

Name: _____

BennettMaths AQA 3H – Part 3

18 $f(x) = 3x^2 - x$
 $g(x) = x + 3$

18 (a) Show that $fg(x) = 3x^2 + 17x + 24$

[3 marks]

18 (b) Solve $fg(x) = 5$

Give your answers correct to 2 decimal places.

[3 marks]

Answer _____

19

Two integers have a difference of 2

The integers are multiplied together.

1 is then added.

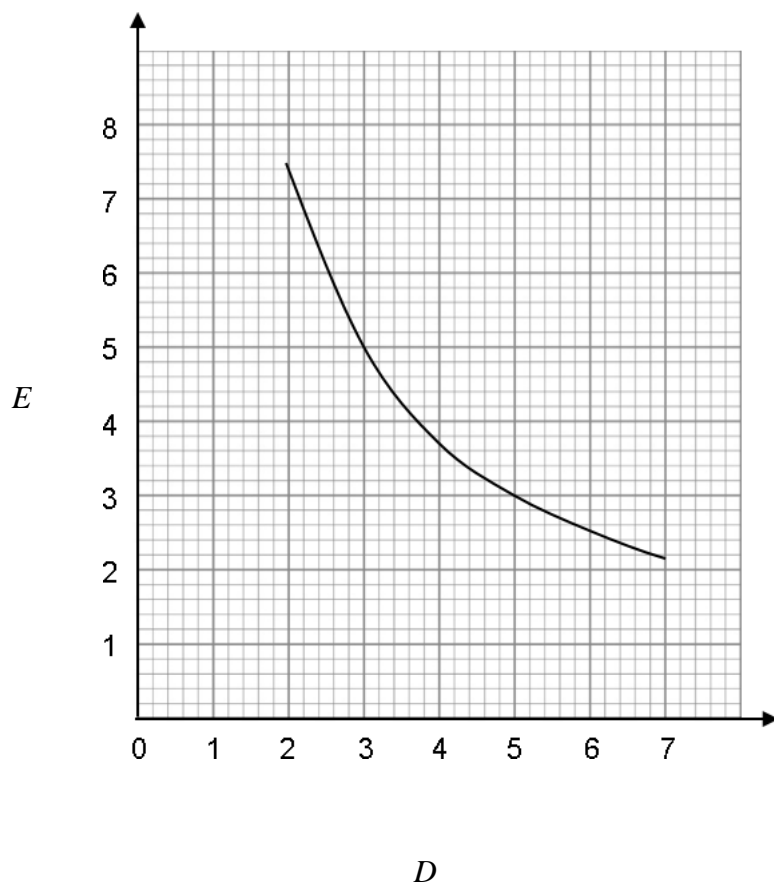
Prove algebraically that the result is always a square number.

[3 marks]

Turn over for the next question

20 (a) Sunil thinks that E and D are linked by the equation $E = \frac{14}{D}$

The graph shows the values of D and E for $2 \leq D \leq 7$



Choose **one** point on the graph and state if Sunil's equation is correct for that point.

[1 mark]

20 (b) G is directly proportional to the square of H .

$$G : H = 5 : 1 \text{ when } H = 10$$

Work out $G : H$ when $H = 20$

[4 marks]

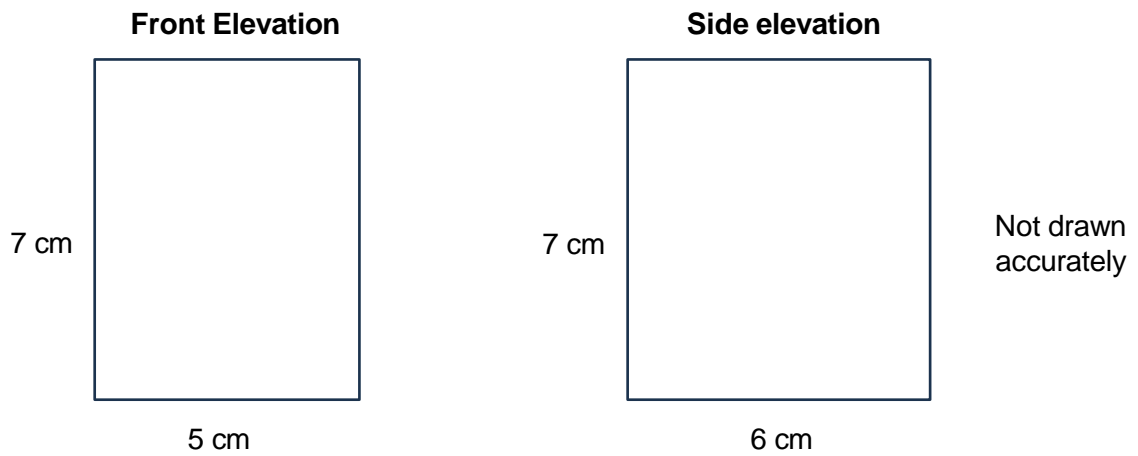
Answer _____ : _____

Turn over for the next question

21

A solid shape is made from centimetre cubes.

The front elevation and side elevation of the shape are shown.



Work out

the **maximum** possible number of cubes in the shape

and

the **minimum** possible number of cubes in the shape.

