: MASS	
P4 MATHEMATICS	**Unit 8:** Mass measurements.	**Number of periods: 8**

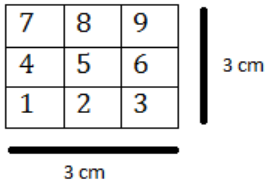
Key Unit Competence: Pupils will be able to convert between units of mass and apply this knowledge in solving mathematical problems related to daily life situations.

Learning Objectives			Content	Learning activities
Knowledge and understanding	Skills	Attitudes and values		
– Identify different units of mass and relate them to appropriate objects, recognizing how these units are connected. – Estimate the masses of objects through observation and explain the process of solving mathematical problems involving mass measurement.	– Select and correctly use appropriate scales and materials to measure mass in daily situations. – Accurately read, write, and convert mass units, and use addition, subtraction, and multiplication to solve related problems. – Develop the ability to	– Appreciate the importance of mass measurement in daily life and build confidence while practicing honesty and accuracy. – Work cooperatively in groups, showing respect for others' ideas and demonstrating a spirit of hard work and trustworthiness.	– The concept of mass and units of mass – Estimating mass of different things. – Measuring different objects using a balance. – Units of mass measurement. – Reading and writing measurement of mass. – Addition and subtraction of mass measurement of whole and decimal	– Through observation of different objects, learners will estimate the mass by identifying which object is heavier or lighter than the other. – In a group, learners measure the mass of different objects using different types of balances (beam, scale spring balances, weight balances, etc.). – In groups or individually, solve problems involving the addition and subtraction of mass measurements. (Group presentation activities should be assigned to learners to improve cooperation, discussion and communication in the classroom).

	estimate mass and provide logical reasoning for your measurements.		numbers up to two (2) decimal places in meaningful contexts. – Conversion of mass measurements, with application problems in meaningful contexts.	– Design practical activities for finding the mass of various things/ objects using materials you prepared for example stones, a bottle full of water, soil, beans, etc. Allow the learners to feel the mass of 500g and 1 kg. Avoid explaining the difference between mass and weight.
Links to other Subjects: *EST: in finding the densities of objects, mass of different objects to be used in experiments.*				
Generic skills to be developed: critical thinking and problem solving, cooperation and communication skills.				
Values to be developed: learner-centredness, excellence, equity and inclusiveness, dignity, integrity and trustworthiness, hard work and perseverance.				
Crosscutting issues to be addressed: standardization culture, financial education, gender balance, inclusive education, environment and sustainability, peace and values education.				
Assessment criteria: *Learners should be able to accurately convert, add, subtract and compare mass measurements through solving problems related to daily life situations.*				
Materials: *Different scales (beam balances, baby scale, etc.) to measure different masses, charts (with a conversion table, worked examples on mass measurement), and textbooks.*				

TOPIC AREA: METRIC MEASUREMENT	SUB-TOPIC AREA: AREA AND LAND	
P4 MATHEMATICS	**Unit 9:** Area and land measurements.	**Number of periods: 16**

Key Unit Competence: Pupils will be able to determine area of shapes and use square and land units in solving related problems.

Learning Objectives			Content	Learning activities
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Explain the concept of square units. – State the units of area and land measurements. – Establish the relationship between the units of area measurements. – List the units of area and land measurements in ascending and descending order.	– Practically differentiate the measurement of area from the measurement of length. – Convert, add, subtract, or compare area and land measurements. – Solve mathematical problems related to finding the surface area of different shapes and plots of land.	– Appreciate how area and land measurements are useful in daily life, understanding their significance in practical situations. – Develop responsibility in correctly applying different measurement units to effectively solve	– Concept of units of area/land measurement using real objects or a geoboard. – Reading and writing measurements of area/land. – Relationship between area and land measurements. – Understand area as the space enclosed by a boundary.	– Outside the classroom, learners should work in groups to measure a square of 1m by 1m and then show the surface area of that square which is written as $1m^2$.(metre square) – Using charts, manila paper or squared paper, learners should discover and explain the concept of square units.  – A square of 3cm by 3cm is divided into 9 squares of 1cm by 1cm each. The surface area of the big square is 9 cm^2

– Correctly read and write units of area measurements. – Explain the process of adding, subtracting, or converting area measurement. – Establish the relationship between the units of land and area measurements. – Correctly read and write units of land measurement.	– Calculate the area as the space enclosed by a boundary without using the formula.	real-world problems.	– Conversion of area and land measurements. – Area of a rectangle including a square – Area of a rectangular piece of land Two-dimension shapes(2D). – Addition and subtraction of area/land measurement of whole and decimal numbers up to two (2) decimal places in meaningful contexts. – Solving real- life problems involving area and land measurement	– In groups, using the relationship between length measurement (1 dam =10m), learners should discover that a square of 10m by 10m has a surface area of 100 m^2 which should help learners establish a relationship between area measurements (100 m^2 = 1 dam^2). – Using charts, manila cards or squared paper, learners can discover and explain the concept of land units. – A rectangle of 5m by 10m is divided into 50 squares of 1m by 1m each. The surface area of the big rectangle is 50 m^2 (on the drawing 1cm = 1m). 41 42 43 44 45 46 47 48 49 50 31 32 33 34 34 36 37 38 39 40 21 22 23 24 25 26 27 28 29 30 — 5 m 11 12 13 14 15 16 17 18 19 20 1 2 3 4 5 6 7 8 9 10 10 m – In groups, using the relationship between area and land measurements, learners should understand that one square of 1m^2 is represented by 1 ca, 50m^2= 50 ca, 100m^2= 1a (are).

				– Solve problems involving conversion, addition or subtraction of area/land measurements in groups or individually.
Links to other Subjects: *Social studies and geography: in the representation and notation of surface areas.*				
Generic skills to be developed: Cooperation, Interpersonal relations and Life Skills, Communication skills, creativity and innovation.				
Values to be developed: Learner-Centredness, Equity and Inclusiveness, Dignity, Integrity and Responsibility.				
Crosscutting issues to be addressed: gender balance, Inclusive education, Peace and values education.				
Assessment criteria: *Learners should accurately convert, add, subtract and compare area and land measurements through solving problems related to daily life situations.*				
Materials: *Meter ruler, tape measure, rope, sticks, squared paper, manila cards, charts (with a conversion table, worked examples on area measurements), and textbooks.*				

TOPIC AREA: METRIC MEASUREMENT		SUB-TOPIC AREA: TIME		
P4 MATHEMATICS	**Unit 10:** Time			**Number of periods: 8**
Key Unit Competence: Pupils will be able to tell, write and convert time appropriately.				
Learning Objectives			**Content**	**Learning activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Recognise different units of time. – Explain the process of solving mathematical problems involving time. – Explain the meaning of am and pm.	– Read and tell the time accurately. – Apply acquired knowledge to convert between units of time. – Correctly write units of time.	– Appreciate the value of time management in daily situations.	– Reading and telling the time accurately using a digital, and analogue watches. – Writing Time using AM (Ante Meridiem) and PM (Post Meridiem) – Conversion of units of time: seconds to minutes, minutes to hours, and vice versa. – Reading the calendar – **Solve problems involving time: minutes, hours, dates, and times.**	– In groups, discuss the units of time: seconds, minutes, hours, days, weeks, months, and years. – Learners can draw clock faces similar to the familiar ones in the classroom, display large cards on which are written a.m, p.m. – In groups, learners should tell the time shown on the clock and indicate the given time. – In groups, discuss different activities at a specified time.

				– Guide learners to convert between the units of time. – Learners will solve problems involving time.
Links to other subjects: *Geography: telling the time and conversion of time when calculating GMT basing on prime meridian.*				
Generic skills to be developed: critical thinking and problem solving, management of learning, commitment and resilience, communication.				
Values to be developed: learner-centredness, self-reliance and punctuality, dignity and integrity.				
Crosscutting issues to be addressed: gender balance, inclusive education, financial education, peace and values education.				
Assessment criteria: *Learners should tell, write and convert time accurately.*				
Materials: *Real clock, clock faces and calendars, wall chart showing clock faces.*				

TOPIC AREA: ALGEBRA	SUB-TOPIC AREA: NUMBER SEQUENCES	
P4 MATHEMATICS	**Unit 11:** Number patterns	**Number of periods: 8**

Key Unit Competence: Pupils will be able to describe and generate number patterns following a rule.

Learning Objectives			Contents	Learning activities
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Explain how to arrange whole numbers according to their size in increasing and decreasing order. – Explain the meaning of arithmetic and geometric progression.	– Determine the clue or pattern for a given arithmetic progression/ geometric progression. – Differentiate between arithmetic progression and geometric progression. – Arrange whole numbers in different orders.	– Appreciate the importance of orderliness in daily life. – Appreciate the spirit of hard work and self-confidence.	– Arranging whole numbers in increasing and decreasing order. – Arithmetic progressions. – Finding the missing number in an arithmetic progression. – Geometric progression.	– Learners in groups can find the missing number in an arithmetic progression and create their own examples (for example:5, 15, 25, 35, 45, 55, _____, _____, 85). – In groups, learners will discuss arithmetic or geometric progressions on flashcards and discover the clue/pattern. – Learners will show the difference between arithmetic and geometric progression (the arithmetic progression focuses on addition and subtraction while geometric progression focuses on multiplication and division).

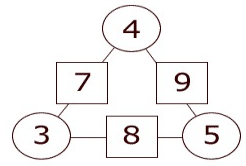
Links to other subjects: *Geography and science: On mountains, the temperature gets lower as you go higher. We measure this using degrees that decrease with height.*

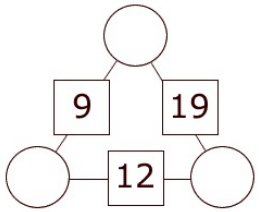
Generic skills to be developed: critical thinking and problem solving, cooperation and interpersonal relations, communication

Values to be developed: hard work, respect for others and human rights, excellence and learner-centredness.
Crosscutting issues to be addressed: gender balance, inclusive education, financial education, peace and values education.
Assessment criteria: *Learners should order whole numbers (in increasing and decreasing order) or generate number patterns following a rule.*
Materials: *Manila cards, scissors and markers to prepare charts.*

TOPIC AREA: ALGEBRA	SUB-TOPIC AREA: NUMBER SEQUENCES	
P4 MATHEMATICS	**Unit 12:** Solving problems involving missing number in addition and subtraction	**Number of periods: 8**

Key Unit Competence: Pupils will be able to solve missing number problems involving addition and subtraction.

Learning Objectives			Contents	Learning activities
Knowledge and understanding	**Skills**	**Attitudes and values**		
Explain how to solve simple missing number problems involving addition and subtraction.	– Use relationships between numbers to solve missing number problems. – Create missing number problems	Appreciate the value of inverse operations in solving and verifying answers while fostering a spirit of hard work and self-confidence.	– Solving simple missing number problems involving addition. – Solving simple missing number problems involving subtraction. – Solving simple missing number problems involving both addition and subtraction.	– Solve missing number problems in contexts involving addition and subtraction (for example: $35+?=99$ or $?-576=324$). – Learners create their own missing number problems, for example hide a number (some learners may choose to use multiplication as well). – In groups, learners discuss and discover the missing numbers in an arithmagon (a polygon with numbers at its vertices which that determine the numbers written on its edges) such that when they add the numbers on 2 vertices the sum will be on the edge between those two vertices. **Example**: 

				– Rule: to solve the puzzle, simply add the numbers in the three boxes and then divide by 2 to get the centre number for the triangle. To get the number for each vertex, subtract the opposite value on the edge from the centre number.  – More activities on arithmagon are needed

Links to other subjects: *Personal finance: Do I have enough money to buy? How much more do I need to save?*

Generic skills to be developed: critical thinking and problem solving, creativity and innovation, cooperation and interpersonal relations, effective communication.

Values to be developed: hard work, self-reliance, respect for others and human rights, excellence, learner-centredness, openness and transparency.

Crosscutting issues to be addressed: gender balance, inclusive education, peace and values education, and financial education.

