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0178/01  
October/November 2024  
1 hour  
Marks: 60

1 Evaluate.

(a)  $9 + 2 \times 8 \div 4 - 3$

..... [1]

(b)  $3\frac{1}{2} - 2\frac{1}{3}$

..... [2]

2 Express 108 as a product of its prime factors.

..... [2]

3 Write,

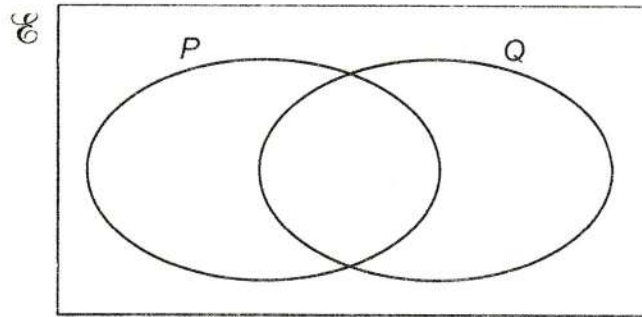
(a) 21054 correct to 3 significant figures,

..... [1]

(b) 0.075 as a fraction in its simplest form.

..... [2]

- 4 Shade the region represented by  $P' \cap Q$  in the following Venn diagram.



[1]

- 5 A farmer has 168 eggs in her basket.  
The eggs are transferred into trays.  
A tray of eggs holds 30 eggs.

Find the number of complete trays of eggs for the farmer.

[2]

6  $A = \begin{pmatrix} -1 & 2 \\ 5 & 1 \end{pmatrix}$        $B = \begin{pmatrix} 3 & 1 \\ 0 & 7 \end{pmatrix}$

Work out.

$A + B$

[2]

- 7 Work out and give your answer in standard form.

$3.6 \times 10^4 \div 1.2 \times 10^7$

[2]

8 Factorise completely.

(a)  $4ab - 20a^2$

..... [1]

(b)  $4ab + 2bc - 6a - 3c$

..... [2]

9 Solve.

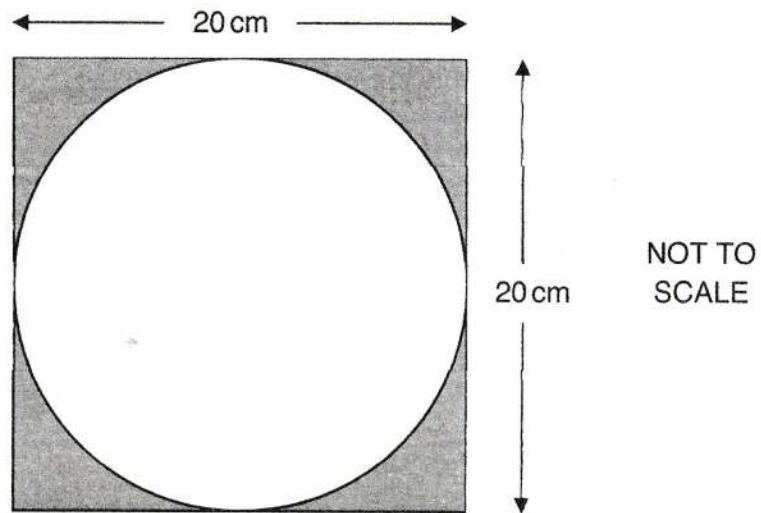
(a)  $x - 7 = 8$

$x =$  ..... [1]

(b)  $x^2 - 6x + 5 = 0$

$x =$  ..... Or  $x =$  ..... [3]

- 10 The diagram shows a circle inside a square.  
The circle touches all four sides of the square.  
The side of the square is 20 cm.

