

Term 1: Unit 2 Fractions, Decimals, and Percentages

Year 7 Australian Curriculum Achievement Standard:
 By the end of Year 7, students solve problems involving the comparison, addition and subtraction of integers. They make the connections between whole numbers and index notation and the relationship between perfect squares and square roots. **They solve problems involving percentages and all four operations with fractions and decimals.** They compare the cost of items to make financial decisions. Students represent numbers using variables. They connect the laws and properties for numbers to algebra. They interpret simple linear representations and model authentic information. Students describe different views of three-dimensional objects. They represent transformations in the Cartesian plane. They solve simple numerical problems involving angles formed by a transversal crossing two lines. Students identify issues involving the collection of continuous data. They describe the relationship between the median and mean in data displays.

Students use fractions, decimals and percentages, and their equivalences. They express one quantity as a fraction or percentage of another. Students solve simple linear equations and evaluate algebraic expressions after numerical substitution. They assign ordered pairs to given points on the Cartesian plane. Students use formulas for the area and perimeter of rectangles and calculate volumes of rectangular prisms. Students classify triangles and quadrilaterals. They name the types of angles formed by a transversal crossing parallel line. Students determine the sample space for simple experiments with equally likely outcomes and assign probabilities to those outcomes. They calculate mean, mode, median and range for data sets. They construct stem-and-leaf plots and dot-plots.

Assessment Overview:

Task: Item 2: Fractions, Decimals, and Percentages

Key Skill/s:
 Using equivalence
 Apply the four operations to fractions
 Apply the four operations to decimals
 Convert between fractions, decimals and percentages
 Round to a specified number of decimal places
 Finding percentages of quantities
 Express a quantity as a percentage of another

Conditions:
 Length: Up to 45 minutes
 Completed under Exam Conditions (as per KSHS Exam Protocol)
 Calculators NOT permitted

Guaranteed Vocabulary:	Design Question Four Strategy	Design Question Five Strategy	21 st Century Skill:
Proper fraction, improper fraction, mixed number, equivalent, numerator, denominator, lowest common multiple, highest common factor, decimal, percentage, conversion, recurring, rounding	Element 9: <u>Using Structured Practice Sessions</u> Students will primarily be practising exercises with routinely set homework and feedback structure. Students will practice a variety of questions and contexts	Element 12: <u>Engaging students in Cognitively Complex Tasks</u> Students will be able to explain the conclusions that they have generated. Teachers will engage students in problem-solving tasks that require them to make decisions in order to test hypotheses.	Students will: Critical thinking: analytical thinking, problem-solving, decision-making, reasoning, reflecting & evaluating, intellectual flexibility Creative thinking, curiosity & imagination, identifying alternatives, seeing or making new links

	Students will be encouraged to write their own questions and these can be swapped with other students to increase engagement and collaboration		<p>Communication: effective oral and written communication, using language, symbols and texts</p> <p>Collaboration and teamwork: participating & contributing</p> <p>Personal and social skills: management (self, career, time, planning and organising), character (resilience, mindfulness, open- and fair-mindedness, self-awareness)</p>
Guaranteed Skills/Language Features:	Reading Comprehension Skill and Strategy	Cognitive Verbs	ICT to Enhance Learning:
<p>Using equivalence</p> <p>Apply the four operations to fractions</p> <p>Apply the four operations to decimals</p> <p>Convert between fractions, decimals and percentages</p> <p>Round to a specified number of decimal places</p> <p>Use estimation to predict answers</p> <p>Finding percentages of quantities</p> <p>Express a quantity as a percentage of another</p>	<p>Reading as a Mathematician</p> <p>Students will complete the following steps when starting a problem:</p> <ol style="list-style-type: none"> 1. Scan the whole problem. 2. Identify the task. It could be a: 3. Reread the problem. What is important to help you solve the problem? 4. Translate - (create a mathematical model) 5. Solve the problem. 		<p>Mathspace</p> <p>Sumdog</p> <p>Scientific calculators</p>

Learning Goals:

Strands and Sub-Strands	Australian Curriculum Content Descriptors	Australian Curriculum Elaborations	Kirwan High Learning Goals
Real numbers	Compare fractions using equivalence. Locate and represent positive and negative fractions and mixed numbers on a number line (ACMNA152)	<ul style="list-style-type: none"> • exploring equivalence among families of fractions by using a fraction wall or a number line (for example by using a fraction wall to show that $\frac{2}{3}$ is the same as $\frac{4}{6}$ and $\frac{6}{9}$) 	<ul style="list-style-type: none"> • Compare fractions using equivalence • Locate positive and negative fractions and mixed numbers on a number line
	Solve problems involving addition and subtraction of fractions, including those with unrelated denominators (ACMNA153)	<ul style="list-style-type: none"> • exploring and developing efficient strategies to solve additive problems involving fractions (for example by using fraction walls or rectangular arrays with dimensions equal to the denominators) 	<ul style="list-style-type: none"> • Use estimation strategies to predict the answer before calculating it • Solve problems involving addition and subtraction of fractions, including those with unrelated denominators
	Multiply and divide fractions and decimals using efficient written strategies and digital technologies (ACMNA154)	<ul style="list-style-type: none"> • investigating multiplication of fractions and decimals, using strategies including patterning and multiplication as repeated addition, with both concrete materials and digital technologies, and identifying the processes for division as the inverse of multiplication 	<ul style="list-style-type: none"> • Solve problems involving the multiplication and division of fractions • Use estimation strategies to predict the answer before calculating it • Solve problems involving addition and subtraction of decimals • Solve problems involving the multiplication and division of decimals
	Express one quantity as a fraction of another, with and without the use of digital technologies (ACMNA155)	<ul style="list-style-type: none"> • using authentic examples for the quantities to be expressed and understanding the reasons for the calculations 	
	Round decimals to a specified number of decimal places (ACMNA156)	<ul style="list-style-type: none"> • using rounding to estimate the results of calculations with whole numbers and decimals, and understanding the conventions for rounding 	<ul style="list-style-type: none"> • Round decimals to a specified number of decimal places
	Connect fractions, decimals and percentages and carry out simple conversions (ACMNA157)	<ul style="list-style-type: none"> • justifying choices of written, mental or calculator strategies for solving specific problems including those involving large numbers • understanding that quantities can be represented by different number types and calculated using various operations, and that choices need to be made about each • calculating the percentage of the total local municipal area set aside for parkland, manufacturing, retail and residential dwellings to compare land use 	<ul style="list-style-type: none"> • Convert between fractions, decimals and percentages • Use estimation strategies to predict the answer before calculating it
	Find percentages of quantities and express one quantity as a percentage of another, with and without digital technologies. (ACMNA158)	<ul style="list-style-type: none"> • using authentic problems to express quantities as percentages of other amounts 	<ul style="list-style-type: none"> • Find percentages of quantities • Express a quantity as a percentages of another