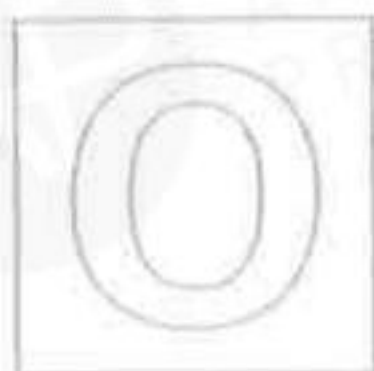




MINISTRY OF EDUCATION, SINGAPORE
in collaboration with
CAMBRIDGE ASSESSMENT INTERNATIONAL EDUCATION
General Certificate of Education Ordinary Level

CANDIDATE
NAME



CENTRE
NUMBER

S				
---	--	--	--	--

INDEX
NUMBER

--	--	--	--

MATHEMATICS

4052/01

Paper 1

October/November 2024

2 hours 15 minutes

Candidates answer on the Question Paper.

READ THESE INSTRUCTIONS FIRST

Write your Centre number, index number and name on all the work you hand in.
Write in dark blue or black pen.
You may use an HB pencil for any diagrams or graphs.
Do not use staples, paper clips, glue or correction fluid.
DO NOT WRITE ON ANY BARCODES.

Answer **all** the questions.

The number of marks is given in brackets [] at the end of each question or part question.

If working is needed for any question it must be shown with the answer.

Omission of essential working will result in loss of marks.

The total of the marks for this paper is 90.

The use of an approved scientific calculator is expected, where appropriate.

If the degree of accuracy is not specified in the question and if the answer is not exact, give the answer to three significant figures. Give answers in degrees to one decimal place.

For π , use either your calculator value or 3.142.

This document consists of **19** printed pages and **1** blank page.



Singapore Examinations and Assessment Board



Cambridge Assessment
International Education



Mathematical Formulae

Compound interest

$$\text{Total amount} = P \left(1 + \frac{r}{100} \right)^n$$

Mensuration

$$\text{Curved surface area of a cone} = \pi r l$$

$$\text{Surface area of a sphere} = 4\pi r^2$$

$$\text{Volume of a cone} = \frac{1}{3} \pi r^2 h$$

$$\text{Volume of a sphere} = \frac{4}{3} \pi r^3$$

$$\text{Area of triangle } ABC = \frac{1}{2} ab \sin C$$

$$\text{Arc length} = r\theta, \text{ where } \theta \text{ is in radians}$$

$$\text{Sector area} = \frac{1}{2} r^2 \theta, \text{ where } \theta \text{ is in radians}$$

Trigonometry

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$a^2 = b^2 + c^2 - 2bc \cos A$$

Statistics

$$\text{Mean} = \frac{\sum fx}{\sum f}$$

$$\text{Standard deviation} = \sqrt{\frac{\sum fx^2}{\sum f} - \left(\frac{\sum fx}{\sum f} \right)^2}$$



Answer **all** the questions.

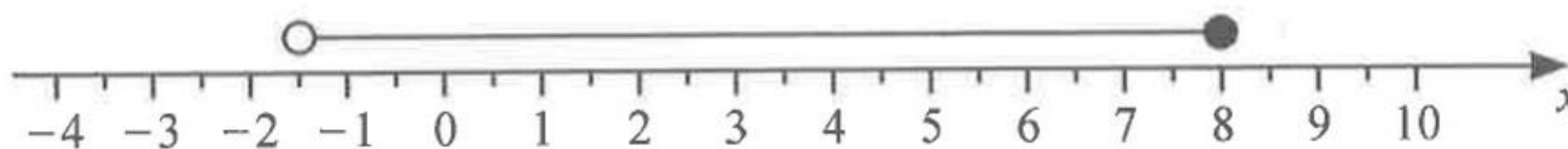
- 1 Simplify
- $3y - 7 - 5y + 4 + 4y - 2$
- .

$$3y - 5y + 4y - 7 + 4 - 2$$

$$= \underline{2y - 5}$$

Answer $2y - 5$ [2]

2



Write down the inequality that represents the numbers indicated on the number line.