Assessment criteria: *Learners can solve simple missing number problems involving addition and subtraction.*

Materials: *Manila cards, masking tape, scissors and markers.*

TOPIC AREA: GEOMETRY	SUB-TOPIC AREA: LINES AND ANGLES	
P4 MATHEMATICS	**Unit 13:** Lines and angles.	**Number of periods:** 8

Key Unit Competence: Pupils will be able to identify types of lines and angles and use a protractor to measure angles.

Learning Objectives			Content	Learning activities
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Recognize different types of lines and angles, identifying their properties and distinctions. – Select appropriate tools to measure and classify angles accurately in geometric tasks.	– Practice drawing straight lines and measuring line segments accurately using a ruler. – Correctly measure different angles using a protractor and apply appropriate instruments for geometric tasks. – Differentiate types of angles based on their properties and develop skills in analyzing geometric shapes.	– Appreciate the importance of lines and angles in daily activities. – Be confident and accurate when measuring.	– Types of lines and measuring line segments using a ruler. – The concept of angles. – Measure angles – Types of angles acute: obtuse, right, straight, complementary, supplementary, and reflex angles.	– Through observation of different lines on charts, learners in groups will classify different types of lines (vertical lines, horizontal lines, oblique lines, and intersecting lines). – Measuring angles using a protractor in clockwise and anti-Clockwise directions – In groups, learners will be asked to draw 2 intersecting lines and tell the number of angles the 2 intersecting lines make. After naming the angles the learners will use the numbers 1, 2, 3, 4 to compare the angles by showing which are bigger, smaller or equal.

				– Given one a complementary or supplementary angle, learners will be asked to determine the second complementary or supplementary angle.
***Links to other Subjects**: Fine Arts: it is linked to drawing different shapes. English: The introduction of new vocabularies. Geography: lines and angles are used in bearings.*				
Generic skills to be developed: critical thinking and problem solving, cooperation and interpersonal relations, effective communication.				
Values to be developed: solidarity and democracy, respect for others and human rights, learner-centredness, excellence, equity and inclusiveness.				
Crosscutting issues to be addressed: inclusive education, gender, environment and sustainability, peace and values education.				
***Assessment criteria:** Learners should identify different types of lines and angles using their properties. Learners should be asked to measure different angles using a protractor.*				
***Materials:** Ruler, protractor, manila cards, and markers.*				

TOPIC AREA: GEOMETRY	SUB-TOPIC AREA: 2D SHAPES AND PROPERTIES	
P4 MATHEMATICS	**Unit 14:** Shapes in the plane.	**Number of periods:** 16
Key Unit Competence: Pupils will be able to use geometric properties, including symmetry, to sort shapes.		

Learning Objectives			Content	Learning activities
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Name triangles and special quadrilaterals. – State the geometric properties that can be used to distinguish between shapes. – Identify triangles and special quadrilaterals in everyday situations.	– Select appropriate geometric instruments to construct triangles, quadrilaterals and examine their properties. – Distinguish between different shapes using their properties. – Determine the symmetrical properties of 2D shapes.	– Appreciate how the properties of shapes aid in classification.	– Name triangles based on their edge lengths (equilateral, isosceles, scalene) and their greatest angle (acute, right, obtuse") – Exploring triangles and quadrilaterals – Distinguish special quadrilaterals given the special characteristics: sides, angles and diagonals. – Distinguish special quadrilaterals based on their unique characteristics: lines of symmetry and, order of rotational symmetry.	– In groups sort a variety of polygons (without specific names, including both regular and irregular examples), distinguishing triangles and quadrilaterals (provided as example paper or card objects). Learn the names of different types of triangles. – Investigate the symmetrical properties of shapes by folding paper cutouts (lines of symmetry) and tracing around a shape to determine how many times it fits exactly into itself when rotated about the center before returning to its original orientation (order of rotation).

				– In groups use yes/no questions about geometric properties to sort special quadrilaterals (provided as paper or card objects) could also be done on computer. – Individually make a table for special quadrilaterals that includes their name, a diagram and all the relevant geometric properties. – Play games based on identifying the quadrilateral based on specific geometric properties or in everyday contexts.
***Links to other Subjects**: Art and languages: Recognizing shapes across the curriculum.*				
Generic skills to be developed: critical thinking and problem solving, creativity and innovation, cooperation and interpersonal relations, communication skills.				
Values to be developed: equity and inclusiveness, learner-centredness, excellence, respect for others and human rights, self-reliance.				
Crosscutting issues to be addressed: gender balance, inclusive education, peace and values education, standardization of culture,				
***Assessment criteria:** Able to use geometric properties, including symmetry, to sort shapes.*				
***Materials:** Ruler, protractor, variety of paper/card shapes for sorting and exploring symmetry, and computers for sorting special quadrilaterals.*				

TOPIC AREA: GEOMETRY	SUB-TOPIC AREA: MEASUREMENTS OF 2D SHAPES	
P4 MATHEMATICS	**Unit 15:** Area of shapes in the plane.	**Number of Periods:** 16
Key Unit Competence: Pupils will be able to use rectangles to determine the area of triangles and special quadrilaterals.		

Learning Objectives			Content	Learning Activities
Knowledge and understanding	Skills	Attitudes and values		
– Explain area as the space enclosed within a perimeter. – Distinguish between area and perimeter. – Select the correct units to use.	– Practically determine the area of triangles and quadrilaterals by relating them to the area of rectangles. – Solve problems involving the determination of the area of various 2D shapes.	– Appreciate that the relationship between area and perimeter is simple. – Appreciate how the properties of shapes assist in classification.	– Recall on the area of a rectangle and the use of a geoboard – Area of a Square and the use of a geoboard – Area of a triangle. – Area of Parallelogram – Area of a Rhombus. – Area of a Trapezium	– Practical: Fold any rectangle in half along its diagonal what is the area of the triangle? – In small groups, each group draw a triangle on squared paper – can its area be related to the area of a rectangle? Explain. – In small groups investigate how to determine the area of special quadrilaterals other than rectangles. – provide paper shapes, scissors, and glue. – create a poster explaining your findings. – In groups, find as many triangles and quadrilaterals as possible with a perimeter of 24cm, determine the area of each shape, measuring where necessary.

				– In groups, find as many triangles and quadrilaterals as possible with an area of 36cm^2, determine the perimeter of each shape, measuring where necessary.
Links to other Subjects: ***Environmental Science:*** *Estimating land areas affected by deforestation or flooding; Comparing land use (For example: farming vs. conservation areas).* ***Geography****: Comparing areas of different landforms (For example: lake vs. forest).* ***Fine arts****: Using area to plan tiling, and fabric patterns; Estimating how much paint or material is needed based on area.*				
Generic skills to be developed: critical thinking and problem solving, creativity and innovation, cooperation and interpersonal relations, effective communication.				
Values to be developed: excellence, learner-centredness, equity and inclusiveness, self-reliance, respect for others and human rights.				
Crosscutting issues to be addressed: gender balance, inclusive education, peace and values education, standardization culture.				
Assessment criteria*: Be able to use rectangles to determine the area of triangles and special quadrilaterals.*				
Materials: *Rulers, paper shapes, squared paper, scissors, and glue.*				

TOPIC AREA: STATISTICS AND ELEMENTARY PROBABILITY		SUB-TOPIC AREA: COLLECTING DATA		
P4 MATHEMATICS	**Unit 16:** Introduction to data handling.			**Number of periods: 16**
Key Unit Competence: Pupils will be able to collect, represent and interpret data.				
Learning Objectives			Content	Learning activities
Knowledge and understanding	Skills	Attitudes and values		
– Explain how data are collected using tables. – Differentiate between quantitative and qualitative data. – Explain the different ways of presenting and interpreting data.	– Apply the knowledge acquired to distinguish between quantitative and qualitative data. – Analyse and describe the possible ways of collecting data. – Solve mathematical problems that involving interpretation and extraction of information from tables in daily life. – Solve mathematical problems that involving representation of data in daily life.	Recognize the value of data collection, interpretation, and statistical tools, such as tables and bar graphs, in making informed decisions in daily life.	– Quantitative and qualitative data. – Ways of collecting data. – Presentation of data using tables. – Presentation of data using bar graphs. – Interpreting and extracting information from tables and bar graphs. – Presenting information using tables and bar graphs.	– Through observation and demonstration, learners will form groups and discuss the possible ways of collecting data. – The learners will be provided with information presented in tables created by the teacher, and they will discuss how the data are collected. Learners will demonstrate to the entire class the outcome of the results. – Learners will discuss among themselves the difference between quantitative and qualitative data and also talk about the meaning of data in the broader context.

			– Project activities in statistics	– Through observation and demonstration, learners will form groups and discuss the possible ways of presenting information and interpreting data using tables. – In groups, the teacher explains to the learners how to interpret and extract information from a table and guides them to do this. – Ask each group to represent their data in a bar graph and guide them.
Links to other subjects: *Geography: Categorization of the population per ages.*				
Generic skills to be developed: critical thinking and problem solving, research and problem solving, cooperation and interpersonal relations, communication.				
Values to be developed: dignity and integrity, hard work, excellence, openness and transparency, learner-centredness.				
Crosscutting issues to be addressed: gender balance, inclusive education, peace and values education, financial education.				
Assessment criteria: *Learners should collect, represent and interpret data.*				
Materials: *Manila paper, scissors, tape measures, rulers, glue, masking tapes, and weighing machines.*				

TOPIC AREA: STATISTICS AND ELEMENTARY PROBABILITY		SUB-TOPIC AREA: PROBABILITY OF EVENTS/EXPERIMENTS		
P4 MATHEMATICS	**Unit 17:** Introduction to games of chance			**Number of periods: 8**
Key Unit Competence: Pupils will be able to play games of chance and decide whether or not they are fair.				
Learning Objectives			**Content**	**Learning activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
Understand that games have rules and may or may not be fair.	– Take turns when playing games of chance that involve coins, dice, and cards. – whether a game is fair or unfair.	Appreciate the importance of following rules and taking turns while playing games.	– Playing games of chance, and decide whether or not they are fair. – Exploring the coin and play the game of tossing a coin – Tossing three coins at the same time and note the sides of the coins facing up – Playing a card game and explore the role of luck.	– In groups, play various games (demonstration, through practice or using a computer game is needed in the class where the other learners are observers) * assessing whether or not the game is fair (for example: does it matter who goes first? Are there winning strategies?) – Snakes and ladders; Ludo; Bingo; First to 100 – take it in turns to throw a dice as many times as you like and tally the scores, if you throw a six you get nothing for your turn; Three coins :decide on your winning combination (for example: two heads and one tail or all three tails) – take it in turns to toss three coins and tally the number of times you get your winning combination

				first to 20 wins; Play snap with sets of cards (for example: numbers, shapes and their names etc.); – Play various games using playing cards and their variations.
***Links to other Subjects**: C*reative arts				
Generic skills to be developed: critical thinking and problem solving, cooperation and interpersonal relations, communication.				
Values to be developed: peace, tolerance and justice, dignity and integrity, respect for others and human rights, equity and inclusiveness, learner-centredness, openness and transparency.				
Crosscutting issues to be addressed: Gender balance, inclusive education, financial education, peace and values education				
***Assessment criteria:** Able to decide whether or not games of chance are fair.*				
***Materials:** Various games, coins, dice, and cards.*				

6.3 Mathematics for primary five

6.3.1 Key competencies at the end of primary five

At the end of primary five, learners can:

- Read, write, compare and calculate whole numbers up to 1,000,000, add and subtract integers.
- Solve problems involving measurements of time, length, capacity, mass, and money including calculating the number of intervals.
- Solve simple problems involving proportions, fractions, and decimals.
- Calculate circumference of a circle and volume of cuboids and cubes; draw and construct different angles.
- Collect data, represent it, and interpret the results to answer a question or explore a hypothesis.
- Solve missing number problems involving addition and subtraction.
- Explain the concept of probability by conducting experiments to decide how likely something is to happen.

6.3.2 Mathematics units for primary five

TOPIC AREA: NUMBERS	SUB-TOPIC-AREA: OPERATIONS ON WHOLE NUMBERS	
P5 MATHEMATICS	**Unit 1:** Reading, writing, comparing and calculating whole numbers up to 1,000,000.	**Number of periods:** 32
Key Unit Competence: Pupils will be able to read, write, compare and make calculations on whole numbers up to 1 000 000.		