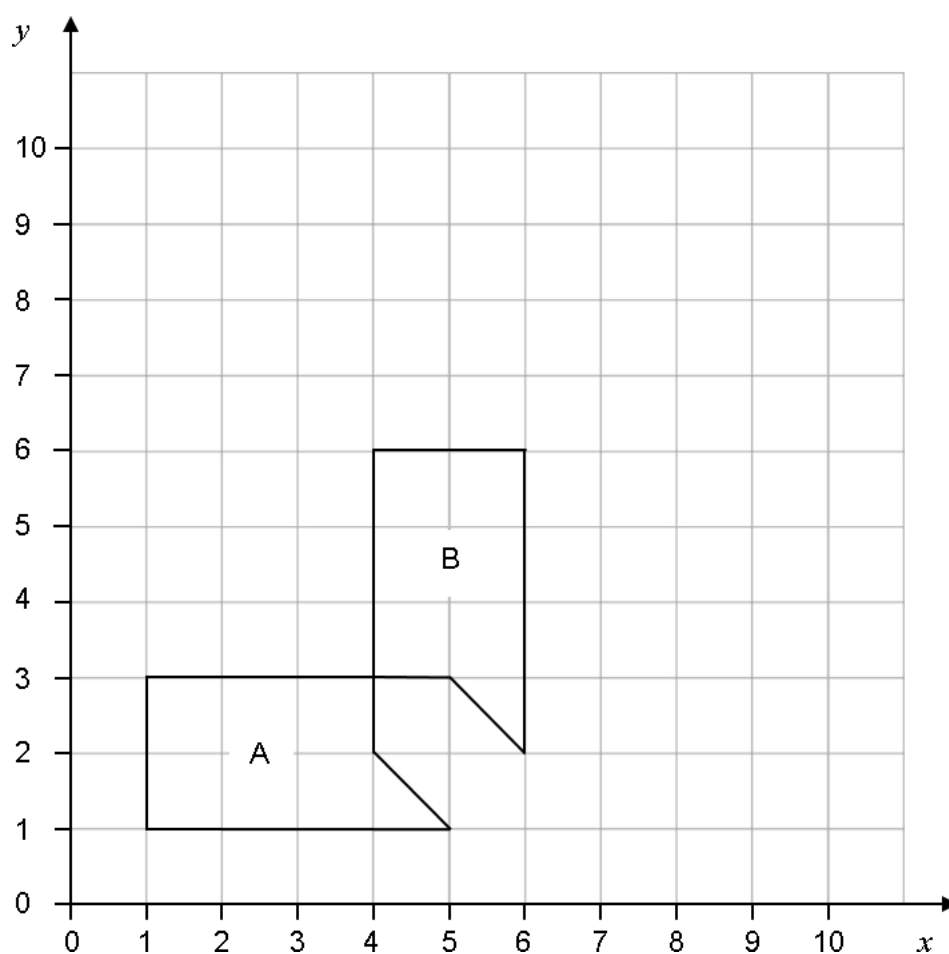
[3 marks]

Maximum _____

Minimum _____

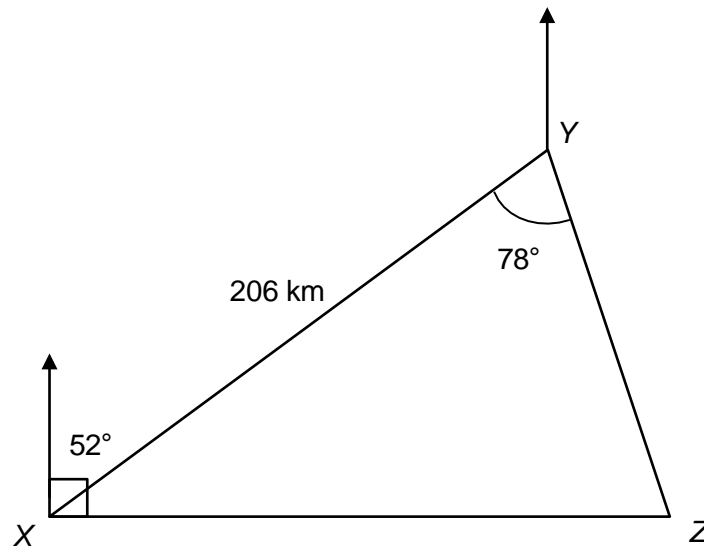
22

Shape A and shape B are shown on the grid.

Do not write
outside the
boxDescribe the **single** transformation that maps shape A to shape B.**[3 marks]**

Turn over for the next question

23

Not drawn
accurately

A plane flies 206 km on a bearing of 052° from X to Y .

From Y the plane flies to Z , which is due East of X , and then back to X .

- 23 (a)** Show that the distance the plane flies from Y to Z is 141 km to the nearest km.
You **must** show your working.

[2 marks]

23 (b)

Two boats leave the same port at the same time.

Boat A sails on a bearing of 157° at a speed of 16 mph.

Boat B sails on a bearing of 240° at a speed of 18 mph.

Calculate the bearing of boat A from boat B 90 minutes after they leave the port.

You may assume both boats are travelling at a constant speed.

[4 marks]

Answer _____^o

END OF QUESTIONS