

19  $a$ ,  $a$ ,  $b$  and 40 are four numbers.

$a$  is the least number.

40 is the greatest number.

The range of the four numbers is 14

The median of the four numbers is 30

Work out the value of  $a$  and the value of  $b$ .

$a =$

$b =$

(Total for Question 19 is 3 marks)

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20 The Shanghai Maglev Train takes 8 minutes to travel a distance of 30.5 kilometres.

Work out the average speed of the train.  
Give your answer in kilometres per hour.

kilometres per hour

(Total for Question 20 is 3 marks)



21 The diagram shows the triangle  $PQR$ .

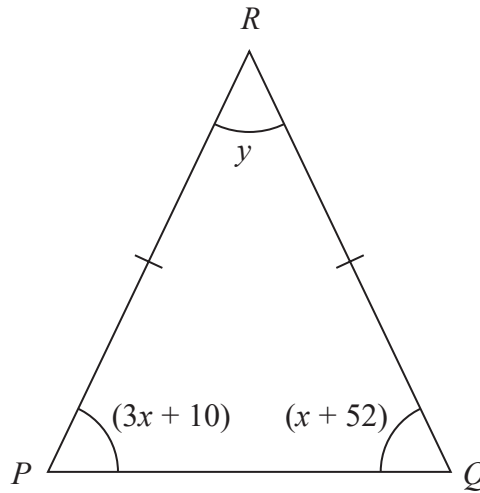


Diagram NOT accurately drawn

In the diagram, all the angles are in degrees.

$$RP = RQ$$

Find the value of  $y$ .

Show clear algebraic working.

$$y =$$

(Total for Question 21 is 4 marks)

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22 The diagram shows two water towers in Kuwait.

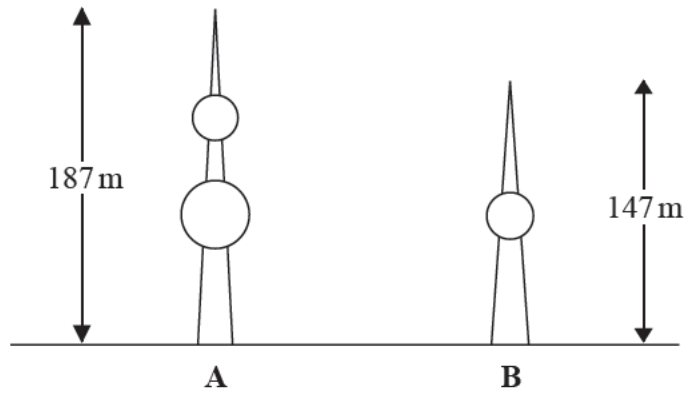


Diagram NOT accurately drawn

The real height of tower A is 187 m.  
The real height of tower B is 147 m.

Ahmed makes a scale model of both towers.

The height of tower A on the scale model is 90 cm.

Work out the height of tower B on the scale model.  
Give your answer correct to the nearest centimetre.

cm

(Total for Question 22 is 3 marks)



23 Solve the simultaneous equations

$$4x + 2y = 9$$

$$x - 4y = 9$$

Show clear algebraic working.

$$x =$$

$$y =$$

(Total for Question 23 is 3 marks)

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24  $N = 480 \times 10^9$

(a) Write  $N$  as a number in standard form.

(1)

(b) Write  $N$  as a product of powers of its prime factors.  
Show your working clearly.

(3)

(c) Find the largest factor of  $N$  that is an odd number.

(1)

(Total for Question 24 is 5 marks)





25 The shape, shown shaded in the diagram, is the region between two semicircles.

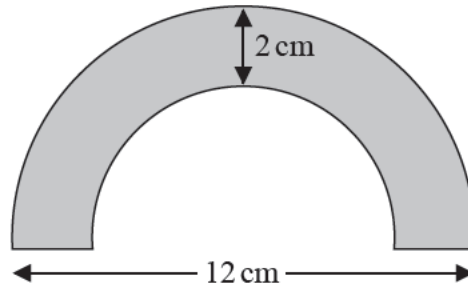


Diagram **NOT**  
accurately drawn

The diameter of the outer semicircle is 12 cm.  
The shape has constant thickness 2 cm.

Calculate the area of the shape.  
Give your answer as a multiple of  $\pi$ .

cm<sup>2</sup>

(Total for Question 25 is 3 marks)



26 There are 12 boys and 8 girls in a class.  
The boys and the girls have some coins.

The mean number of coins that the boys have is 5.5  
The girls have a total of 18 coins.

Work out the mean number of coins the 20 children have.

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(Total for Question 26 is 3 marks)

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**TOTAL FOR PAPER IS 100 MARKS**