Learning Objectives			Content	Learning activities
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Identify and name place values up to 1,000,000 in both spoken and written forms. – Correctly read and say written numbers in English. – Explain the concept and process of addition of 3 or more whole numbers of 6 digits with or without carrying.	– Compare numbers of any size using place values with a general understanding. – Write the given number accurately in word. – Apply comparison of numbers in daily life. – Carry out addition, subtraction of three (3) or more	– Appreciate the importance of reading and writing numbers accurately. – Develop confidence in using numbers in everyday contexts. – Appreciate the importance of addition, subtraction, multiplication	– Reading and writing numbers up to 1,000,000: – Form numbers and read them using number cards or an abacus. – Reading and writing numbers in figures and in words up to 1,000,000. – Place value and comparing numbers – Add whole numbers. using a local abacus. – Addition of three (3) or more whole numbers of 6- digits, with or without carrying.	– Each learner in a group gets a little slip of paper with his or her own large number (up to 1,000,000). The learners arrange themselves in order, and read their numbers out loud. – Dictation: learners write in words or in figures any given 6-digit number from the teacher's dictation. – Matching game: learner matches large numbers (up to 1,000,000) written as numerals and as words. – Use number cards to form and read numbers

– Explain the concept and process of subtraction of two (2) numbers of 6 digits or more with or without borrowing. – Explain the concept and process of multiplication of a 3-digit number by another 3-digit number. – Explain the concept and process of dividing numbers. – Explain the process of solving word problems.	whole numbers. – Quickly and accurately perform basic calculations – Apply the knowledge of addition, subtraction, multiplication and division to solve mathematical problems in in everyday situations.	and division in daily life.	– Subtraction of 2 whole numbers of 6 digits with or without borrowing. – Multiplying whole numbers by a 3-digit number. – Quick multiplication of a 3-digit number by 5, 9, 11, 19, 25, 49,50, 90, and 99. – Division (without a remainder and with a remainder) of a 3-digit numbers by a 2-digit number. – Solve mathematical problems involving operations such as addition, subtraction, multiplication, or division of whole numbers.	– In a group, learners use different digits to create two six-digit and arrange them from largest to smallest and vice versa. This activity can be done using flashcards or cutouts. – Observe worked examples on charts and carry out addition or subtraction in groups using an abacus or objects of different colors. – Compose and solve simple math problems in a group and make a presentation. These problems should relate to real-life situations are related to real life situations (such as those involving money or transactions, etc.).
Links to other subjects: *English: contribution to practice of spoken and written English.*				
Generic skills to be developed: critical thinking & problem solving, cooperation & interpersonal relations, creativity & innovation, lifelong learning & self-reliance.				

Values to be developed: excellence, learner-centredness, hard work, solidarity and democracy, commitment and resilience.
Crosscutting issues to be addressed: Peace and values education, financial education, gender education.
Assessment criteria: *Learners should read, write, compare and solve mathematical problems that involve the calculations up to 1,000,000.*
Materials: *Manila cards or slips of paper, scissor to make cut outs of numbers, markers to write numbers that can be seen from back of the room.*

TOPIC AREA: NUMBERS	SUB-TOPIC AREA: INTEGERS	
P5 MATHEMATICS	**Unit 2:** Addition and subtraction of integers.	**Number of periods:** 8
Key Unit Competence: Pupils will be able to solve problems related to addition and subtraction of negative and positive integers.		

Learning Objectives			Content	Learning activities
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Explain that when two numbers have opposite signs, they are located on opposite sides of zero on the number line. – Describe the concept of addition and subtraction of integers.	– Add and subtract integers using a number line, counters, or without them. – Calculate the additive inverse of any integer. – Solve mathematical problems involving addition and subtraction of integers.	– Appreciate the application of negative numbers in practical contexts. – Appreciate the relationship between positive and negative values in the context of debit.	– Location of positive and negative numbers on a number line. – Comparing and ordering integers: ○ using number line ○ using symbols <, > or = – Addition and subtraction of integers: ○ Using a number line or counters. ○ without using a number line (calculations) – Additive inverses of numbers.	– Groups of five learners get a set of numbers on cards. They place their numbers on a number line drawn on manila card. This activity should also be done on the board and the class assesses correctness. – In groups, let learners use a number line to order integers, ensuring that learners explain when to use the symbol <, > or = – In groups, distribute flashcards showing addition and subtraction of integers. – Through group discussion, let learners discover the concept of additive inverse by finding out that for every integer, there is another integer such that the sum of the two

			– Solve problems involving addition and subtraction of integers.	integers is zero. Then, let them state the additive inverse of some five positive integers and another five negative integers and write these integers on flashcards. – Mental mathematics activities in which learners picture the number line and tell the distance between numbers on either side, where the arithmetic itself is easy.
Links to other subjects: *Science and geography: addition and subtraction of integers includes temperatures differences in Rwanda.*				
Generic skills to be developed: critical thinking & problem solving, cooperation & interpersonal relations, communication skills, lifelong learning & self-reliance.				
Values to be developed: excellence, equity and inclusiveness, solidarity and democracy, hard work, self-reliance, openness and transparency				
Crosscutting issues to be addressed: Inclusive education and financial education				
Assessment criteria: *Learners should be able to accurately add and subtract integers*				
Materials: *Masking tape to mark a number line on floor, manila cards for the number line, and a string marked off evenly with knots.*				

<table>
<tr><td>TOPIC AREA: NUMBERS</td><td colspan="2">SUB-TOPIC AREA: TYPES OF NUMBERS, FACTORS, AND MULTIPLES</td></tr>
<tr><td>P5 MATHEMATICS</td><td>Unit 3: Prime factorization and divisibility tests.</td><td>Number of periods: 16</td></tr>
<tr><td colspan="3">Key Unit Competence: Pupils will be able to prime factorize, exploit the rule of divisibility tests less than 10, find the Lowest Common Multiple (LCM) and the Greatest Common Factor (GCF) of whole numbers.</td></tr>
<tr><td colspan="3">Learning Objectives</td><td rowspan="2">Content</td><td rowspan="2">Learning Activities</td></tr>
<tr><td>Knowledge and understanding</td><td>Skills</td><td>Attitudes and values</td></tr>
<tr><td>– Explain prime numbers.
– Explain LCM and GCF.
– Explain and memorize the rules for divisibility tests of numbers.
– Explain the concept of indices (powers) as shorthand for repeated multiplication of factors.</td><td>– Factor numbers using prime factors.
– Calculate and demonstate the rule of divisibility tests.
– Calculate the LCM and GCF of numbers.
– Solve problems involving LCM in real-life situations.</td><td>– Appreciate the importance of LCM in real-life situations.
– Be confident and accurate when carrying out different calculations.</td><td>– Prime factorization of numbers and its uniqueness.
– Prime factorizing using indices as shorthand for repeated factors.
– Calculation of LCM and GCF.
– Divisibility tests for 2, 3, 4, 5, 6, 8, 9, and10.</td><td>– On flashcards, in groups learners will factor numbers and show the prime factors using indices (powers) or exponents. For example: Prime factorize 40.
<table><tr><td>2</td><td>40</td></tr><tr><td>2</td><td>20</td></tr><tr><td>2</td><td>10</td></tr><tr><td>5</td><td>5</td></tr><tr><td></td><td>1</td></tr></table>40 = 2 x 2 x 2 x 5 = 2^3 x 5. And then, the teacher will guide learners on how to find LCM and GCF of different numbers.
– In groups, learners will discover how to determine the rules for divisibility tests for 2, 3, 4, 5, 6, 8, 9, 10, 11 and 12. Then, they will explain how it works by writing on manila paper or on</td></tr>
</table>

				chalkboards some numeral numbers all divisible by 3, for example: Learners can work together to divide the following numbers by 3 (27, 84, 111, 2016) to get 9, 28, 37 and 672. After that, they can find the sum of the digits of the original numbers i.e. 27, 84, 111, 2016. They will get 9, 12, 3, and 9. Lastly, learners can discover that each sum of the digits of all given numbers is divisible by 3 or multiples of 3 and this should emerge (shows that 27, 84, 111 and 2016 are divisible by 3). – Through various group activities, learners can discover other rules for other divisibility tests. (For example: learners can discover that any natural number is divisible by 5 if it ends with 5 or 0, etc.).
Links to other subjects: *Social studies*				
Generic skills to be developed: critical thinking & problem solving, cooperation & interpersonal relations, communication skills, lifelong learning & self-reliance.				
Values to be developed: excellence, equity and inclusiveness, hard work, solidarity and democracy, commitment and resilience.				

Crosscutting issues to be addressed: Inclusive education, gender education.
Assessment criteria: *Learners should prime factorise, show the rule of divisibility tests for numbers less than 13, find LCM and GCF of whole numbers.*
Materials: *Manila cards, scissors, markers and masking tape.*

TOPIC AREA: FRACTIONS AND PROPORTIONAL REASONING		SUB-TOPIC AREA: OPERATIONS ON FRACTIONS		
P5 MATHEMATICS	**Unit 4:** Equivalent fractions and operations.			**Number of periods: 24**
Key Unit Competence: Pupils will be able to add, subtract and find equivalent fractions and apply this knowledge to solve related problems.				
Learning Objectives			**Content**	**Learning activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Explain the concept of equivalent fractions. – Explain how to find equivalent fractions. – Give examples of equivalent fractions. – Explain how to add or subtract fractions with different denominators using equivalent fractions and the Lowest Common Multiple (LCM).	– Shade equivalent fractions – Calculate the fractions that are equivalent to a given fraction – Use the LCM of denominators to add or subtract fractions – Solve word problems involving the	– Be confident and accurate when finding equivalent fractions. – Develop personal confidence in the use of fractions in real life. – Appreciate the importance of accuracy when working with equivalent fractions, as well as when adding and subtracting fractions.	– Exploring and comparing fractions using models. – Concept of equivalence of fractions. – Finding equivalent fractions. – Shading equivalent fractions. – Addition and subtraction of fractions with different denominators using models or circle- set fractions.	– Individually and in groups, learners will discuss and identify equivalent fractions using flashcards. – Learners will be given different tasks to assess whether they have understood addition and subtraction of fractions with different denominators using models or circle set fractions – Form the groups of learners, Provide each group with flashcards. showing addition or subtraction of fractions that require using

– Describe the process for solving simple problems that involve fractions.	addition and subtraction of fractions.		– Addition and subtraction of fractions with different denominators (using equivalent fractions and LCM). – Solving word problems involving the addition or subtraction of fractions.	equivalent fractions or the least common multiple (LCM). Encourage learners to discuss and explain how to solve each problem.
Links to other subjects: *Geography: representation of scales on maps*				
Generic skills to be developed: critical thinking & problem solving, cooperation & interpersonal relations, communication skills, creativity & innovation, lifelong learning & self-reliance.				
Values to be developed: learner-centredness, equity and inclusiveness, commitment and resilience, self-reliance.				
Crosscutting issues to be addressed: Inclusive education, gender education, peace and values education.				
Assessment criteria: *Learners should add, subtract and find equivalent fractions.*				
Materials: *Manila cards, scissors, markers and masking tape.*				

TOPIC AREA: FRACTIONS AND PROPORTIONAL REASONING		SUB-TOPIC AREA: OPERATIONS ON DECIMALS		
P5 MATHEMATICS	**Unit 5:** Multiplication and division of decimal numbers.			**Number of periods: 16**
Key Unit Competence: Pupils will be able to multiply, divide and compare decimal numbers up to 3 decimal places and apply this knowledge to solve related problems.				
Learning Objectives			**Content**	**Learning activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Explain the concept of decimal numbers using place values up to three (3) decimal places. – Identify the place values in written decimals numbers. – Explain how to multiply and divide decimal numbers. – Match fractions to decimals.	– Compare 2 or more decimal numbers using >, < or = – Read and write decimal numbers correctly both in figures and in words. – **Convert fractions to decimals and vice versa.** – Carry out multiplication or division of decimal numbers up to three (3) decimal places.	– Develop personal confidence in the use of decimal numbers. – Appreciate the importance of decimal numbers in real life.	– The concept of decimal numbers through examples. – Place value of decimals up to 3 decimal places. – Comparing and ordering decimal numbers. – Converting fractions to decimals and vice versa. – Multiplication and division of decimal numbers.	– Using place values, individually or in groups, learners should discover the differences between two or more decimal numbers and then compare decimal numbers up to three decimal places using >, <, or =.") – Using place values, in individually or in groups), learners should be asked to multiply or divide two(2) or more decimal numbers and then through demonstration they will discuss mixed operation of multiplication and division of decimal numbers. For example: 0.2 x 0.6 ÷ 0.04.