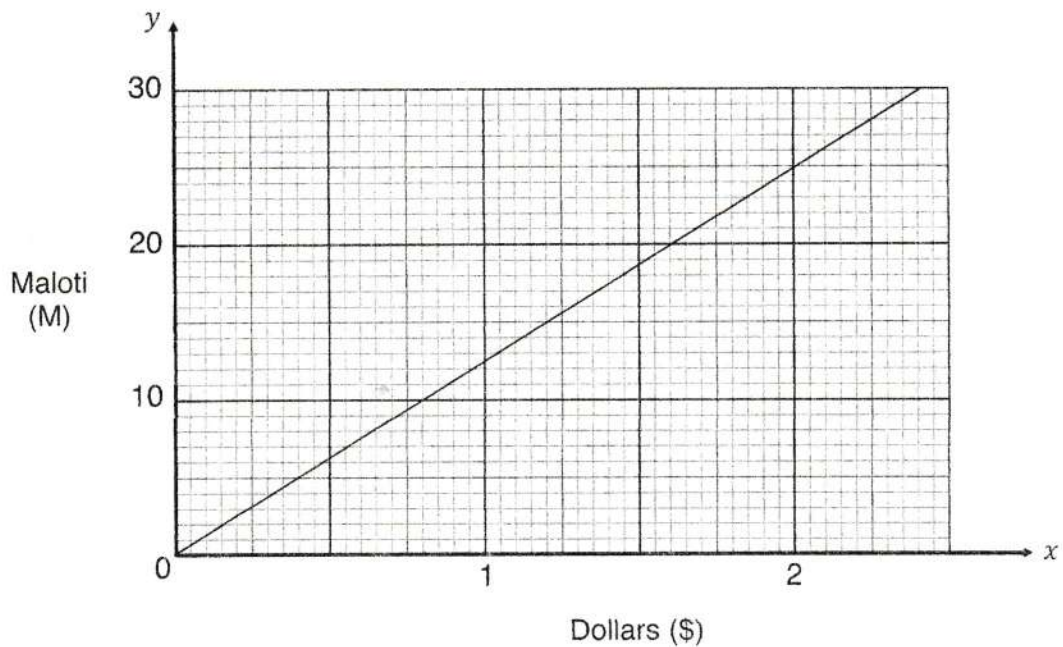


Use  $\pi$  as 3.142.

Calculate the shaded area.

.....cm<sup>2</sup> [3]

- 11 The diagram shows a graph used to convert between dollars (\$) and Maloti (M) on a particular day.



- (a) Use the graph to change M2500 into dollars.

\$..... [2]

- (b) On the same day Suping changes \$150 into Maloti.

Use the graph to calculate the amount he receives in Maloti.

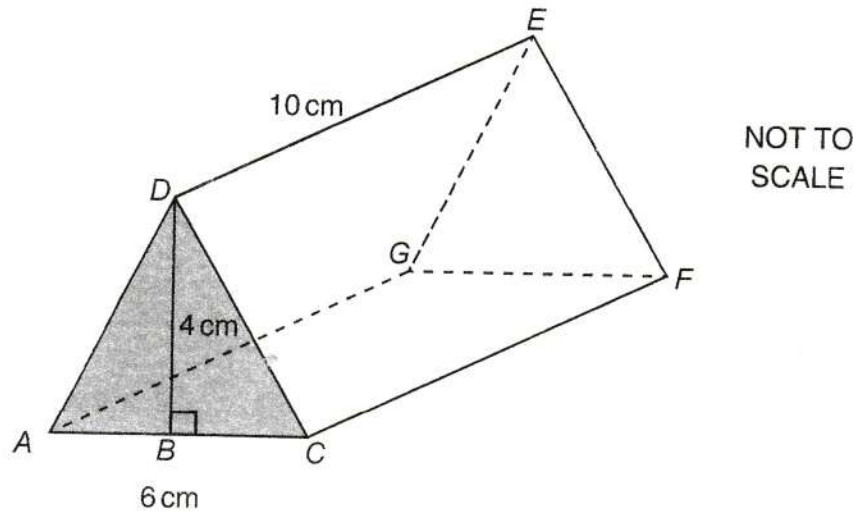
M..... [2]

- 12 The mass of a baby decreased from 7.5 kg to 6.3 kg.

