

Yr 9 Review 1A

- 1 Without using a calculator, work out the cube roots of the numbers in parts (i) and (ii). Then estimate the cube root of the number in part (iii).

a) (i) 64 (ii) 125 (iii) 100
 b) (i) 216 (ii) 343 (iii) 230

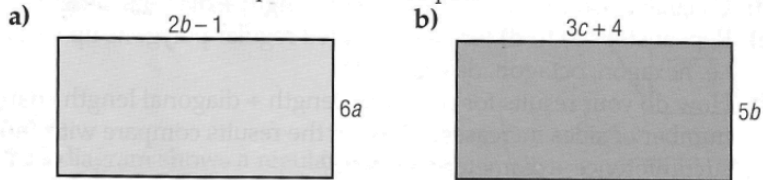
- 2 Simplify the following using indices:

a) $3^2 \times 3^5 \times 3$
 b) $7^6 \div 7^2$
 c) $(4^3)^4$
 d) $(3^5)^3 \div 3^5 \times (3^3)^2 \div 3^5$

- 3 For each of the following rectangles, write an expression for:

(i) the area
 (ii) the perimeter.

Use brackets in the expression where possible.



- 4 Factorise the following expressions fully.

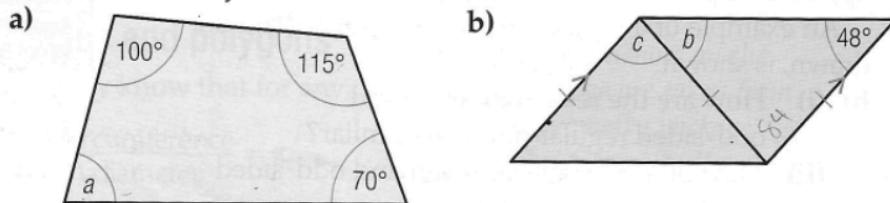
a) $16p - 36q$ b) $10a + 25b$ c) $56d - 42e$
 d) $6a - 18b + 12c$ e) $4ab^2 - 12b^3$ f) $a^4 - a^3 + a^2$

- 5 Rearrange the following formulae to make the letter in red the subject.

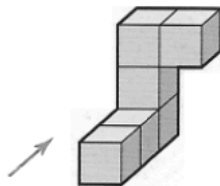
a) $3q = 2p + 4$ b) $5q = 4p + 6$ c) $4x + 8y = 6z$

- 6 Calculate the size of the unknown angles in these polygons.

Give reasons for your answers.

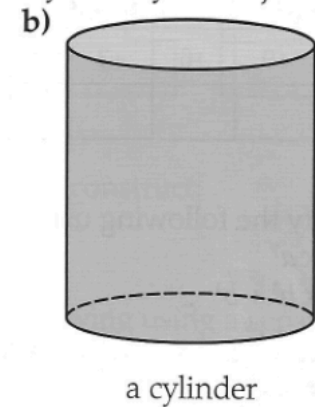


- 7 Draw the front, side and plan elevations of this three-dimensional shape.



- 8 For each of the following three-dimensional objects, copy the diagram shown. Then:

(i) draw a plane of symmetry on your copy
 (ii) work out how many planes of symmetry the object has in total.



- 9 Draw a line AB , where $AB = 6$ cm and mark a point M , like this.



a) Construct a line which passes through M and is perpendicular to AB .
 b) Mark a point C on the perpendicular line so that $MC = 3$ cm.
 c) Draw the lines AC and BC .
 d) Calculate the area of the triangle ABC .

- 10 a) A load of cement weighs 3.4 tonnes. 2730 kg is removed. What weight is left?
 b) A driver travels for four days and covers 900 km in total. He covers 223 km, 188 km and 309 km on the first three days. How far does he travelled on day 4?

- 11 Data is to be collected in order to answer the following question:

'Are children eating too much fast food?'

a) Give an example of a type of primary data that could be collected to investigate this question.
 b) Give an example of a type of secondary data that could be collected.
 c) Design a questionnaire with five questions that could be used.

- 12 Use the fact that $4592.34 \div 37.2 = 123.45$ to work out these divisions.

a) $4592.34 \div 372$
 b) $459234 \div 123.45$

Yr 9 Review 1B

- 1 If $xy = +18$, copy and complete this table.

x	+9	+6	+3	+2	+1	-1	-2	-3	-6	-9
y										

- 2 Simplify the following using indices.

- a) $a^3 \times a^7$
 b) $b^5 \times b^3 \div b^4$
 c) $(c^3)^4 \div c^9$
 d) $(d^4)^2 \div d^7$
 e) $(e^5)^3 \div (e^3)^5$

- 3 Factorise the following expressions by grouping.

- a) $af - ag - bf + bg$ b) $a^2 - ab^2 + ac - cb^2$

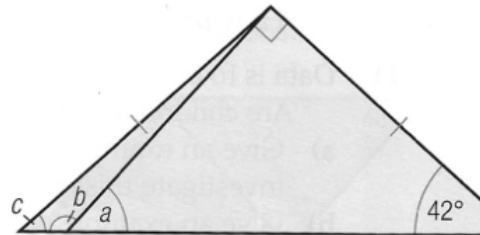
- 4 Calculate the value of each of the following expressions when $a = \frac{1}{4}$, $b = -\frac{1}{4}$, $c = 3$ and $d = -2$. Use a calculator if necessary.

- a) $a - b + (c - d)$ b) $a^2 + b^2$
 c) $c^2 - d^2$ d) $a + b + c - d$

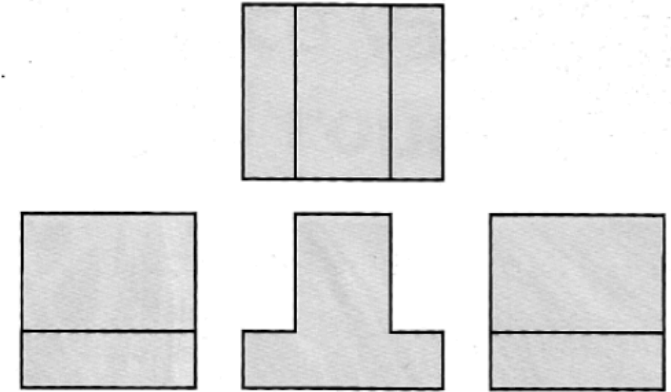
- 5 Simplify the following.

- a) $\frac{3}{5} - \frac{3}{10}$ b) $\frac{2a}{10} + \frac{4a}{25}$
 c) $\frac{2ab}{xy} - \frac{ab}{4xy}$ d) $\frac{b}{5x} - \frac{b}{15x} + \frac{2b}{20x}$

- 6 Calculate the size of the unknown angles in this diagram.
 Give reasons for your answers.



- 7 Sketch the three-dimensional object from the elevations given.



- 8 Using a ruler and a pair of compasses construct:

- a) a regular hexagon
 b) a regular octagon.

- 9 Write an estimate for each of the following using a sensible unit.

- a) What does a newborn baby elephant weigh?
 b) How long does an average film at the cinema last?
 c) How tall is an adult?

- 10 When collecting data, why should a trial be carried out before the actual data is collected?

- 11 Solve the following problems mentally.

- a) What is the perimeter of a square of side 15 cm?
 b) What is the area of the square in part a)?

- 12 a) A train is travelling at an average speed of 120 km/h.
 How far does it travel in $2\frac{1}{4}$ hours?

- b) If the journey takes $2\frac{1}{4}$ hours and the train arrives at 13 10, what time did it leave?