	– Apply decimal concepts in solving daily life mathematics problems.		– Problems involving multiplication and division of decimals.	– Learners should be given exercises to be completed and presented to the group. This should be done by observing worked examples on multiplication or division of decimal numbers. – In group discussions, learners will convert fractions to decimals and vice versa. After this, they will do more activities on matching decimals to fractions to check exactly whether they have understood the concept of decimals.
Links to other subjects: *Science: components of air for example, carbon dioxide and rare gases use decimals. History: decimals are also linked to the time line. Geography: scales also use decimals.*				
Generic skills to be developed: critical thinking & problem solving, cooperation & interpersonal relations, communication skills, creativity & innovation, lifelong learning & self-reliance.				
Values to be developed: learner-centredness, equity and inclusiveness, hard work, solidarity and democracy, commitment and resilience.				
Crosscutting issues to be addressed: Inclusive education, gender education, peace and values education.				
Assessment criteria: *Learners should be able to accurately multiply, divide and compare decimal numbers up to 3 decimal places.*				
Materials: *Manila cards, scissors, markers and masking tape.*				

TOPIC AREA: FRACTIONS AND PROPORTIONAL REASONING	SUB-TOPIC AREA: RATIOS, PROPORTIONS AND PERCENTAGES	
P5 MATHEMATICS	**Unit 6:** Application of direct proportions.	**Number of periods:** 16
Key Unit Competence: Pupils will be able to apply direct proportions in a practical context.		

Learning Objectives			Content	Learning activities
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Explain the concept of direct proportions. – Explain how to work out problems involving direct proportions. – State where to apply direct proportions in a practical context.	– Calculate values involving direct proportions. – Solve mathematical problems that involve direct proportions.	– Appreciate the importance of using direct proportions in daily life situations. – Be confident and accurate when solving direct proportions.	– Concept of direct proportion through practical examples. For example: scales drawing, three times size of 1kg. – Constant of proportionality and the application of direct proportion in real life. – Scale drawing and direct proportion – Problems involving direct proportions.	– Practically introduce the idea of direct proportions using learner's experiences. for example: the number of books possessed by two learners; ages of a brother and a sister; the amount of water in two bottles of ½ l and 1l respectively; the time it takes two learners to walk to school, etc. – Form the groups of learners and give them a task of solving problems involving direct proportion. – Help learners to fully explain the concept of direct proportion through different examples in context. The rule states that in direct proportions, when one

				quantity increases, the second quantity also increases, and vice versa.
Links to other subjects: *Sciences: Direct proportion is used in physics during experiments and in chemistry when mixing substance.*				
Generic skills to be developed: critical thinking & problem solving, cooperation & interpersonal relations, communication skills, creativity & innovation, lifelong learning & self-reliance.				
Values to be developed: learner-centredness, equity and inclusiveness, hard work, solidarity and democracy, justice & dignity.				
Crosscutting issues to be addressed: peace and values education, gender education, inclusive education, financial education.				
Assessment criteria: *Learners should be able to apply direct proportions in a practical context and solve problems involving direct proportion.*				
Materials: *Manila cards, markers, scissors and masking tape.*				

TOPIC AREA: MEASUREMENT		SUB-TOPIC AREA: LENGTH, CAPACITY, AND MASS		
P5 MATHEMATICS	**Unit 7:** Solving problems involving measurements of length, capacity and mass.			Number of periods: 8
Key Unit Competence: Pupils will be able to solve problems involving measurements of length, capacity, mass and calculating number of intervals.				
Learning Objectives			**Content**	**Learning activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Explain how to convert units of length, capacity and mass measurements. – Define the relationship between the number of poles and the intervals on a closed or open line. – Explain steps to follow in order to solve problems involving length, capacity and mass.	– Convert units of length, capacity and mass measurement. – Calculate the number of intervals. – Solve problems involving length, capacity and mass. – Apply knowledge of length to solve problems involving intervals.	Appreciate the importance of measuring length, capacity and mass in daily life situations.	– Review on problems on length, capacity and mass. – Number of intervals between objects on an open line – Number of intervals between objects on a closed line.	– Using flashcards in groups, the teacher will go through the units of length, mass and capacity in the form of revision. Learners will attempt questions on conversion of different units. For example: ○ A man's stride is 90cm. How many such strides can he make in a distance of 27 dam? ○ Subtract 2m 6dm 4cm from 9m. ○ 10dm =_____hm – Through observation from outside the classroom, learners will practically demonstrate and discover how

				to find the number of intervals on an open line and a closed line. Then find the general rule – After getting the intervals between poles learners can calculate the distance from the first pole to the last pole on both an open line and a closed line using the measurements of length. And then use the number of intervals to calculate the number of poles or trees alongside the road.
***Links to other subjects**: Agriculture: the demarcation of land and fencing the cattle grazing area using intervals.*				
Generic skills to be developed: Critical thinking & problem solving, Cooperation & interpersonal relations, Communication skills, Creativity & innovation, Lifelong learning & self-reliance.				
Values to be developed: learner-centredness, equity and inclusiveness, hard work, solidarity and democracy, commitment and resilience.				
Crosscutting issues to be addressed: gender, peace and values education, inclusive education, standardization culture.				
***Assessment criteria:** Learners should solve problems involving measurements of length, capacity, mass and calculate numbers of intervals.*				
***Materials:** Charts, tape measure, manila cards and glue*				

TOPIC AREA: MEASUREMENT	SUB-TOPIC AREA: TIME	
P5 MATHEMATICS	**Unit 8:** Solving problems involving time intervals.	**Number of Periods: 16**

Key Unit Competence: Pupils will be able to solve real life problems that involve finding time intervals and conversion of units.

Learning Objectives			Content	Learning Activities
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Explain the various units of time. – State the units used in time measurements. – Describe how to solve mathematical problems involving time. – Explain the meaning of time intervals.	– Convert the measurement of time. – Find the duration of a time interval. – Add and subtract time. – Solve real-life problems involving time intervals.	– Show commitment and perseverance to complete tasks on time. – Be confident and accurate when working out problems involving time. – Show the spirit of punctuality.	– Convert hours into minutes and vice versa – Convert hours into seconds – Convert days into hours and vice versa – Finding time intervals or time taken by an event using clock face, watch and calendar. – Solving real-life problems that involve the addition and subtraction of time.	– Learners will be required to list the units of time and then they will convert from one unit to another and vice versa. In groups the teacher will help learners explain the relationship between the units of time that is seconds, minutes, hours and days. – In their groups, learners will find time intervals for the time taken for an event to take place. For example: when learners come to school in the morning and then go back in the evening, the time taken is the duration or time interval. So to get the duration, the earliest time is subtracted from the latest time.

				– In their groups, learners will solve real life problems involving addition and subtractions of time under the guidance of the teacher.
Links to other subjects: *Geography: calculating GMT* (*Greenwich Mean Time)*				
Generic skills to be developed: critical thinking & problem solving, cooperation & interpersonal relations, communication skills, creativity & innovation, lifelong learning & self-reliance.				
Values to be developed: excellence, equity and inclusiveness, hard work, commitment and resilience.				
Crosscutting issues to be addressed: Gender education, inclusive education, peace and values education, en vironment and sustainability.				
Assessment criteria: *Learners should solve real life problems that involve finding time intervals and the conversion of units.*				
Materials: *Real clock faces, manila cards, masking tape, markers and scissors.*				

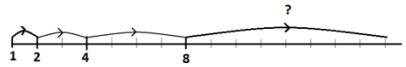
TOPIC AREA: MEASUREMENT	SUB-TOPIC AREA: MONEY AND FINANCIAL APPLICATIONS	
P5 MATHEMATICS	**Unit 9:** Money and its financial applications.	**Number of periods:**24
Key Unit Competence: Pupils will be able to explain money and its financial applications.		

Learning Objectives			Content	Learning activities
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Explain how to changes money and give examples. – Define the following terms: Buying price, selling price, profit, and loss.	– Receive an amount of money and provide the changes of using coins and notes. – Calculate the selling price, buying price. – Compare the buying price and the selling price and decide if there is a loss or a profit. – Convert currencies in a practical context.	– Appreciate the importance of money in our daily life. – Show honest, faithfulness and trustworthy in any situation when you are entrusted with money. – Show confidence and accuracy when changing the amount of money.	– Changing Rwandan currency – Buying and selling prices – Simple Budgeting and operations with Rwandan francs – Converting currencies in practical contexts.	– In groups, learners will discuss the uses of money as this was covered in P4. They will perform role-plays and state the uses of money. Then they will make presentations in class and others will learn more from them. – Through examples, the teacher will discuss with the learners the importance of budgeting at home and why budgeting should be done before spending. Learners will then be given group tasks to set priorities They should differentiate between wants and needs as well as understand why budgeting is important so that they don't waste money.

				– Set tasks/problems such that learners can convert currencies in practical context (USD money, Euros, Kenyan Shillings, and Ugandan Shillings, into Rwandan Francs and vice verse).
Links to other subject: *Entrepreneurship: budgeting.*				
Generic skills to be developed: critical thinking & problem solving, cooperation & interpersonal relations, communication skills, creativity & innovation, lifelong learning & self-reliance.				
Values to be developed: learner-centredness, equity and inclusiveness, importance of family, Rwandan culture, and heritage, dignity and integrity, self-reliance and justice.				
Crosscutting issues to be addressed: inclusive education, financial education				
Assessment criteria: *Learners should explain money and its financial applications.*				
Materials: *Mobile phone, sheet of paper, ATM cards, cheque leaf, coins, and notes (paper money)*				

TOPIC AREA: ALGEBRA	SUB-TOPIC AREA: NUMBER SEQUENCES	
P5 MATHEMATICS	**Unit 10:** Sequences that include whole numbers, fractions and decimals.	**Number of periods:24**
Key Unit Competence: Pupils will be able to write sequences of whole numbers, fractions and decimals.		

Learning Objectives			Content	Learning activities
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Explain how to arrange whole numbers in increasing and decreasing order. – Explain sequences of whole numbers, fractions, and decimals. – Show the patterns used.	– Find the missing numbers in the sequence. – Complete the consecutive terms of a sequence with a constant difference – Complete the consecutive terms of a sequence with constant ratio. – Describe how whole numbers can be arranged in different patterns.	– Appreciate the importance of orderliness when writing number patterns.	– Order whole numbers according to their size in increasing or decreasing order – Simple sequences – Simple sequences that include fractions and decimals (For example: 0, 1½, 3, 4½, 6, 7½..., or 0, 0.5, 1, 1.5, 2, 2.5...) – Sequence with constant differences	– In group work, learners will discover the pattern used in sequences which involve fractions (for example:0, 1½, 3, 4½, 6, 7½,_____, ____). – The pattern that should be followed is 1 ½ in increasing order. Let learners practice more numbers on flash cards in their groups. Let them formulate more tasks in groups so that they can deliver a presentation. – In group discussions, learners will discover the pattern in sequences which involve decimals (for example: 0, 0.5, 1, 1.5, 2, 2.5, _____, _____). The pattern used here is 0.5. Let learners carry out more tasks involving decimals. Learners should discuss more patterns involving decimals. Provide charts and flashcards so that learners undertake more examples so they can better explain the concept.

