Short-Answer Tasks – Sample questions

Year 8 Tasks

1. **Integers and Indices**
   Using index notation with numbers, applying the index laws with positive integral indices and the zero index, evaluating numbers expressed as powers of positive integers, carrying out the four operations with integers
2. **Fractions, Decimals and Percentages**
   Carrying out the four operations with rational numbers, recognising terminating and recurring decimals, understanding that the real number system includes irrational numbers, solving problems involving the use of percentages, including percentage increases and decreases, and profit and loss
3. **Rates and Ratios**
   Solving a range of problems involving rates and ratios, understanding that rate and ratio problems can be solved using fractions, decimals or percentages, choosing the most efficient approach to solve a particular problem, using the unitary method
4. **Statistics and Probability**
   Taking a census or selecting a sample, random and non-random sampling, identifying the population, exploring the variation of means and proportions in representative data, investigating the effect of outliers on the mean and median, identifying complementary events and using the sum of probabilities, describing events using language of exclusive 'or' (A or B but not both), inclusive 'or' (A or B or both) and 'and', representing such events in two-way tables and Venn diagrams and solving related problems
5. **Algebra**
   Simplifying algebraic expressions involving the four operations, understanding that the laws used with numbers can also be used with algebra, applying the distributive law to the expansion of algebraic expressions, factorising algebraic expressions by identifying numeric and algebraic factors
6. **Linear and Non-linear Relationships**
   Plotting linear relationships on the Cartesian plane, completing a table of values, assessing the steepness of a line, determining if the gradient is positive, negative, zero or undefined, finding the coordinates of points on a line by inspection and by substitution, finding the axial intercepts, finding the rule for a linear relationship, using rules to recognise parallel lines, determining whether a relationship is linear
7. **Linear Equations**
   Solving linear equations using algebraic and graphical techniques, verifying solutions by substitution, solving real life problems by using variables to represent unknowns
8. **Measurement**
   Choosing appropriate units of measurement for area and volume and converting from one unit to another, finding perimeters and areas of parallelograms, rhombuses, trapeziums and kites, investigating the relationship between features of circles such as circumference, area, radius and diameter, using formulas to solve problems involving circumference, area, volumes of rectangular and triangular prisms and prisms in general, solving problems involving duration, including using 12- and 24-hour time within a single time zone
9. **Geometry**
   Defining congruence of plane shapes using transformations (translations, reflections, rotations), applying the conditions for congruence of triangles (SSS, SAS, ASA, RHS), using congruent triangles to prove geometric properties, solving related problems

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Short-Answer Tasks – Sample questions

Year 8: Integers and Indices

Question 2
If $2^{16} = 65{,}536$ then evaluate

- **a.** 2^{17}
- **b.** 2^{15}
- **c.** $(-2)^{16}$
- **d.** -2^{16}

Year 8: Fractions, Decimals and Percentages

Question 16
Dasha purchased her apartment for $375,000 five years ago. She sold it this week for $487,500. Calculate her percentage profit.

Year 8: Rates and Ratios

Question 3
A girl cycles for 50 minutes at an average speed of 12 km/h. Calculate the number of kilometres travelled.

Year 8: Statistics and Probability

Question 1
A population may be studied using one of two approaches: taking a census, or selecting a sample. Which approach is being described by each of the following statements?

- **a.** A study of every unit, everyone or everything in the population of interest
- **b.** A subset of units in the population is selected in order to represent the population
- **c.** Expensive and time consuming to conduct, especially if the population is large
- **d.** Provides a true measure of the population, i.e. no sampling error
- **e.** Costs are generally lower and results are available in less time
- **f.** Data may not be representative of the population, particularly where the sample size is small
- **g.** Detailed information about small sub-groups within the population is more likely to be available
- **h.** The data are subject to sampling error
- **i.** If good sampling techniques are used, the results can be very representative of the population

Year 8: Algebra

Question 12
Expand and simplify

- **a.** $12x(x - 7) + x(12 - x)$
- **b.** $5x(9 - 2x) - 4(13 - x)$

Short-Answer Tasks – Sample questions

Year 8: Linear and Non-linear Relationships

Question 7

For each given rule, complete the table and list the coordinates of the points

a. $y = 3x$

x	-3	-2	-1	0	1	2	3
y							
(x,y)							

b. $y = -2x - 1$

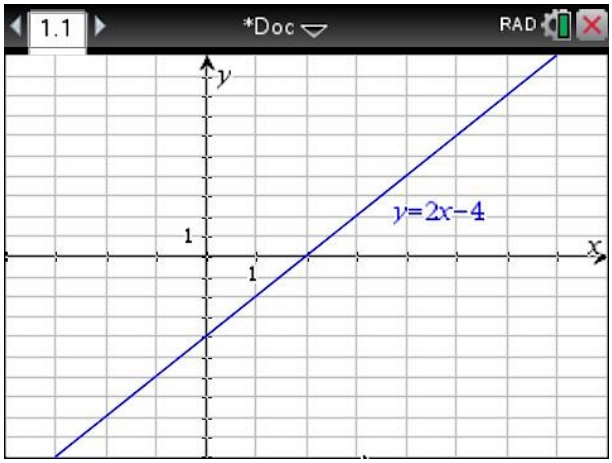
X	-3	-2	-1	0	1	2	3
Y							
(x,y)							

c. $y = -9$

x	-3	-2	-1	0	1	2	3
y							
(x,y)							

Year 8: Linear Equations

Question 1



Use the above graph of $y = 2x - 4$ to solve each of the following equations for x

a. $2x - 4 = -8$
b. $2x - 4 = -4$
c. $2x - 4 = 0$
d. $2x - 4 = 6$

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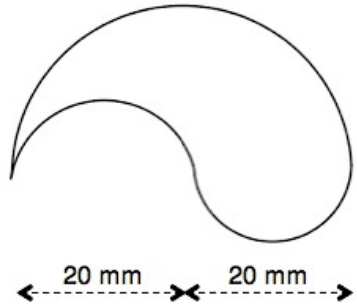
Short-Answer Tasks – Sample questions

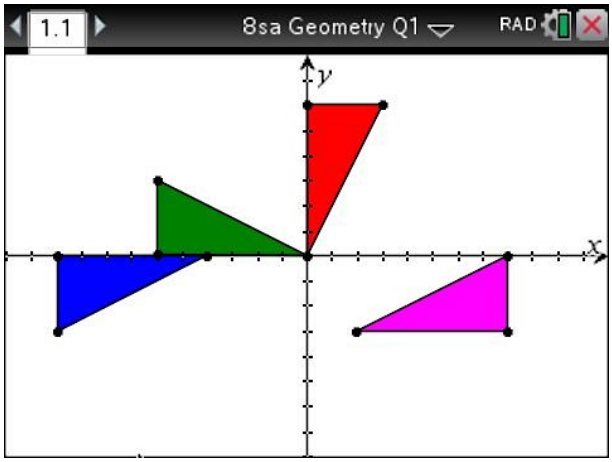
Year 8: Measurement

Question 15
Find, in terms of π, the perimeter and area of the following shape



Year 8: Geometry

Question 1
In the diagram below, the green, red, blue and magenta triangles are congruent.



State the transformations required to place the green triangle on top of

- **a.** The red triangle
- **b.** The blue triangle
- **c.** The magenta triangle

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