Calculate the percentage decrease in baby's mass.

.....% [2]

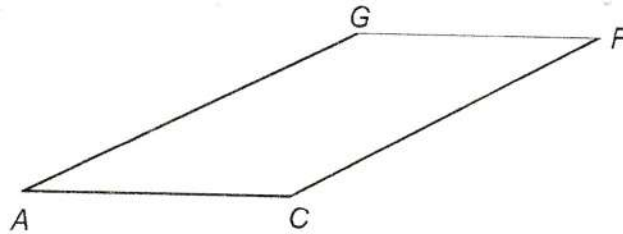
- 13 The diagram shows a triangular prism.  
 $AC = 6\text{ cm}$ ,  $BD = 4\text{ cm}$  and  $DE = 10\text{ cm}$ .



- (a) Calculate the volume of the prism.

..... $\text{cm}^3$  [2]

- (b) Complete a labelled sketch of the net for the prism.



[3]

- 14** A bag contains identical balls which are either red, black or yellow.

The probability of choosing a black ball is  $\frac{5}{12}$  and the probability of choosing a yellow ball is  $\frac{7}{18}$ .  
A ball is chosen at random from the bag.

- (a)** Show that the probability of choosing a red ball is  $\frac{7}{36}$ .

[2]

- (b)** Calculate the probability of choosing a red ball or a yellow ball.

..... [2]

- 15** Pule leaves home at 6.17 a.m. to school and arrives after 48 minutes.

Find the time at which he arrives at school.

..... [2]

- 16**  $f(x) = 2x + 3$

Find

- (a)**  $f(0)$ ,

$f(0) = \dots\dots\dots$  [1]

- (b)**  $p$  when  $f(p) = 11$ .

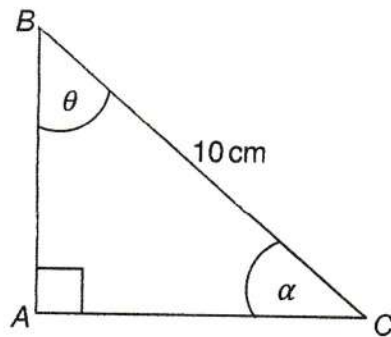
..... [2]

- 17 The length,  $l$ , of a desk measures 48.4 cm correct to the nearest millimetre.

Find the lower bound and the upper bound for the length.

.....  $\leq l <$  .....cm [2]

- 18 The diagram shows triangle  $ABC$  with  $BC = 10$  cm.  
Angles  $\theta$  and  $\alpha$  are marked in the triangle.