Answer $-\frac{3}{2} < x \leq 8$ [1]

- 3 The cash price of a garden fountain is \$2250.
Arman buys the fountain using hire purchase.
She pays a deposit of 18% of the cash price plus 24 equal monthly payments of \$92.75.

(a) Calculate the total amount that Arman pays for the fountain.

$$(0.18 \times 2250) + (24 \times 92.75) = \underline{\$2631}$$

Answer \$ 2631 [2]

(b) Calculate the extra cost of using hire purchase as a percentage of the cash price.

$$\frac{2631 - 2250}{2250} \times 100\% = 16.933$$

$$= \underline{16.9\%}$$

Answer 16.9 % [2]THE ANNEXE PROJECT
EDUCATIONAL CENTRE

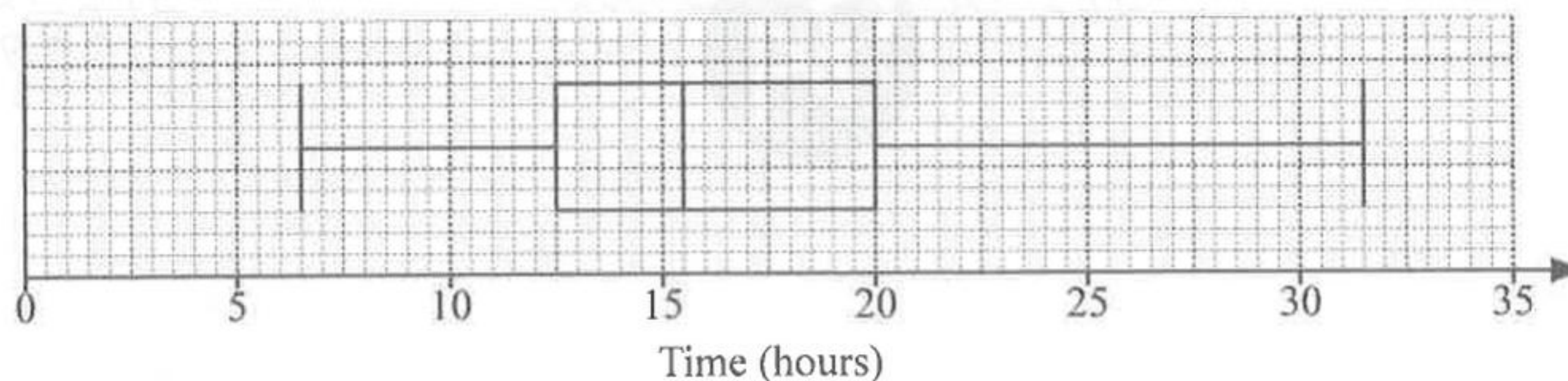
ESTD 2008

The suggested solutions are prepared by Mr Alvin Yeo. Mr Yeo will hold no liability for any errors.





4



The box-and-whisker plot gives information about the times, in hours, that 120 adults spent on social media in one week.

- (a) Use the box-and-whisker plot to find the median time.

Answer **15.5**hours [1]

- (b) Rishi says, "There are almost twice as many adults who spent more than 20 hours on social media as there are adults who spent less than 12.5 hours".

Is he correct?

Give a reason for your answer.

Rishi is incorrect. 20h is the upper quartile time while 12.5h is the lower quartile time. Hence, there is equal number of adults who spent more than 20h on social media as there are adults who spent less than 12.5h. [1]

- 5 Express as a single fraction in its simplest form $\frac{7x}{6} - \frac{3(x+1)}{8} - \frac{7x-6}{24}$.

$$\begin{aligned}
 & \frac{28x}{24} - \frac{9(x+1)}{24} - \frac{7x-6}{24} \\
 = & \frac{28x - 9x - 9 - 7x + 6}{24} \\
 = & \frac{12x - 3}{24} \\
 = & \frac{4x - 1}{8}
 \end{aligned}$$

Answer **$\frac{4x-1}{8}$** [3]

The suggested solutions are prepared by Mr Alvin Yeo. Mr Yeo will hold no liability for any errors.



