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

Additional Materials: Geometrical Instruments
Tracing paper (optional)



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,

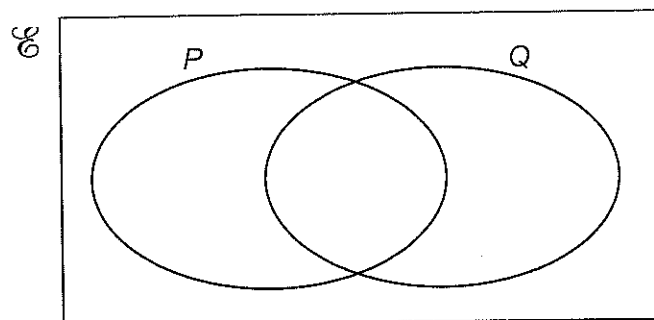
(a) 21054 correct to 3 significant figures,

..... [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.

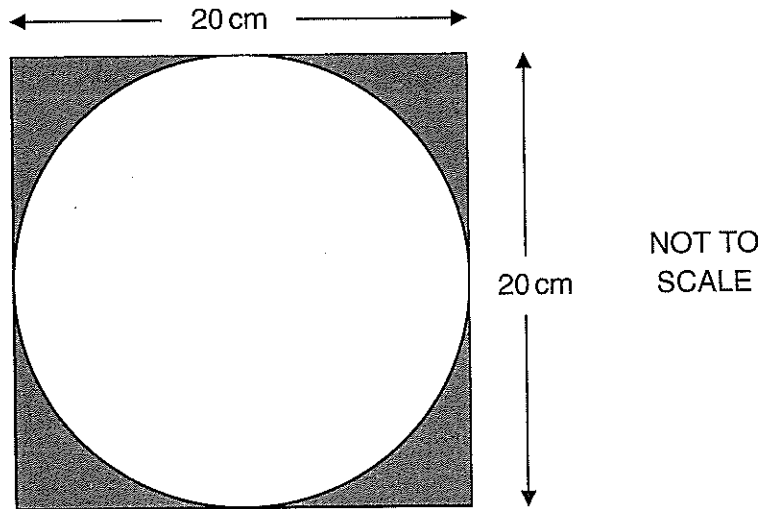
(a) $x - 7 = 8$

$x =$ [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.