			– Sequence with constant ratios – Sequences where the changing difference is geometric.	– Learners can use a table to determine the missing numbers in the sequence (For example,) – In their groups, let learners find the missing numbers so that they are able to extend the sequence and discover the pattern used. The learners should then create posters showing what they have learnt: for example: 2, 3, 5, 7, ___, ___) – In groups, learners can use a number line or geometric patterns to determine the sequence of numbers. 1  2

2	4	8		6			
16	32	64	24		72	0	40

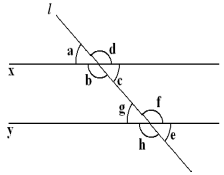
***Links to other subjects*:** *Geography and science: when measuring the temperature of a mountain, we use decreasing order in degrees. The higher you go, the cooler it becomes.*

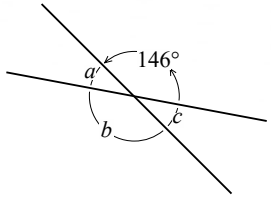
Generic skills to be developed: critical thinking & problem solving, cooperation & interpersonal relations, communication skills, creativity & innovation, lifelong learning & self-reliance.

Values to be developed: learner-centredness, excellence, equity and inclusiveness, hard work, solidarity and democracy.
Crosscutting issues to be addressed: gender balance, inclusive education, financial education, peace and values education.
Assessment criteria: *Learners should write sequences of whole numbers, fractions and decimals.*
Materials: *Manila cards, scissors and markers to prepare charts.*

TOPIC AREA: GEOMETRY	SUB-TOPIC AREA: LINES AND ANGLES	
P5 MATHEMATICS	**Unit 11:** Constructing angles and describing angles formed by intersecting lines.	**Number of periods:** 24

Key Unit Competence: Pupils will be able to construct different angles and describe properties of angles formed by intersecting lines.

Learning Objectives			Content	Learning activities
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Explain the concept of parallel, transversal, intersecting, and perpendicular lines. – Describe the process of drawing angles and the process of constructing angles using a ruler and a pair of compasses.	– Measure angles using a protractor. – Construct angles using a ruler and a pair of compasses. – Carry out and explain the process of bisection of an angle using a ruler and compass.	– Appreciate the importance and use of lines and angles in daily life and in drawing. – Demonstrate confidence and accuracy in drawing.	– Construct different angles using a protractor. – Bisecting angle – Constructing 90^0, 45^0, and 22.5^0 angles – Constructing 60^0, 30^0, and 15^0 angles – Constructing 120^0, and 150^0 angles – Identify different lines and angles formed by real objects – Perpendicular lines	– In groups, leaners observe different materials (boxes, tables, chairs, the wall of the class, windows, etc.) and identify different lines and show angles formed by those lines. Then the teacher leads learners in different activities involving angles. – In their groups, learners will be given tasks of finding missing angles based on parallel lines, transversal lines and perpendicular lines. For example: If angle $a = 30^0$, find the rest of other angles. 

– Explain how to solve problems involving angles.	– Find the angle sum of a triangle.		– Properties related to intersecting lines – Properties related to parallel lines – Angles formed by intersecting lines. – Angles formed by parallel lines under a transversal line. – Angle sum of a triangle.	– Through examples, allow learners to demonstrate that two intersecting straight lines always form two pairs of angles that have the same measure.  for example: One of those angles is known to be 146°. Let learners figure out the measures of the other angles using a diagram.(Angle a is equal angle c and b=146^0) – Solve addition and subtraction problems to find unknown angles on a diagram in both real world and mathematical problems, by using an equation with a symbol or a letter for the unknown angle measure. – Measure angles in whole-number degrees using a protractor. Sketch angles of a specified measure and help learners set the angle's vertex at the marked centre of the protractor. Line up the base of the

				protractor along one side of the angle. Read the measurement where the other side of the angle crosses the scale of the protractor. – Help learners construct angles using a ruler and a pair of compasses. For example: angles like: 90^0, 45^0, 30^0, 60^0, 15^0, 120^0, 150^0, 22.5^0. – Learners should develop the concept of bisecting angles.
Links to other subjects: *Music: stave. Masonry and carpentry: technical drawing.*				
Generic skills to be developed: critical thinking & problem solving, cooperation & interpersonal relations, communication skills, creativity & innovation, lifelong learning & self-reliance.				
Values to be developed: learner-centredness, excellence, equity and inclusiveness, aspiration and optimism, solidarity and democracy, commitment and resilience.				
Crosscutting issues to be addressed: Inclusive education, gender education				
Assessment criteria: *Learners should draw and construct different angles.*				
Materials: *Geometrical instruments, charts and markers.*				

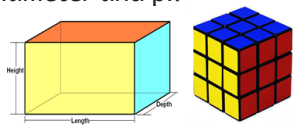
TOPIC AREA: GEOMETRY	SUB-TOPIC AREA: 2D SHAPES AND PROPERTIES	
P5 MATHEMATICS	**Unit 12:** Interpreting and constructing scale drawings.	**Number of periods: 8**
Key Unit Competence: Pupils will be able to interpret and construct scale drawings.		

Learning Objectives			Content	Learning activities
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Explain the concept of scale drawing. – Explain how to find the actual distance on the ground. – Explain how to find the scale of drawings and maps.	– Calculate the scale of a map. – Calculate the actual distance on the ground. – Find the distance represented on a map. – Solve problems involving scale drawings.	– Appreciate the importance of scale drawing in daily life. – Be confident and accurate when calculating scales.	– Concept of scale through examples of actual distances/sizes and the distance/ size on a map – Finding the scale to which a real object will be drawn on a sheet of paper – Constructing scale drawings – Determine the actual distance – Finding the drawing length.	– Learners should be asked to measure the perimeter of their classroom or the floor of the classroom and then use drawings to represent what has been measured. Through explanations, learners can discover that the distances they have measured cannot fit on the piece of paper. The only way to accurately fit the drawing on the piece of paper is to use a scale. – Through examples, learners will discover that a scale is written without measurement unit. For example: In real-life, the length of a small car may measure 250cm. However, the length of a copy or print paper that you could use to draw this car is a

				little bit less than 10cm. Since 250/10 = 25, you will need about 25 sheets of copy paper to draw the length of the actual size of the car. In order to use just one sheet, you could then use 1cm on your drawing to represent 25cm on the real- object. You can write this situation as 1:25 or 1/25 or 1 to 25.
Links to other subjects: *English: writing and speaking skills. Geography: scales on a map.*				
Generic skills to be developed: critical thinking & problem solving, cooperation & interpersonal relations, creativity & innovation, lifelong learning & self-reliance.				
Values to be developed: learner-centredness, equity and inclusiveness, hard work, commitment and resilience.				
Crosscutting issues to be addressed: peace and values education, inclusive education.				
Assessment criteria: *Learners should solve problems involving interpretation and construction of scale drawings.*				
Materials: *Charts, textbooks, tape measures, and maps.*				

TOPIC AREA: GEOMETRY	SUB-TOPIC AREA: MEASUREMENTS OF 2D SHAPES	
P5 MATHEMATICS	**Unit 13:** Calculating circumference of a circle, surface area of cubes and cuboids.	**Number of periods:** 16
Key Unit Competence: Pupils will be able to calculate circumference of a circle, surface area of cubes and cuboids.		

Learning Objectives			Content	Learning activities
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Explain the concept of circumference. – Describe the process of finding the circumference of a circle. – Establish the relationships between cubes and cuboids.	– Practically calculate the value of pi. – Calculate the surface area of cubes and cuboids – Solve mathematical problems involving the circumference of a circle.	– Show confidence when exploring the circumference of circular objects from daily life. – Appreciate the importance of surface area of cubes and cuboids in daily life.	– Circumference of a circular objects – Finding the number pi (π) – Properties of cubes and cuboids – Use of nets to calculate the surface area of cubes and cuboids.	– Outside the classroom, learners should work in groups to measure the distance around a roundabout, which is the circumference of that roundabout. – Help learners develop the concept of pi (π). Use different examples to find that π = C/D (circumference/ diameter) – Using charts, manila cards, or paper squares, learners should

			– Finding the area of a face of cuboids.	discover and explain the concept of diameter and pi. 
Links to other Subjects: *Social studies and geography: circumference of the earth.*				
Generic skills to be developed: critical thinking & problem solving, cooperation & interpersonal relations, communication skills, creativity & innovation, lifelong learning & self-reliance.				
Values to be developed: learner-centredness, excellence, equity and inclusiveness, solidarity and democracy, hard work, commitment and resilience.				
Crosscutting issues to be addressed: Peace and values education, standardization culture, inclusive education.				
Assessment criteria: *Learners should calculate the circumference of a circle and the volume of cuboids and cubes.*				
Materials: *Metre ruler, rope, sticks, paper squares, manila cards, charts, and markers.*				

TOPIC AREA: STATISTICS AND ELEMENTARY PROBABILITY		SUB-TOPIC AREA: COLLECTING, REPRESENTING, AND INTERPRETING DATA		
P5 MATHEMATICS	**Unit 14:** Data handling.			**Number of periods:** 24
Key Unit Competence: Pupils will be able to collect data, represent and interpret it in order to answer a question or explore a hypothesis.				
Learning Objectives			**Content**	**Learning activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Define continuous and discrete data. – Explain how to construct bar charts. – Explain line graphs.	– Distinguish continuous from discrete data. – Collect data and record it in a table. – Represent data in a bar chart. – Represent data on a line graph – Interpret data represented on a bar chart or line graph to answer to a question.	Appreciate that data can be represented on a bar graph or a line graph.	– Quantitative and qualitative data. – Types of quantitative data. – Recording data using tally chart. – Representing data using bar charts or line graphs. – Interpreting bar charts or line graphs to draw a conclusion. – Collecting and graphing real life events.	In groups, choose a question to investigate a characteristic of the children in the class. For example height (continuous), number of brothers and sisters (discrete), shoe size (discrete), distance to school (continuous), or time taken to get to school (continuous), etc. Collect the data, summarize it in a table, and represent as a bar chart. Make a poster showing what has been learnt. In groups, interpret bar charts and line graphs, and draw conclusions.
Links to other subjects: *Economics, geography, science, etc.: any subject which needs to handle data.*				
Generic skills to be developed: critical thinking & problem solving, cooperation & interpersonal relations, communication skills, creativity & innovation, lifelong learning & self-reliance.				

Values to be developed: equity and inclusiveness, openness and transparency, dignity and integrity, solidarity and democracy, hard work.
Crosscutting issues to be addressed: Gender education, standardization culture, Inclusive education.
Assessment criteria: *Can collect data, represent and interpret it in order to answer a question or explore a hypothesis.*
Materials: *Tape measures, rulers, digital technology (for example: calculators, spreadsheets), and data from other subjects.*

TOPIC AREA: STATISTICS AND ELEMENTARY PROBABILITY	SUB-TOPIC AREA: PROBABILITY OF EVENTS/EXPERIMENTS	
P5 MATHEMATICS	**Unit 15:** Introduction to likelihoods of events.	**Number of periods: 8**

Key unit Competency: Pupils will be able to conduct experiments to decide how likely something is to happen.

Learning Objectives			Content	Learning activities
Knowledge and understanding	**Skills**	**Attitudes and values**		
Explain likelihood of occurring events.	– Conduct experiments and record outcomes systematically. – Use the vocabulary of likelihood to compare events.	– Appreciate that random events cannot be predicted. – Appreciate the appropriate use of vocabulary of likelihood of events.	– Representing the outcomes of a die tossed many times. – Vocabulary of chance and special events. – Use data to decide how likely something is to happen.	– Warm up debate activity: for example, discuss the role of tossing a coin by the referee before starting a football match. – In pairs toss a dice 8 times and record the outcomes. For example 4, 3, 6, 6 etc. Count the total number of each score and make a table and bar chart. Collate the class results and make a bar chart. In groups discuss: What are the chances of getting a particular score? Is getting a particular score more or less likely than getting a head when you throw a coin? Is getting an even score on a dice as likely as getting an odd score? Etc. – In pairs toss a bottle top twenty times and record the outcomes. Collate the class results. Does the bottle top behave in the same way as the coin? If not, why not?

***Links to other subjects**: Science subjects where random events are important*

Generic skills to be developed: critical thinking and problem solving, cooperation and interpersonal relations, communication skills, creativity and innovation, lifelong learning and self-reliance.