6 A map of Singapore has a scale of 1 : 200 000.

- (a) The scale can be written in the form 1 cm : n km.

Find the value of n .

$$200\,000\text{ cm} = 2000\text{ m} = \underline{2\text{ km}}$$

Answer $n = \underline{2}$ [1]

- (b) The distance on the map from Changi Airport to Bukit Panjang is 18.9 cm.

Calculate the actual distance, in kilometres, between these two places.

$$18.9 \times 2 = \underline{37.8}$$

Answer $\underline{37.8}$ km [1]

- (c) The area of Singapore is 728.6 km².

Calculate the area, in square centimetres, of Singapore on the map.

$$1\text{ cm} : 2\text{ km}$$

$$728.6 \div 4 = \underline{182.15}$$

$$\therefore 1\text{ cm}^2 : 4\text{ km}^2$$

Answer $\underline{182.15}$ cm² [2]

7 Factorise.

- (a) $18a - 24b + 15c$

$$= \underline{3(6a - 8b + 5c)}$$

Answer $\underline{3(6a - 8b + 5c)}$ [1]

- (b) $3 + 2m^2xy - 2my - 3mx$

$$= 3 - 3mx + 2m^2xy - 2my$$

$$= 3(1 - mx) + 2my(mx - 1)$$

$$= 3(1 - mx) - 2my(1 - mx)$$

$$= \underline{(3 - 2my)(1 - mx)}$$

Answer $\underline{(3 - 2my)(1 - mx)}$ [2]

The suggested solutions are prepared by Mr Alvin Yeo. Mr Yeo will hold no liability for any errors.



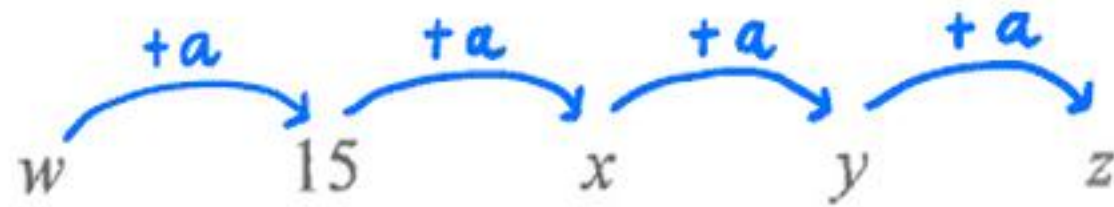


- 8 In this sequence, the difference between any two consecutive terms is the same number.

$w \quad 15 \quad x \quad y \quad z \quad \dots$

The sum of the first five terms is 105.

Find the values of w , x , y and z .



