# Short-Answer Tasks – Sample questions

**Year 7 Tasks**

1.  **Whole Numbers**
    Using algorithms and index notation, expressing whole numbers as products of powers of prime factors, using prime factorisation to solve problems, using square roots, perfect squares and perfect cubes, applying the associative, commutative and distributive laws to aid mental and written computation

2.  **Integers**
    Comparing and ordering integers, giving the opposite of an integer, adding, subtracting, multiplying and dividing integers, applying divisibility tests for 2, 3, 4, 5, 6, 8, 9 and 10, order of operations with integers and indices, problems involving integers

3.  **Fractions**
    Exploring equivalence of fractions by using a fraction wall, finding equivalent fractions, locating and representing positive and negative fractions and mixed numbers on a number line, ordering fractions, expressing one number as a fraction of another, adding, subtracting, multiplying, dividing and squaring positive and negative fractions

4.  **Decimals, Percentage and Ratio**
    Rounding decimals to a specified number of decimal places, connecting fractions, decimals and percentages and carrying out conversions, adding, subtracting, multiplying, dividing and squaring positive and negative decimals, finding percentages of quantities and expressing one quantity as a percentage of another, solving problems involving ratios, using the unitary method, investigating and calculating 'best buys'

5.  **Algebra**
    Introducing the concept of variables as a way of representing numbers using letters, creating algebraic expressions and evaluating them by substituting a given value for each variable, extending and applying the laws and properties of arithmetic to algebraic terms and expressions

6.  **Linear and Non-linear Relationships**
    Plotting coordinates and finding coordinates for given points on the Cartesian plane, completing tables of values, finding rules for graphs, writing and solving simple linear equations, investigating, interpreting and analyzing linear and non-linear graphs

7.  **Statistics and Probability**
    Identifying categorical and numerical data, constructing frequency tables, dot plots and stem-and-leaf plots, calculating mean, median, mode and range, comparing the mean with the median, discussing the likely affect of outliers, constructing sample spaces for single-step experiments with equally likely outcomes, assigning probabilities to the outcomes of events and determining probabilities for events

8.  **Measurement and Geometry**
    Calculating perimeters, using formulas to calculate areas of rectangles, triangles and parallelograms, calculating volumes of prisms and compound solids, solving problems involving perimeter, area and volume, identifying corresponding, alternate and co-interior angles when two parallel straight lines are crossed by a transversal, classifying triangles according to their side and angle properties, solving problems using vertically opposite, complementary and supplementary angles, the angle sum of a triangle, the angle sum of a quadrilateral and the exterior angle of a triangle

9.  **Transformations, Location and Shape**
    Describing, drawing and investigating the properties of translations, reflections in an axis, and rotations by multiples of 90° on the Cartesian plane using coordinates, identifying and determining line and rotational symmetries, drawing different views of prisms and solids formed from combinations of prisms

To order the Year 7 Mathematics Short-Answer Tasks, please point your browser to
**http://russellboyle.com/orders.html**

# Short-Answer Tasks – Sample questions

**Year 7:  Whole Numbers**

**Question 14**
   **a.** Express 168 and 630 as products of their prime factors in index form.
   **b.** Hence find the highest common factor and the lowest common multiple of 168 and 630.
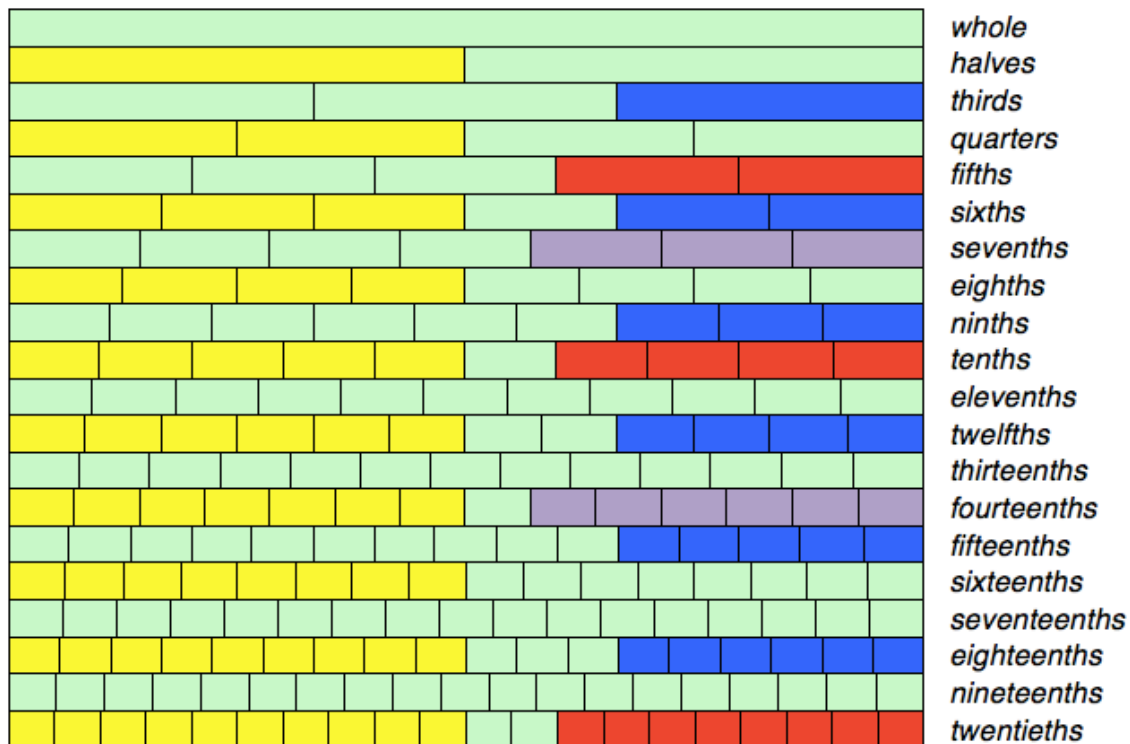
**Year 7:  Integers**