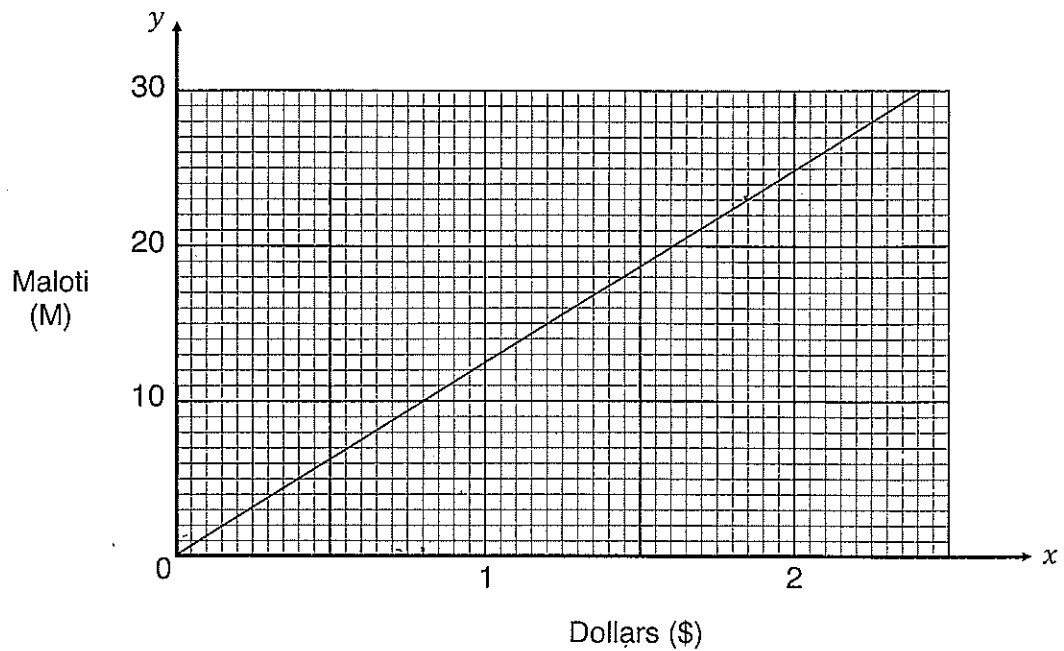


Use π as 3.142.

Calculate the shaded area.

.....cm² [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.

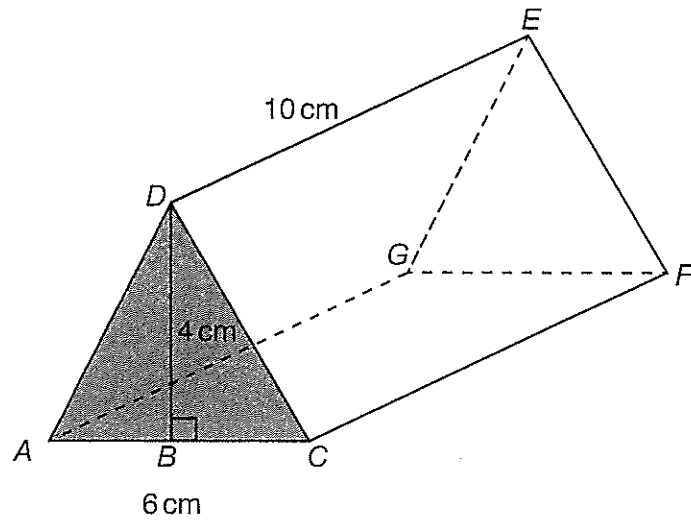
M..... [2]

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

Calculate the percentage decrease in baby's mass.

.....% [2]

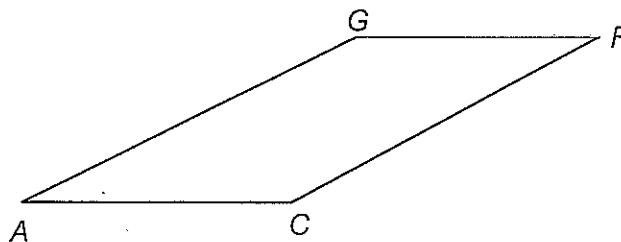
- 13 The diagram shows a triangular prism.
 $AC = 6\text{ cm}$, $BD = 4\text{ cm}$ and $DE = 10\text{ cm}$.



- (a) Calculate the volume of the prism.

..... 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 $f(p) = 11$.

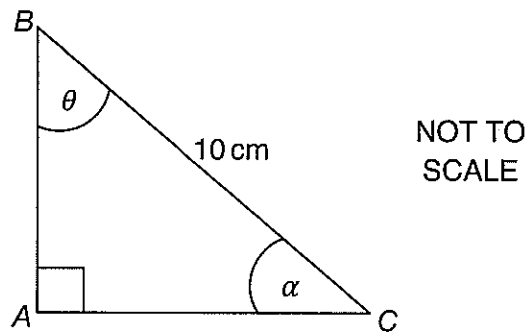
[2]

- 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]