$$w + (w+a) + (w+2a) + (w+3a) + (w+4a) = 105$$

$$5w + 10a = 105$$

$$w + 2a = 21 \quad \text{--- (1)}$$

$$w + a = 15$$

$$a = 15 - w \quad \text{--- (2)}$$

Sub (2) into (1): $w + 2(15 - w) = 21$

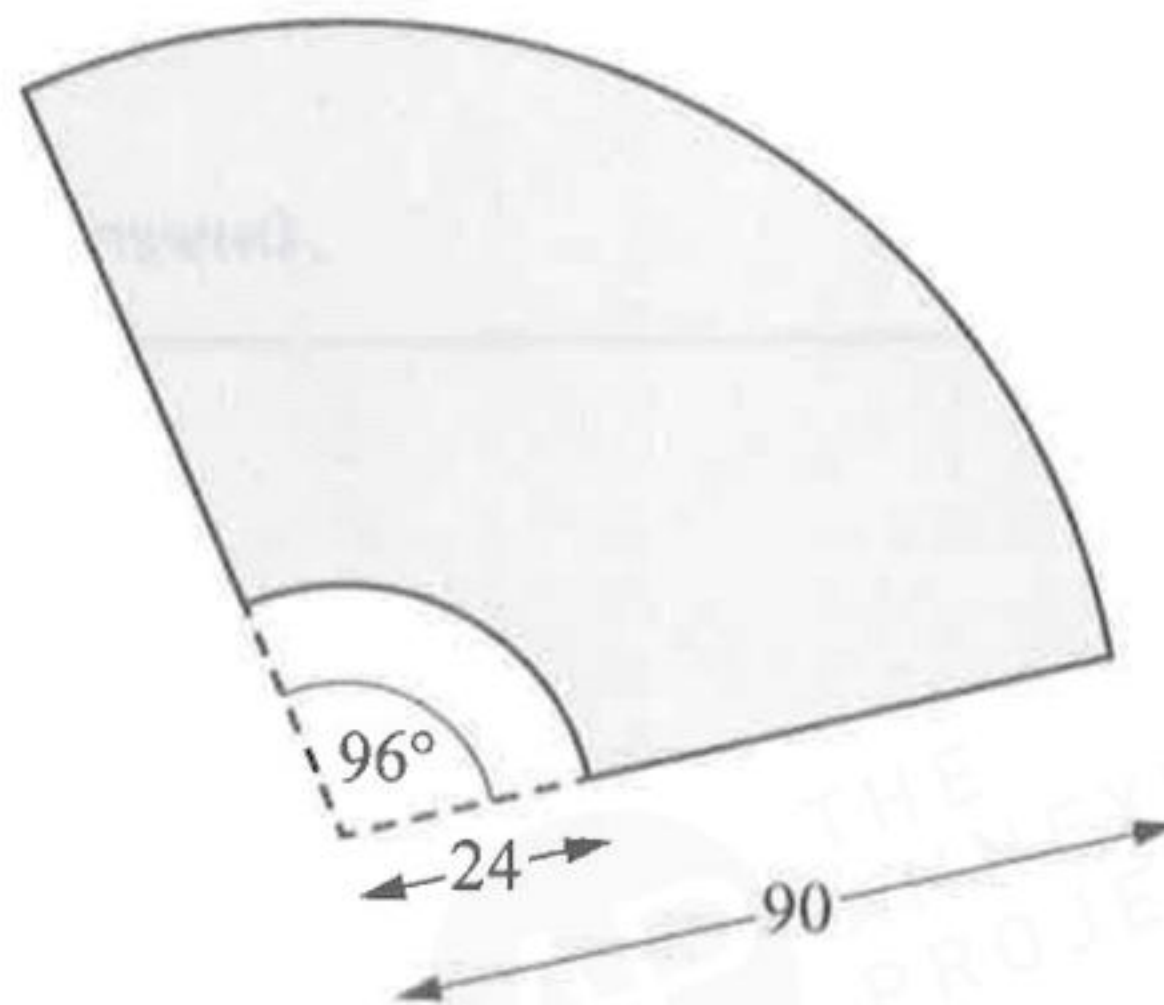
$$w - 2w = 21 - 30$$

$$w = 9$$

$$\therefore a = 6$$

Answer $w = 9 \quad x = 21 \quad y = 27 \quad z = 33$ [2]

9



In the diagram, the shaded area represents the area cleaned by a windscreen wiper. All lengths are in centimetres.

Calculate the shaded area.