Values to be developed: learner-centredness, equity and inclusiveness, solidarity and democracy, dignity and integrity, hard work and patience.
Crosscutting issues to be addressed: peace and values education, gender education, inclusive education, financial education.
Assessment criteria: *Assess the likelihood of an event happening and use the language of chance.*
Materials*: Bottle tops, coins, dice (improvise by using wooden cubes and label the sides as required).*

6.4. Mathematics for primary six

6.4.1 Key competencies at the end of primary six

At the end of primary six, learners should be able to:

- Read, write, compare, and calculate whole numbers beyond 1,000,000, multiply and divide integers, and use powers and indices, as well as the LCM and GCF when solving problems.
- Convert between units of volume, capacity and mass, calculate simple interest, and solve problems involving savings.
- Calculate speed, distance, and time.
- Solve simple problems involving ratios, percentages, fractions, and decimals.
- Calculate area enclosed by a circle, surface area of cuboids, and the volume of a solid.
- Extend methods for collecting data, representing it, and interpreting it to answer a question.
- Order events in terms of likelihood (impossible, equally likely, certain).
- Use bearings and compass points, and understand the relationship between them. use the angle sum of a triangle to determine the interior angles of regular polygons.
- Construct polygons using a protractor, a ruler, and a pair of compasses, and design nets to make cuboids and prisms.

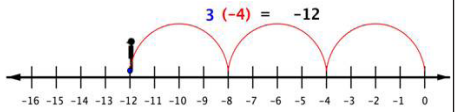
6.4.2 Mathematics units for primary six

TOPIC AREA: NUMBERS	SUB-TOPIC AREA: OPERATIONS ON WHOLE NUMBERS	
P6 MATHEMATICS	**Unit 1:** Reading, writing and comparing whole numbers beyond 1 000 000.	Number of Periods: 24
Key Unit Competence: Pupils will be able to read, write and compare whole numbers beyond 1 000 000.		

Learning Objectives			Content	Learning Activities
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Identify the place values of digits beyond 1,000,000. – Explain the concept of adding a 7-digit number by a 7-digit number which involves carrying. – Explain the concept of subtracting larger numbers with borrowing. – Explain the concept of multiplying larger numbers. – Explain the concept of dividing a 7-digit	– Read and write numbers accurately in both figures and words. – Compare numbers using >, <, or =. – Calculate numbers involving addition, subtraction, multiplication, and division. – Round off numbers. – Solve problems involving addition, subtraction, multiplication, and division.	– Appreciate the importance of accuracy in reading and writing numbers and assessing how big they are. – Respect others when working in a group to solve a mathematical problem.	– -Place value and comparing numbers: – oPlace value of numbers beyond 1 000 000. – Forming, writing and reading numbers beyond 1 000 000 in words. – Read and write numbers beyond 1 000 000 in figures. – Place value and comparing numbers: ○ Place value of numbers beyond 1 000 000.	– Dictation: learners write in words or in figures any given number beyond 1,000,000 from the teacher's dictation. – Matching game: learners match large numbers (beyond 1,000,000) written as numerals and as words. – Using different digits in a group, learners make two(2) numbers of 7 digits and arrange them from the largest to the smallest number and vice versa. This activity can be done flashcards or cutouts.

number by a 3-digit number. – Describe the steps involved in rounding off numbers.			○ Comparing numbers using <, > or = and arranging numbers in ascending or descending order. – Addition and subtraction of whole numbers using wooden vertical abacus. – Multiplying numbers beyond 1,000,000. – Dividing numbers beyond 1,000,000 (with or without a remainder). – Solving problems using calculation strategies. – Rounding to the nearest (tens, hundreds, thousands, etc.).	– Through observation while in groups, learners perform calculations in addition, multiplication, subtraction and division of given large numbers using flashcards. – In groups, learners round off given numbers to the nearest tens, hundreds, thousands etc.
Links to other subjects: *English: Contribution to the practice of speaking and writing in English.*				
Generic skills to be developed: critical thinking and problem-solving, effective communication, interpersonal management and life skills.				

Values to be developed: Equity and inclusiveness, openness and transparency, Peace and Tolerance, excellence in all learning activities.
Crosscutting issues to be addressed: Peace and values education, Gender Education, Financial education, Environment and sustainability.
Assessment criteria: *Learners should read, write, compare and calculating whole numbers beyond 1,000,000.*
Materials: *Manila cards or slips of paper, scissors to make cut outs of numbers, markers to write numbers that can be seen from the back of the room.*

<table>
<tr><td>TOPIC AREA: NUMBERS</td><td colspan="4">SUB-TOPIC AREA: INTEGERS</td></tr>
<tr><td>P6 MATHEMATICS</td><td colspan="3">Unit 2: Multiplication and division of integers.</td><td>Number of Periods: 16</td></tr>
<tr><td colspan="5">Key Unit Competence: Pupils will be able to multiply and divide integers.</td></tr>
<tr><td colspan="3">Learning Objectives</td><td rowspan="2">Content</td><td rowspan="2">Learning Activities</td></tr>
<tr><td>Knowledge and understanding</td><td>Skills</td><td>Attitudes and values</td></tr>
<tr><td>– Describe the steps taken when multiplying and dividing integers.
– Show and explain the concept of integers to solve problems.</td><td>– Apply the concepts of multiplication and division to solve problems involving integers.
– Carry out multiplication and division of integers.
– Explain how integers change in multiplication and division.</td><td>– Appreciate the importance of accuracy in the multiplication and division of integers.
– Develop confidence in understanding and using integers.</td><td>– Multiplying integers using counters or a number line.
– Understand the multiplication and division of integers.
– Solving problems involving the multiplication and division of integers.</td><td>– Learners in their groups do multiplication and division of integers. For example
 

– In groups, learners solve problems that involve the multiplication and division of integers.</td></tr>
<tr><td colspan="5">Links to other subjects: Entrepreneurship: introduction of negative numbers in the context of buying and selling (loss, benefit).</td></tr>
<tr><td colspan="5">Generic skills to be developed: critical thinking and problem-solving, effective communication, cooperation and life skill.</td></tr>
</table>

Values to be developed: Respect for Others and Human Rights, Equity and inclusiveness, learner-centeredness, Peace and Tolerance, excellence in all learning activities.
Crosscutting issues to be addressed: Peace and values education, Gender Education, Financial education, Environment and sustainability.
Assessment criteria: *Learners should multiply and divide positive integers, negative integers, positive and negative integers and solving problems related to integers.*
Materials: *Charts should be displayed in class, scissors,counters or colored chips markers and masking tape*

TOPIC AREA: NUMBERS AND OPERATIONS	SUB-TOPIC AREA: TYPES OF NUMBERS, FACTORS AND MULTIPLES	
P6 MATHEMATICS	**Unit 3:** Powers, indices, LCM and GCF.	**Number of Periods:** 16

Key Unit Competence: Pupils will be able to use powers and indices, and apply the Lowest Common Multiple (LCM) and the Greatest Common Factor (GCF) when solving problems.

Learning Objectives			Content	Learning activities
Knowledge and understanding	**Skills**	**Attitudes and values**		
– State and explain the law of multiplication and division of indices. – Explain the terms "base" and "exponent" or "power". – Identify the ways of working out problems involving the LCM in a practical context.	– Apply the law of indices in multiplication and division. – Calculate the LCM and the GCF of numbers. – Apply LCM and GCF in solving problems.	– Show respect for others when working in groups on multiplication or division of powers. – Acknowledge the importance of the law of indices when solving real-life problems. – Show confidence and accuracy when finding the LCM and GCF of numbers.	– Concept of "base" and "exponent". – Laws of indices in multiplication and division. – LCM and GCF. – Solving problems involving LCM and GCF.	– Through group work, learners work out numbers involving multiplication and division of indices on flashcards. – Learners discover the law of indices in multiplication and division from a given situation. – In their groups, learners find the LCM and the GCF of given numbers. – Working in groups, learners solve problems involving LCM and GCF.

Links to other subjects: *Physics: the flashing of lights at different intervals, when they light together at the same time*

Generic skills to be developed: critical thinking and problem-solving, creativity and innovation, effective communication, cooperation, interpersonal management and life skills.

Values to be developed: Respect for Others and Human Rights, Equity and inclusiveness, openness and transparency, Peace and Tolerance, hard-work.
Crosscutting issues to be addressed: Peace and values education, Gender Education, Financial education, Environment and sustainability
Assessment criteria: *Learners should use powers and indices, and LCM and GCF when solving problems.*
Materials: *Manila cards, scissors and masking tape.*

TOPIC AREA: FRACTIONS, DECIMALS AND PROPORTIONAL REASONING	SUB-TOPIC AREA: OPERATIONS ON FRACTIONS	
P6 MATHEMATICS	**Unit 4:** Operations on fractions.	**Number of periods:** 16

Key Unit Competence: Pupils will be able to apply fractions in daily life situations and solve related problems.

Learning Objectives			Content	Learning activities
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Explain how to multiply and divide fractions. – Describe how to solve problems involving fractions.	– Multiply and divide fractions. – Solve word problems involving fractions.	– Appreciate the importance of fractions in daily life situations. – Show confidence and accuracy when solving problems involving fractions.	– Multiplication and division of fractions. – Application of multiplication of fractions by a whole number – Solve problems involving the multiplication and division of fractions.	– In groups, learners multiply and divide given fractions. – Through group discussion, learners apply the multiplication and division of fractions to solve given real-life situations.

Links to other subjects: *Geography: representation of scales on maps.*

Generic skills to be developed: critical thinking and problem-solving, creativity and innovation, effective communication, cooperation, interpersonal management and life skills.

Values to be developed: Respect for Others and Human Rights, Equity and inclusiveness, Peace and Tolerance, learner-centeredness.

Crosscutting issues to be addressed: gender education, inclusive education, Environment and sustainability, Financial education, Peace and values education.
Assessment criteria: *Learners should apply fractions in daily life situations and solve related problems.*
Materials: *Manila cards, scissors, markers and masking tape.*

TOPIC AREA: FRACTIONS, DECIMALS AND PROPORTIONAL REASONING	SUB-TOPIC AREA: DECIMAL NUMBERS	
P6 MATHEMATICS	**Unit 5:** Rounding and conversion of decimals fractions/numbers.	**Number of periods:** 16

Key Unit Competence: Pupils will be able to round off decimals accurately, and demonstrate understanding by matching equivalent fractions and decimals.

Learning Objectives			Content	Learning activities
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Explain how to round off decimal fractions. – Describe the various steps taken when rounding off numbers. – Illustrate and explain how to match fractions and decimals.	– Convert fractions to decimals and vice versa. – Apply how to round of a number. – Apply the knowledge acquired to match fractions with decimals. – Carry out various calculations involving rounding numbers.	– Show confidence and accuracy when rounding off decimal numbers. – Appreciate the use of rounding off decimal numbers in some situations and not in other situations.	– Rounding off decimal numbers to the nearest tenths, hundredths, etc. – Conversion of fractions to decimals and vice versa. – Solving problems involving rounding and conversion.	– In groups, learners round off given decimal numbers. – Through observation in groups, learners convert fractions to decimals and vice versa from given situations. – In groups, learners match fractions to decimals. – In groups, learners solve problems involving rounding and conversion.

Links to other subjects: *Geography: Apply rounding when calculating population density (number of people per square kilometre, including fractional values)*

Generic skills to be developed: critical thinking and problem-solving, creativity and innovation, effective communication, cooperation, interpersonal management and life skills.
Values to be developed: Equity and inclusiveness, Peace and Tolerance, Learner-centeredness, Hard work, excellence in all learning activities.
Crosscutting issues to be addressed: gender education, inclusive education, Environment and sustainability, Financial education ,Peace and values education.
Assessment criteria: *A written tasks on each of the following (i) rounding decimals (ii) matching decimals to fractions (iii) converting decimals to fractions and vice versa should be given to learners.*
Materials: *Manila cards, scissors, markers and masking tape.*

TOPIC AREA: FRACTIONS, DECIMALS AND PROPORTIONAL REASONING	SUB-TOPIC AREA: RATIOS AND PERCENTAGES	
P6 MATHEMATICS	**Unit 6:** Percentages and ratios.	**Number of periods: 32**

Key Unit Competence: Pupils will be able to work out percentages, and ratios and apply this knowledge to solve real life mathematical problems.

