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Answer ALL TWENTY FOUR questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 The table shows information about the frame size, in cm, of 60 bicycles sold in a shop.

Frame size ( $S$ cm)	Frequency
$30 < S \leq 36$	4
$36 < S \leq 42$	14
$42 < S \leq 48$	18
$48 < S \leq 54$	19
$54 < S \leq 60$	5

(a) Write down the modal class.

.....

(1)

(b) Work out an estimate for the mean frame size.

..... cm

(4)

(Total for Question 1 is 5 marks)



P 7 2 4 3 8 A 0 3 2 8

2 The diagram shows a solid triangular prism.

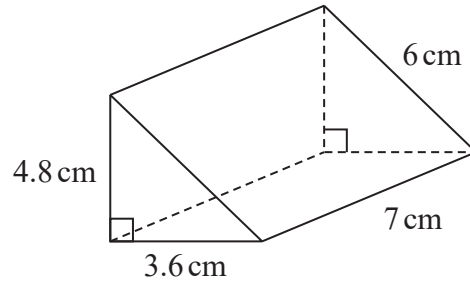


Diagram **NOT** accurately drawn

Work out the **total** surface area of the triangular prism.  
Give your answer correct to 3 significant figures.

..... cm<sup>2</sup>

(Total for Question 2 is 3 marks)

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3 Here is a list of six numbers written in order of size.

$x$     5     $y$      $z$     10    12

The numbers have

a range of 9

a median of 8

a mode of 10

Find the value of  $x$ , the value of  $y$  and the value of  $z$

$x =$  .....

$y =$  .....

$z =$  .....

**(Total for Question 3 is 3 marks)**



4 Divya and Yuan each pay for a holiday at a special offer price.

<p><b>Divya's holiday</b></p> <p>Normal price: \$1600</p> <p>Special offer: 16% off the normal price</p>
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<p><b>Yuan's holiday</b></p> <p>Normal price: \$1400</p> <p>Special offer: <math>k\%</math> off the normal price</p>
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The amount that Divya pays is the same as the amount that Yuan pays.

Work out the value of  $k$

$k = \dots\dots\dots$

(Total for Question 4 is 4 marks)

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- 5  $C$  grams of chocolate is shared in the ratios 2:5:8  
The difference between the largest share and the smallest share is 390 grams.

Work out the value of  $C$

$$C = \dots\dots\dots$$

(Total for Question 5 is 3 marks)

- 6 Solve the simultaneous equations

$$\begin{aligned}x + 2y &= 15 \\4x - 6y &= 4\end{aligned}$$

Show clear algebraic working.

$$x = \dots\dots\dots$$

$$y = \dots\dots\dots$$

(Total for Question 6 is 3 marks)



7 (a) Write  $9.32 \times 10^{-5}$  as an ordinary number.

.....  
(1)

(b) Work out  $3 \times 10^5 - 6 \times 10^4$   
Give your answer in standard form.

.....  
(2)

(c) Work out  $(3 \times 10^{55}) \times (6 \times 10^{65})$   
Give your answer in standard form.

.....  
(2)

(Total for Question 7 is 5 marks)



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8 (a) Factorise fully  $18c^3d^2 - 21c^2$

.....  
(2)

(b) (i) Factorise  $y^2 - 3y - 18$

.....  
(2)

(ii) Hence, solve  $y^2 - 3y - 18 = 0$

.....  
(1)

(Total for Question 8 is 5 marks)



9 The diagram shows an isosceles triangle  $ABC$

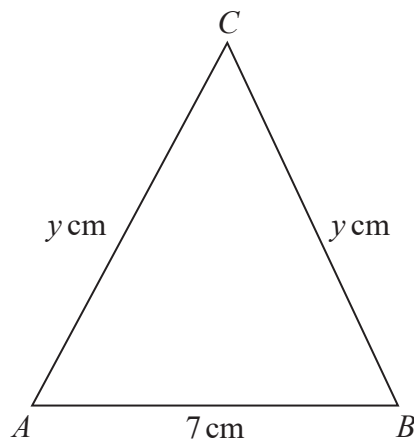


Diagram **NOT** accurately drawn

$$AB = 7 \text{ cm} \quad AC = BC = y \text{ cm}$$

The area of the triangle is  $42 \text{ cm}^2$

Work out the value of  $y$

$$y = \dots\dots\dots$$

(Total for Question 9 is 4 marks)

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10  $R$  and  $T$  are points on a circle, centre  $O$

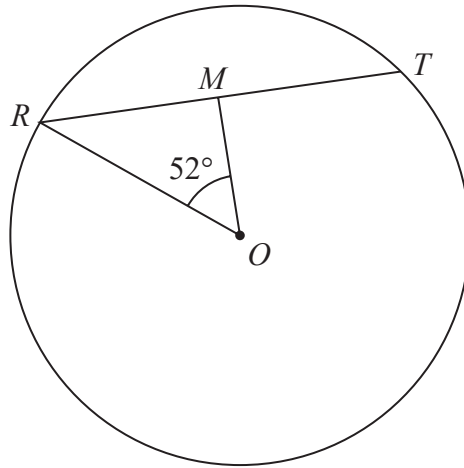


Diagram NOT accurately drawn

$RT = 12$  cm  
 $M$  is the midpoint of  $RT$   
Angle  $ROM = 52^\circ$

Work out the area of the circle.  
Give your answer correct to 3 significant figures.

..... cm<sup>2</sup>

(Total for Question 10 is 4 marks)



P 7 2 4 3 8 A 0 1 1 2 8