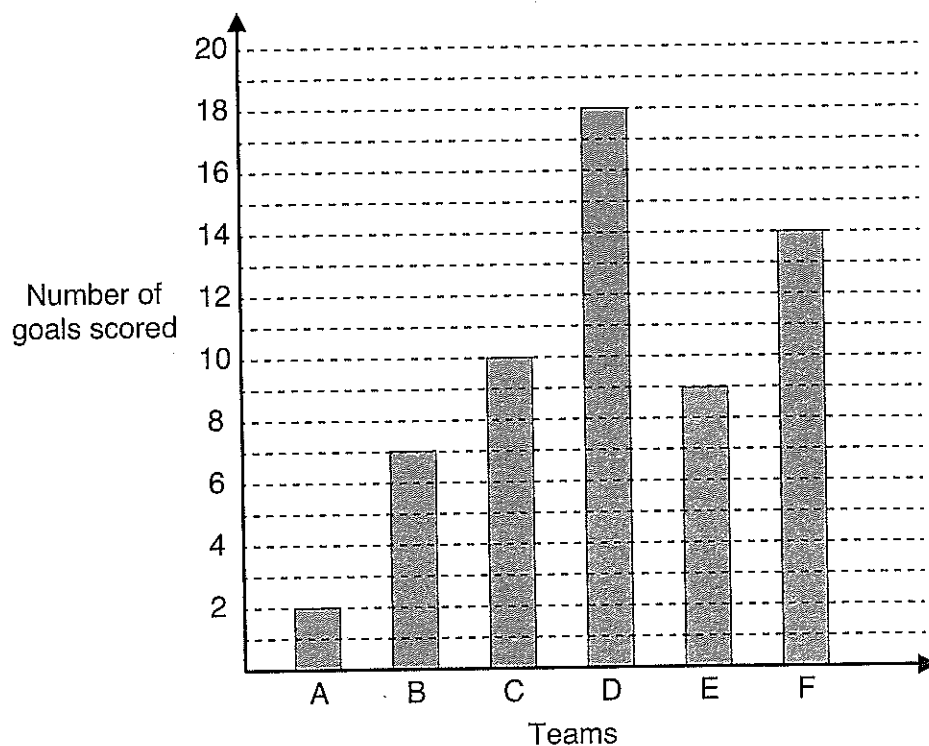
- 18 The diagram shows triangle ABC with $BC = 10$ cm.
Angles θ and α are marked in the triangle.



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.

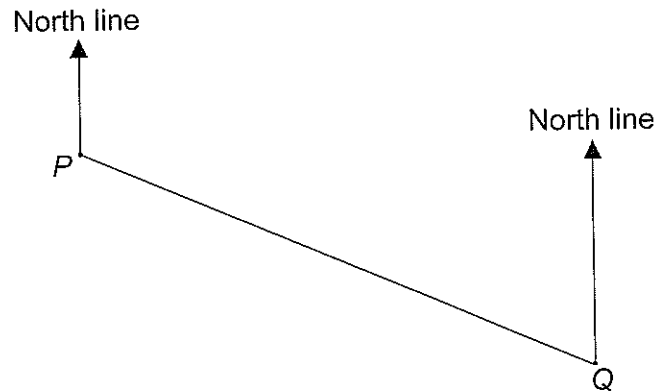
$$\frac{3}{4}x = 12y$$

$$x - 15y = 1$$

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

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

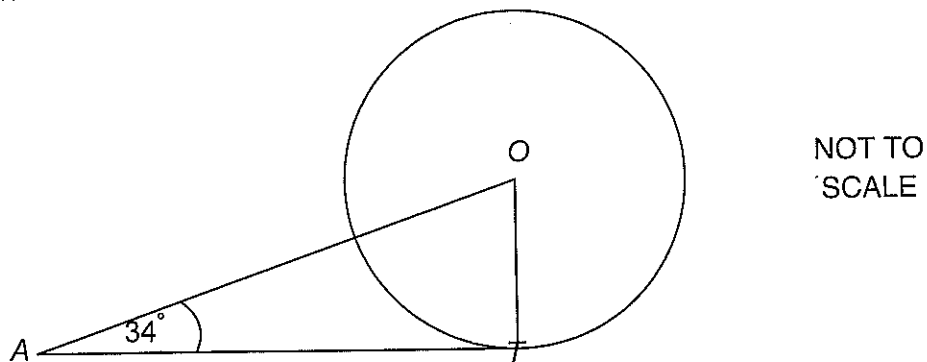
- 21 The diagram shows points P and Q with the north lines.



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 $OAT = 34^\circ$.



Calculate angle AOT .

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

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