Learning Objectives			Content	Learning activities
Knowledge and understanding	**Skills**	**Attitudes and values**		
Explain the meaning and the role of percentages.	– Convert percentages to decimals and vice versa. – Share quantities in a ratio. – Apply percentages and ratios in solving mathematical problems.	– Acknowledge the importance of percentages and ratios in daily life situations. – Respect one another when working in groups to solve problems involving percentages and ratios.	– Converting percentages to decimals and vice versa. – Converting percentages to fractions and vice versa. – Comparing quantities as percentages and vice versa. – Increase or decrease a given number by a given percentage or ratio. – Calculating the percentage increase or decrease – Calculating the ratio of increase or decrease – Solving word problems involving ratios and percentages.	– In groups, learners express percentages as decimals and vice versa as well as Percentages as fractions and vice versa. – In groups, learners compare percentages as quantities and calculate percentage increases and decreases. – In groups, learners work together to solve real-life mathematical problems involving ratios and percentages.

Links to other subjects: *Geography: understanding population growth rates, rainfall distribution, or land use.*
Economics: Calculating discounts, profit margins, interest rates, or inflation.

Generic skills to be developed: critical thinking and problem-solving, creativity and innovation, effective communication, cooperation, interpersonal management and life skills.

Values to be developed: Respect for Others and Human Rights, Equity and inclusiveness, Peace and Tolerance, Dignity and Integrity, excellence in all learning activities.
Crosscutting issues to be addressed: gender education, inclusive education, Environment and sustainability, Financial education ,Peace and values education.
Assessment criteria: *Learners should work out ratios and percentages and solve related real-life problems.*
Materials: *Manila cards, masking tape, scissors and markers.*

TOPIC AREA: MEASUREMENT	SUB-TOPIC AREA: CAPACITY, MASS AND VOLUME	
P6 MATHEMATICS	**Unit 7:** Relationship between volume, capacity and mass.	**Number of periods: 8**

Key Unit Competence: Pupils will be able to compare and convert accurately units of volume, capacity and mass of water and apply this knowledge to solve real-life problems.

Learning Objectives			Content	Learning activities
Knowledge and understanding	**Skills**	**Attitudes and values**		
– State the units of length, capacity, and mass when solving problems. – Explain the relationship between volume, capacity, and mass in the case of water.	– Convert between units of volume, capacity, and mass. – Solve problems involving the relationship among volume, capacity, and mass measurements.	– Show respect for one another when working in groups. – Appreciate the use of the relationship among units of mass, capacity, and volume in real life.	– Relationship between units of volume, capacity, and mass. – Conversion between units of volume, capacity, and mass.	– In groups, by measuring one litre of water using a beam balance, learners should compare its mass with 1 kilogram of any object and discover that they are equivalent (). From the idea of volume, using different containers they can deduce that $1dm^3 = 1\ell = 1kg$ and then $1cm^3 = 1m\ell = 1g$. – Learners convert between the units of volume, capacity, and mass using a table that showing the relationship among those units. – Learners solve mathematical problems involving volume, capacity, and mass.

Links to other subjects: *Chemistry: comparison of liquids and solids.*

Generic skills to be developed: critical thinking and problem-solving, creativity and innovation, effective communication, cooperation, interpersonal management and life skills.

Values to be developed: Respect for Others and Human Rights, Equity and inclusiveness, Learner-centeredness, Dignity and Integrity, excellence in all learning activities.
Crosscutting issues to be addressed: gender education, inclusive education, Environment and sustainability, Peace and values education.
Assessment criteria: *Learners should compare and convert between the units of volume, capacity and mass and solve related real-life problems.*
Materials: *Manila cared, scissors, glue and markers, a litre bottle with water, balance.*

TOPIC AREA: MEASUREMENTS		SUB-TOPIC AREA: TIME		
P6 MATHEMATICS	**Unit 8:** Speed, distance and time.			**Number of periods: 16**
Key Unit Competence: Pupils will be able to calculate speed, distance and time, solve problems that relate to different time zones and convert speed from km/h to m/s and vice versa.				
Learning Objectives			**Content**	**Learning activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Explain the relationship between a 12-hour clock and a 24-hour clock. – Define speed, distance, and time. – Identify different units of speed, distance, and time. – Explain what determines time zones.	– Tell the time using a 12-hour clock and a 24-hour clock. – Convert from km/h to m/sec and vice versa. – Solve simple problems involving the calculation of speed, distance, and time in real-life situations. – Solve problems that relate to different time zones.	– Appreciate the importance of time management in daily life. – Show concern for respecting one another in group activities and being welcoming group ideas. – Appreciate the relationship between speed, distance, and time to understand time management.	– Comparing or converting between the 12-hour format to 24-hour format and vice versa. – The concept of time zones – Mathematics problems related to different time zones (for example Rwanda and America). – Speed, distance, and the time taken by a moving body to cover a certain distance. – Conversion of speed from km/h to m/s and vice versa.	– Through the analysis of records from running activities during a competition, learners should discuss the time taken by individuals to cover a certain distance and then deduce the concept of units of speed. This activity should be extended to high speed moving bodies. – In groups, learners carry out calculations on speed, distance ,and time. – Through group activities or individual work, learners can calculate time zones of different places/countries.

				– In groups, learners solve problems involving speed distance and time and also compute speed, distance and time of moving bodies (a body following another, bodies moving towards each other, etc.).
Links to other subjects: *Geography: time zones. Physics: motion.*				
Generic skills to be developed: critical thinking and problem-solving, creativity and innovation, effective communication, cooperation, interpersonal management and life skills.				
Values to be developed: Respect for Others and Human Rights, Equity and inclusiveness, Peace and Tolerance, Dignity and Integrity, excellence in all learning activities.				
Crosscutting issues to be addressed: gender education, Environment and sustainability, Peace and values education.				
Assessment criteria: *Calculate speed, distance and time, solve problems related to different time zones and convert speed from km/h to m/s and vice versa.*				
Materials: *Manila cards, masking tape, scissors and markers, stopwatch.*				

TOPIC AREA: MEASUREMENTS	SUB-TOPIC AREA: MONEY AND FINANCIAL APPLICATIONS	
P6 MATHEMATICS	**Unit 9:** Simple interest and problems involving saving.	**Number of periods:** 24
Key Unit Competence: Pupils will be able to work out simple interest and solve problems involving saving.		

Learning Objectives			Content	Learning activities
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Define different terms such as simple interest, rate, principle, and time. – Explain the importance of saving money.	– Solve problems involving savings. – Solve problems involving the calculation of simple interest.	– Show confidence when calculating simple interest to be paid by the Saving and Credit Association. – Appreciate the importance of simple interest in daily life situations. – Appreciate the importance of saving in daily life.	– Calculation of simple interest, rates, principle and time. – Problems involving simple interest, rates, principle and time. – Saving money in the bank, or putting it in the investments. – Problems involving savings.	– In groups, learners should discuss how saving can be done in case they are given money (for example: 20,000 Frw). On flashcards or manila cards, each group writes different ways of saving and then presents in class. – In groups, learners solve problems involving simple interest, rates, principle, and time.

Links to other subjects*: *Economics: *Apply basic number skills to solve problems involving simple interest.*

Generic skills to be developed: critical thinking and problem-solving, creativity and innovation, effective communication, cooperation, interpersonal management and life skill.

Values to be developed: Respect for Others and Human Rights, Equity and inclusiveness, Peace and Tolerance, Dignity and Integrity, Learner-centeredness, excellence in all learning activities
Crosscutting issues to be addressed: gender education, Financial education ,Peace and values education.
Assessment criteria: *Learners should work out simple interest and solve problems involving saving.*
Materials: *Manila cards, masking tape, scissors and markers.*

TOPIC AREA: ALGEBRA	SUB-TOPIC AREA: NUMBER SEQUENCES	
P6 MATHEMATICS	**Unit 10:** Equivalent expressions and number sequences.	**Number of periods: 16**
Key Unit Competence: Pupils will be able to write sequences of whole numbers, fractions and decimals.		

Learning Objectives			Content	Learning activities
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Give examples of algebraic expressions and their equivalent expressions. – Explain how to find the rule for determining the n^{th} term in a linear sequence.	– Match equivalent expressions. – Determine the rule for a sequence. – Find the missing number in a sequence following a particular rule. – Solve real life problems involving a sequence with a determined rule.	– Appreciate the importance of orderliness in finding the different terms of sequence and extend it to real-life situations. – Show concern towards the faithfulness to the group members when solving a problem involving sequences.	– Algebraic expressions. – Equivalent expressions. for example: $3(n-2)+n+5 = 4n-1$ – Finding the missing consecutive numbers – Finding the general term or rule of a linear sequence. – Finding the missing number in a linear sequence.	– In groups, learners can give examples of algebraic expressions and carryout operations to find their equivalent. for example: $3(n-2)+n+5 = 4n-1$ – In groups, learners can find 4 missing consecutive numbers in a given linear sequence (for example: 3, 7, 11, 15,...), and then attempt to verify that the last or general term or rule for the above sequence is 4n – 1. For example, this can be done by determining the 20^{th}, 21^{st} , 30^{th} numbers. Learners can substitute the numbers 20, 21, 30 in the general term to get the asked term.

				– Using different examples of number sequences, learners in groups can discuss and determine the general term or rule. for example: 2, 4, 6, 8, ... the generalized rule here is 2n or, 4, 7, 10, 13... the generalized rule here is 3n + 1. – Let learners develop more patterns and discover the rules which can be used.
***Links to other subjects**: Economics: saving. Entrepreneurship: investing.*				
Generic skills to be developed: critical thinking and problem-solving, creativity and innovation, effective communication, cooperation, interpersonal management and life skills.				
Values to be developed: Respect for Others and Human Rights, Equity and inclusiveness, Peace and Tolerance, Dignity and Integrity, excellence in all learning activities..				
Crosscutting issues to be addressed: gender education, Peace and values education.				
***Assessment criteria:** Learners should be able to complete the sequence of numbers or determine a rule for finding any term*				
***Materials:** Charts, flash cards markers and scissors.*				

TOPIC AREA: GEOMETRY	SUB-TOPIC AREA: LINES AND ANGLES	
P6 MATHEMATICS	**Unit 11:** Regular polygons and bearings.	**Number of periods:** 16

Key Unit Competence: Pupils will be able to use triangle, angle properties and compass directions to solve real-world problems involving regular polygons and bearings.

Learning Objectives			Content	Learning activities
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Define a regular polygon. – Give the formulae used to calculate the perimeter and area of a regular polygon. – Explain directions and bearing using compass points – Understand and use the angle sum of a triangle to determine the angle sum of a polygon.	– Derive the interior angle of a regular polygon. – Find the sum of interior and exterior angles of a regular polygon using the angle sum of a triangle. – Calculate the length of the side, apothem, perimeter, and areas of regular polygons.	– Work systematically when investigating mathematical problems involving regular polygons. – Appreciate the importance of regular polygons in everyday activities. – Appreciate the relevance of bearings in daily life.	– Definition of a polygon. – Investigating interior and exterior angles of regular polygons and finding their sum. – Finding perimetre of regular polygons. – Finding area of regular polygons. – Finding sides and apothem of a regular polygon.	– In groups, investigate what is the angle sum of any polygon? Hint: an angle sum of a triangle is 180°. – What is the least number of triangles you can divide a polygon into? – In groups, investigate the size of the interior angle of any regular polygon (same length and same angle equilateral triangle is 60°; square is 90°). – In groups, use regular polygons cards to investigate which ones can be used to tile the plane (for example squares, equilateral triangles and hexagons do) and use interior angles to check (could be done with IT).

	– Use bearings to define direction.		– Finding direction and compass points. – Finding the bearing. – Exploring the concept of tiling in construction.	– Individually, if the sum of all the angles of regular polygons is given, find the number of sides. – In groups, construct given regular polygons and state their properties. – In pairs, calculate the perimeter and areas of regular polygons. – As a class, recall the main compass points (N, E, S, W) in relation to the school. Discuss what direction you would travel if you went partway between these points (for example: NW, NE, SW, SE). – In pairs use a map of the local area and draw a line from home to school. Measure the bearing. What is the bearing from school to home? Do this for other locations.
***Links to other subjects*:** *Geography map reading.* *Art: polygons and tiling.*				
Generic skills to be developed: critical thinking and problem-solving, creativity and innovation, effective communication, cooperation, interpersonal management and life skills.				
Values to be developed: Learner-centeredness, Equity and inclusiveness, Peace and Tolerance, Dignity and Integrity, excellence in all learning activities.				