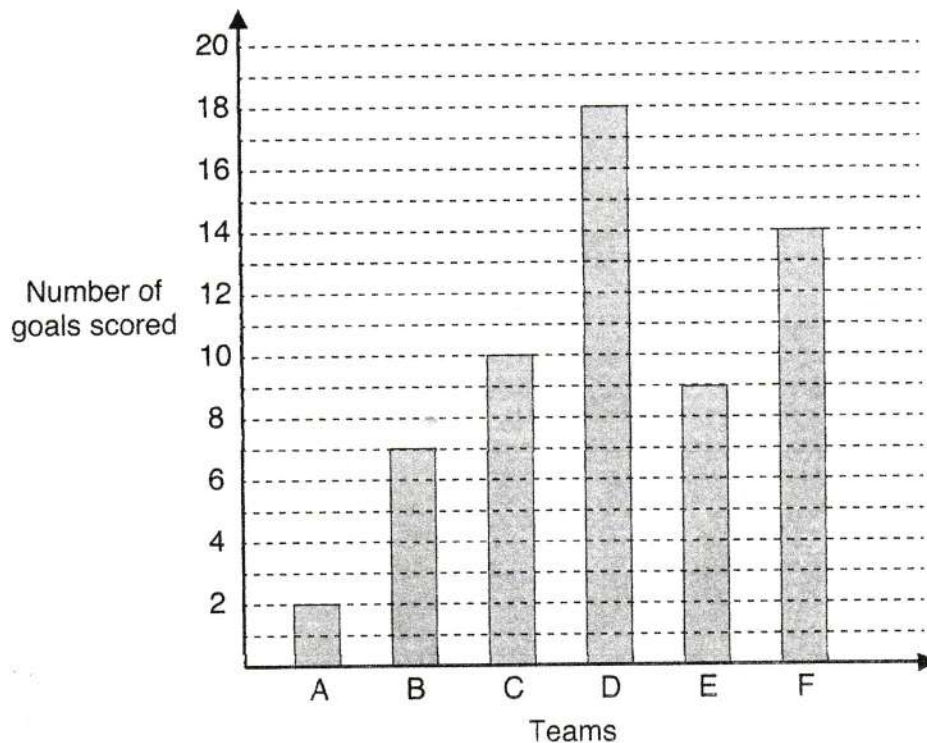


NOT TO  
SCALE

Find the value of  $\cos \alpha$  if  $\sin \theta = \frac{2}{5}$ .

..... [2]

- 19 The bar chart shows the number of goals scored by each team in a tournament.



- (a) Find the team which scored the least number of goals.

..... [1]

- (b) Calculate the mean score.

..... [3]

- 20 Solve the simultaneous equations.

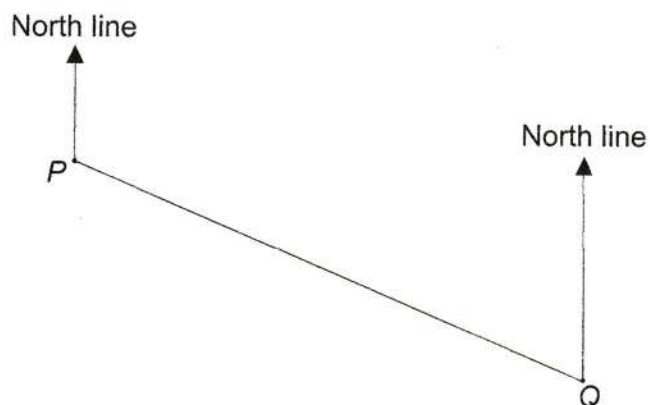
$$\frac{3}{4}x = 12y$$

$$x - 15y = 1$$

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

$$y = \dots\dots\dots [3]$$

- 21 The diagram shows points  $P$  and  $Q$  with the north lines.



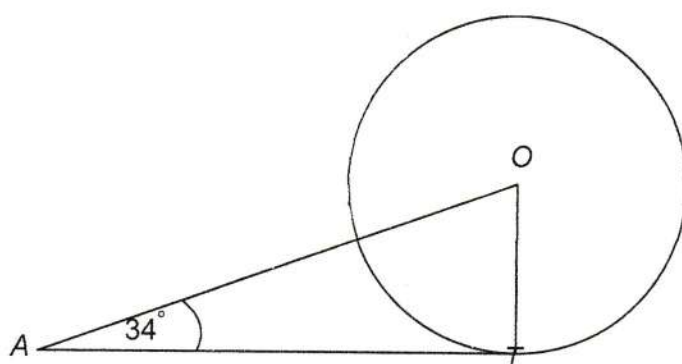
Measure and write the bearing of  $P$  from  $Q$ .

.....° [2]

- 22 The diagram shows a circle with centre  $O$ .

$AT$  is a tangent to the circle at  $T$ .

Angle  $OAT = 34^\circ$ .



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Calculate angle  $AOT$ .

Angle  $AOT = \text{.....}^\circ$  [2]

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