

## Choose Your Prize – Teacher Guide

### Task:

- You have won a competition. Which of these prizes would you choose and why?
  - 10kg of 10 cent coins, 40m of 10c coins, 1 square metre of 10c coins or 3.5m of coins stacked
  - Show all the maths you use to make your choice
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- Provide each student with a copy of the [Choose Your Prize Task](#) page.
  - Allow students to use a calculator but ensure they understand to show all the calculations they do on the calculator in the space on the worksheet.
  - Set the student/s to work independently.
  - If needed, the arrangement of the coins for each of the options i.e. stacked or laying side-by-side can be demonstrated for understanding of the context and the problem. Ensure these demonstrations don't include how to approach the task.
  - Students can be given a 10c coin but do not provide multiple coins which could lead students to use counting strategies. Encourage students to calculate – use maths not just counting.
  - Remind students to record all the mathematics they use so their reasoning is evident.

### AC V9.0 Year 6 Achievement Standard

Students use **all four operations with decimals** and **connect decimal representations of measurements to the metric system**. Students use **estimation to find approximate solutions** to problems involving **rational numbers**. They use mathematical modelling to solve financial and other **practical problems involving rational numbers, formulating and solving the problem**, and **justifying choices**. Students **convert between common units of length**. They use the **formula for the area of a rectangle to solve problems**.

### AC V9.0 Year 6 Content Descriptors

- AC9M6N07** Solve problems that require finding a familiar **fraction, decimal** or **percentage of a quantity**, including percentage discounts, **choosing efficient calculation strategies** and **using digital tools** where appropriate.
- AC9M6N08** Approximate numerical solutions to problems involving **rational numbers** and percentages, including financial contexts, using appropriate estimation strategies.
- AC9M6N09** Use mathematical modelling to solve practical problems, involving **rational numbers** and percentages, including in financial contexts, formulate the problems, choosing operations and efficient calculation strategies, and **using digital tools** where appropriate; **interpret and communicate solutions** in terms of the situation, **justifying** the choices made.
- AC8M6M01** Convert between common metric units of **length**, mass and capacity; choose and use decimal representations of metric measurements relevant to the context of the problem.
- AC9M6M02** Establish the formula for the area of a rectangle and use it to solve practical problems.

## Assessment Criteria:

Focus	Below	Expected	Above
<b>Identified when to use division</b>	Used multiplication when the operation needed to be division e.g. used $1000 \times 5.65$ to find how many coins in 1kg	Used division when appropriate e.g. $1000g \div 5.65g$ but indicated the result as a measurement unit.	Understood that a measurement unit $\div$ a measurement unit = count of objects (not a unit)
<b>Interpret decimals in context</b>	Worked only with whole numbers – ignored any decimal places created by calculations	Understood that decimals created during calculations represented parts of a whole unit e.g. 42.37 coins was more than 42 coins	Converted whole units into decimals to facilitate calculations
<b>Connect decimals and metric measurements</b>	Used whole measurements ignoring the decimal component	Converted decimal measurements given to units to suit calculations needed in the problem e.g. converted 23.6mm to 2.36cm	Represented small units as decimals of larger units e.g. $1\text{cm} = 0.01\text{m}$ and used these in calculations e.g. $1\text{ coin} = 5.65\text{g} = 0.00565\text{kg}$
<b>Convert units of measurement</b>	Converted whole number measurements e.g. 1m to 100cm.	Converted measurements to other units using multiple steps e.g. $1\text{m} = 100\text{cm}$ so $100\text{cm} = 1000\text{mm}$	Converted measurements in one step e.g. m to mm ( $\times 10000$ )
<b>Round decimals to whole units (measurements and coins) in context</b>	Did not round decimals created during calculations or only used whole numbers and ignored any decimals.	Rounded decimals created during calculation mathematically to a nearby place or to a whole number e.g. $100\text{cm} \div 2.36\text{cm} = 42.37$ rounded to 42.4 but didn't realise this was not viable in context (can't have part coins)	Realised that rounding decimals created during calculations needed extra consideration (there could never be part coins as part of a prize) e.g. $100\text{cm} \div 2.36\text{cm} = 42.37$ coins could only be 42 coins not 42.4
<b>Calculate area of a rectangle</b>	Needed multiple coins (or counters) to physically represent a rectangle of coins.	Used knowledge of area formula (length $\times$ width) to identify the number of coins in one row and multiplied this by the number of rows needed.	Considered rectangles of other dimensions than 1m $\times$ 1m in case these arrangements would result in more coins
<b>Justification of choices to solve the problem using mathematics</b>	Some calculations choices were evident. Recording did not include all calculations and justifications were not clear.	Enough information was recorded to follow the reasoning used to make choices including calculations.	Justification was clear. The reasoning for calculations and unit conversions were clearly organised and logically sequenced.
<b>Communicating strategies and reasoning</b>	Recordings did not show calculations strategies clearly enough to be interpreted.	Calculation strategies and reasoning were identifiable.	Calculation strategies and reasoning was clearly set out and provided a logical path toward a solution.

### Related Learning Through Doing Lessons:

- **Division** - Break Up (Decimals by non-zero whole numbers)
- **Estimation** – Make Reasonable Estimates (Multiply and Divide Decimals)
- **Units of Measure** – Investigate prefixes of metric units
- **Units of Measure** – Convert Metric Units of Length, Mass and Capacity using Place Value
- **Area** – Investigate a rule for calculating the Area of Rectangles