Crosscutting issues to be addressed: gender education, inclusive education, Environment and sustainability ,Peace and values education.
Assessment criteria: *Use bearings and compass points for directions. Use the angle sum of a triangle to determine the interior angles of regular polygons.*
Materials: *Maps of the local area (one between two), protractor, sheets of polygons (not necessarily regular), sheets of regular polygons, polygon cards, technology (interactive multimedia content, internet, etc.).*

TOPIC AREA: GEOMETRY	SUB-TOPIC AREA: 2D AND 3D SHAPES AND PROPERTIES	
P6 MATHEMATICS	**Unit 12:** Construction of polygons and nets for cuboids and prisms.	Number of periods: 24
Key Unit Competence: Pupils will be able to construct polygons and design nets to make cuboids and prisms.		

Learning Objectives			Content	Learning activities
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Show how to construct polygons with given properties using a protractor, a ruler and, a pair of compasses. – Demonstrate how a 2D shape can be folded to make a 3D solid and name the 2D shape used. – Show that the net of a solid is not unique.	– Construct polygons using a protractor, a ruler, and a pair of compasses. – Explore different strategies for constructing polygons with given properties. – Design nets to make cuboids and prisms.	Appreciate that there are different effective methods for accurately constructing polygons or designing nets.	– Drawing polygons using a protractor and a ruler – Constructing triangle, square and rectangle using a pair of compasses and a ruler. – Finding the central angle of a regular polygon. – Designing nets to make cuboids, cubes and prisms.	– In groups, explore different methods for constructing a right angle using a ruler and pair of compasses – Accurately construct squares and rectangles. – In groups, devise strategies for accurately constructing polygons given their properties and make a poster of different polygons. – Practical (possibly demonstration) what is the flat shape (net) that folds up to make a box (cuboid)? Pairs sketch what they think is correct and then explore different ways of doing this.

				– In groups, investigate (using six squares and masking tape) how many nets are there for a cube? Groups then record their findings on squared paper. – In groups, design accurate nets for cuboids and prisms – check they work by cutting out and making the solid.
Links to other subjects: *Art: shapes. Architecture: 2D representations of 3D.*				
Generic skills to be developed: Critical thinking and problem-solving, creativity and innovation , , effective communication, cooperation, interpersonal management and life skills.				
Values to be developed: Respect for Others and Human Rights, Equity and inclusiveness, Peace and Tolerance, Dignity and Integrity, excellence in all learning activities.				
Crosscutting issues to be addressed: gender education, ,Peace and values education.				
Assessment criteria: *Construct polygons using a protractor, ruler and a pair of compasses. Design nets to make cuboids and prisms.*				
Materials: *Geometric instruments, scissors, plain paper, manila cards, empty boxes, squares made from card (six per group), masking tape, and squared paper.*				

<table>
<tr><td>TOPIC AREA: GEOMETRY</td><td colspan="2">SUB-TOPIC AREA: MEASUREMENTS OF 2D AND 3D SHAPES</td></tr>
<tr><td>P6 MATHEMATICS</td><td>Unit 13: Area bounded by a circle, surface area and volume of some solids.</td><td>Number of periods: 16</td></tr>
<tr><td colspan="3">Key Unit Competence: Pupils will be able to calculate the area enclosed by a circle, the surface area and volume of some solids.</td></tr>
<tr><td colspan="3"><table>
<tr><th colspan="3">Learning Objectives</th><th rowspan="2">Content</th><th rowspan="2">Learning activities</th></tr>
<tr><th>Knowledge and understanding</th><th>Skills</th><th>Attitudes and values</th></tr>
<tr>
<td>– State the formula for finding the area enclosed by a circle and explain how it can be derived from the circumference of a circle.
– Explain the surface area of a solid as the areas of its net.
– State the formula for finding the volume of a given solid shape.</td>
<td>– Calculate the area bounded by a circle.
– Use the netS of a solid to determine its surface area.
– Calculate the volume of a cube and cuboids.
– Select appropriate units when calculating area and volume.</td>
<td>Appreciate the differences between area, surface area, and volume, and understand the importance of using appropriate units for each.</td>
<td>– Estimating the area bounded by a circle using a squared paper
– Exploring the area bounded by a circle using the concept of circumference and radius
– Surface area of a solid.
– Exploring the volume of cube and cuboid.</td>
<td>– In groups, each learner can draw a circle on squared paper using an exact number of square edged lengths as the radius and ensuring the centre is at the vertex. Estimate the area enclosed by the circle by counting squares. Tabulate the results.
<table>
<tr><th>Radius(r)</th><th>r^2</th><th>Area</th></tr>
<tr><td>-</td><td>-</td><td>-</td></tr>
<tr><td>-</td><td>-</td><td>-</td></tr>
</table>
Discuss the relationship.
– Practical – draw a circle on white paper and cut out the disk. Cut the disk into 12 segments and arrange to approximate a parallelogram – link its dimensions to the circumference and radius and hence establish a formula.</td>
</tr>
</table></td></tr>
</table>

				– In groups, find the surface area of a box by dismantling (disassembling) it into its net. – In groups, consider how the volume of a cube and cuboid might be found (area of one face multiplied by height).
Links to other Subjects: *Science, art, and geography: subjects in which area and volume may be needed.*				
Generic skills to be developed: critical thinking and problem-solving, creativity and innovation, effective communication, cooperation, interpersonal management and life skills.				
Values to be developed: Respect for Others and Human Rights, Equity and inclusiveness, Peace and Tolerance, Dignity and Integrity, excellence in all learning activities				
Crosscutting issues to be addressed: gender education, inclusive education, Environment and sustainability, Peace and values education.				
Assessment criteria: *Calculate the area bounded by a circle, the surface area and the volume of a solid.*				
Materials*: Pairs of compasses, scissors, squared paper, and boxes.*				

<table>
<tr><td colspan="2">TOPIC AREA: STATISTICS AND ELEMENTARY PROBABILITY</td><td colspan="3">SUB-TOPIC AREA: COLLECTING, EXPLORING AND INTERPRETATING DATA</td></tr>
<tr><td>P6 MATHEMATICS</td><td colspan="3">Unit 14: Data handling.</td><td>Number of periods: 16</td></tr>
<tr><td colspan="5">Key Unit Competence: Pupils will be able to collect, represent and interpret data in order to solve a problem.</td></tr>
<tr><td colspan="3">Learning Objectives</td><td rowspan="2">Content</td><td rowspan="2">Learning activities</td></tr>
<tr><td>Knowledge and understanding</td><td>Skills</td><td>Attitudes and values</td></tr>
<tr><td>– Explain when it is appropriate to use a tally and how to obtain frequency from the tally.
– Explain how to use pie charts to represent proportions.
– Interpret line graphs as representation of data.</td><td>– Devise a question or hypothesis that requires data for its resolution.
– Decide what data to collect to answer a question.
– Collect data using a table and tally.
– Represent data using a bar chart or pie chart when the total frequency is a factor of 360^0.</td><td>Appreciate the power of data to answer questions and adopt a systematic and organised approach to dealing with data.</td><td>– Collecting the data to investigate a question
– Exploring tally and frequency tables
– Representing and interpreting the data using bar charts or pie charts to draw conclusions.
– Collect and represent data using a bar chart or a pie chart, and interpret the information displayed.</td><td>– In groups, conduct an experiment to investigate whether it is easier to get certain outcomes when two coins are tossed rather than other outcomes. Toss the coins 60 times. And use a tally to collect the data.
<table>
<tr><td>No. of heads</td><td>Tally</td><td>Frequency</td></tr>
<tr><td>0</td><td></td><td></td></tr>
<tr><td>1</td><td></td><td></td></tr>
<tr><td>2</td><td></td><td></td></tr>
<tr><td colspan="2">Total frequency</td><td>60</td></tr>
</table>
– Represent the data as a bar chart and a pie chart. Answer the questions and compare the representations. Create a poster to display your findings.</td></tr>
</table>

	– Interpret representations of data to draw conclusions.			– In groups, use data presented in bar charts and pie charts to make comparisons and draw conclusions.
Links to other subjects: *Economics, geography, science, physical education and sport etc.; any subject that needs to handle data.*				
Generic skills to be developed: critical thinking and problem-solving, creativity and innovation , , effective communication, cooperation, interpersonal management and life skills.				
Values to be developed: Respect for others and Human Rights, Equity and inclusiveness, Peace and Tolerance, Dignity and Integrity, excellence in all learning activities.				
Crosscutting issues to be addressed: Gender education, Peace and values education.				
Assessment criteria: *Can use tally charts to collect data and pie charts to represent and interpret data in order to answer a question or explore a hypothesis.*				
Materials: *Coins, calculators, spreadsheets and data from other subjects.*				

TOPIC AREA: STATISTICS AND ELEMENTARY PROBABILITY		SUB-TOPIC AREA: PROBABILITY OF EVENTS/EXPERIMENTS		
P6 MATHEMATICS	**Unit 15:** Introduction to likelihood of events.			**Number of periods: 8**
Key Unit Competence: Pupils will be able to describe and ordering events in terms of likelihood.				
Learning Objectives			**Content**	**Learning activities**
Knowledge and understanding	**Skills**	**Attitudes and values**		
– Explain that random events have different probabilities of occurring. – Illustrate key probability terms (for example: certain, likely, unlikely, impossible) with examples.	– Use the language of chance (for example "certain," "probable," "unlikely") to describe real-world events. – Compare and order events based on their likelihood (from least to most probable).	– Recognize that random events cannot be predicted with absolute certainty. – Appreciate the role of probability in making informed decisions.	– Vocabulary of chance. – use the expected outcomes of experiment to explore less likely and more likely results. – Determining the likelihood of events.	As a class play Bingo! – Learners are asked to write down their choice of six numbers between 1 and 12. Teacher throws two dice and tells the class the total. Learners strike out the number if it is in their list. Continue until the first learner has struck out all their numbers that learner should call out, "Bingo!" Play the game several times. Are some numbers easier to get than others? Discuss possible reasons why – use the language of chance. – In groups discuss the likelihood of different events for example: getting a head when you toss a coin; that it will rain in Kigali this year;

				that a woman will give birth to a boy; that the sun will rise tomorrow; getting a six when you throw a dice; getting a total of 1 when you throw two dice; that my teacher will become the president; that I was born yesterday; etc. Associate with the vocabulary of chance and place in order of likelihood. Learners then make up their own statements.
Links to other subjects: *Science and any subjects where random events are important.*				
Generic skills to be developed: critical thinking and problem-solving, creativity and innovation, effective communication, cooperation, interpersonal management and life skills.				
Values to be developed: Respect for Others and Human Rights, Equity and inclusiveness, Learner-centeredness, Peace and Tolerance, Dignity and Integrity, excellence in all learning activities.				
Crosscutting issues to be addressed: gender education, inclusive education, Environment and sustainability, Peace and values education.				
Assessment criteria: *To be able to order events in terms of likelihood (impossible, equally likely, certain).*				
Materials*: Dice (improvise by using wooden cubes and label the sides as required), and cards with events.*				

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APPENDICE: SUBJECTS AND WEEKLY TIME ALLOCATION FOR UPPER PRIMARY (P4 – P6)

The table below shows the subjects to be taught in upper primary:

# Subjects to be taught in P4 – P6		Number of periods (Period= 40 minutes)		
		P4	P5	P6
1	Kinyarwanda/ Rwanda Sign Language	8	8	8
2	English	8	8	8
3	Mathematics	8	8	8
4	Social and Religious Studies	6	6	6
5	Science and Elementary Technology	6	6	6
6	French	4	4	4
7	Creative Arts (Fine arts and Music)	2	2	2
8	Physical Education and Sport	2	2	2
9	Co-curricular Activities	4	4	4
	Total number of contact *periods* per week	48	48	48
	Total number of contact *hours*/week	32	32	32
	Total number of contact *hours* per year (39 weeks)	1248	1248	1248