**Question 13**
Evaluate  $-7 - 48 \div (-2)^2 \times (-12)$

**Year 7:  Fractions**

*Questions 1 to 4 relate to the following fraction wall diagram and information*



*The small vertical lines that lie exactly underneath each other across the wall represent equivalent fractions.*

**Question 1**
Using the fractions shaded in yellow on the wall, complete the following equivalent fractions

$$\frac{1}{2} = \frac{\square}{4} = \frac{\square}{6} = \frac{4}{\square} = \frac{\square}{10} = \frac{7}{12} = \frac{\square}{\square} = \frac{9}{16} = \frac{\square}{20}$$

To order the Year 7 Mathematics Short-Answer Tasks, please point your browser to
**http://russellboyle.com/orders.html**

# Short-Answer Tasks – Sample questions

**Year 7:  Decimals, Percentage and Ratio**

**Question 7**
Subtract 9.789 from 27.14.

**Year 7:  Algebra**

**Question 2**
The sum of two whole numbers is 19. If one of the numbers is *x* then write an algebraic expression for the other number.

**Year 7:  Linear and Non-linear Relationships**

**Question 3**
   **a.** On a number plane, plot the points with the given coordinates:
   (–4, 2), (–3, 2), (–2, 2), (–1, 2), (0, 2), (1, 2), (2, 2), (3, 2), (4, 2)
   Use a ruler to join the points with a line.
   **b.** Give the rule used to find the *y*-coordinate on this line.
   **c.** State the *y*-coordinate on this line when *x* = 1.5

**Year 7: Statistics and Probability**

**Question 7**
The heights, in cm, of twenty adults are listed below
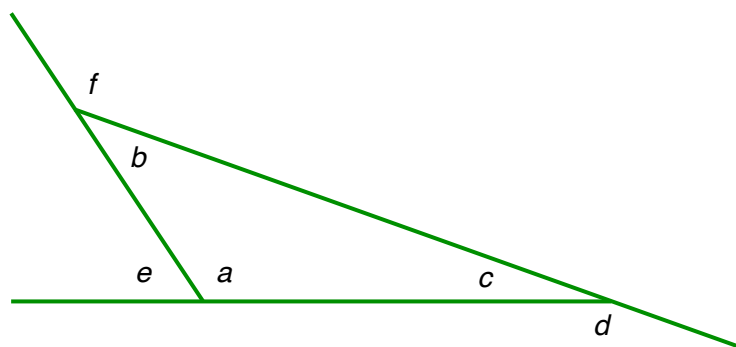194, 173, 160, 187, 194, 178, 184, 200, 168, 181,
198, 172, 204, 165, 183, 187, 194, 186, 196, 175
Draw an ordered stem-and-leaf plot for this data using stems of 16, 17, 18, 19 and 20.

**Year 7: Measurement and Geometry**

**Question 20**
*a*, *b* and *c* are the interior angles of a triangle and *d*, *e* and *f* are the exterior angles, as shown in the following diagram
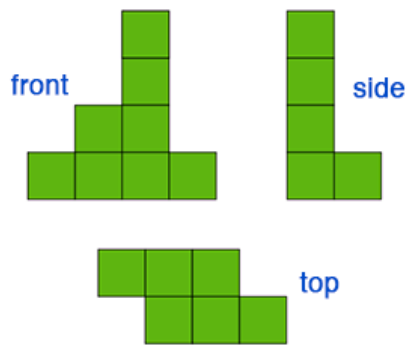


Show that $d + e + f = 360°$

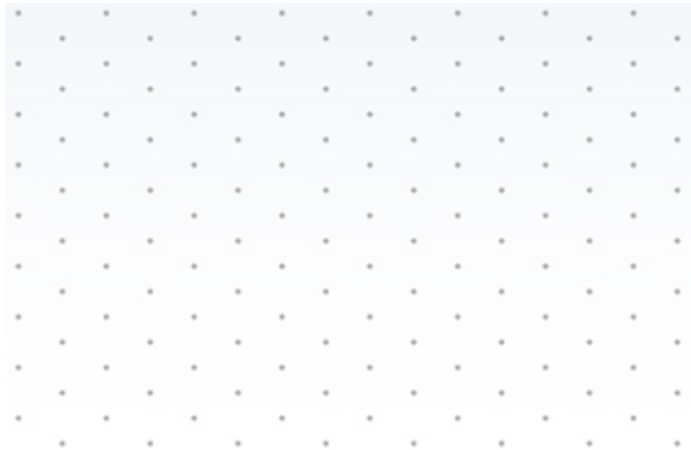To order the Year 7 Mathematics Short-Answer Tasks, please point your browser to
**http://russellboyle.com/orders.html**

# Short-Answer Tasks – Sample questions

**Year 7: Transformations, Location and Shape**

**Question 19**



Use the following isometric paper to draw the solid represented by the front, side and top views shown above



To order the Year 7 Mathematics Short-Answer Tasks, please point your browser to
**http://russellboyle.com/orders.html**