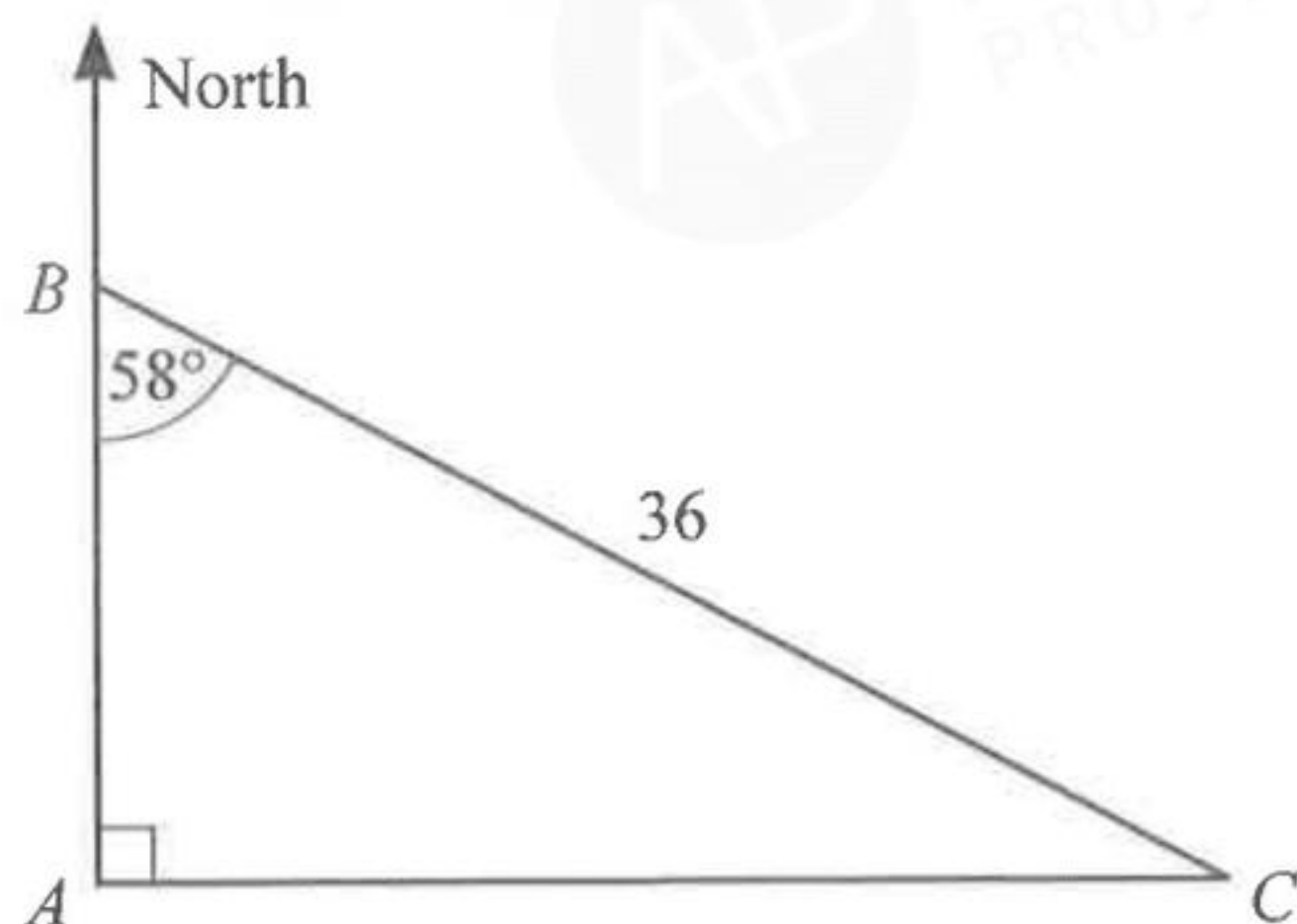
$$\left[\frac{96^\circ}{360^\circ} \times \pi(90^2) \right] - \left[\frac{96^\circ}{360^\circ} \times \pi(24^2) \right] = 6303.29$$

$$= \underline{6300 \text{ cm}^2}$$

Answer 6300 cm^2 [2]

The suggested solutions are prepared by Mr Alvin Yeo. Mr Yeo will hold no liability for any errors.





A , B and C are three points on horizontal ground.
Angle $ABC = 58^\circ$, angle $BAC = 90^\circ$ and $BC = 36$ m.

- (a) Calculate the distance AC .

$$\sin 58^\circ = \frac{AC}{36}$$

$$\therefore AC = 30.530$$

$$= \underline{30.5}$$

Answer $AC = \dots\dots\dots 30.5 \dots\dots\dots$ m [2]

- (b) Calculate the perimeter of triangle ABC .

$$\cos 58^\circ = \frac{AB}{36}$$

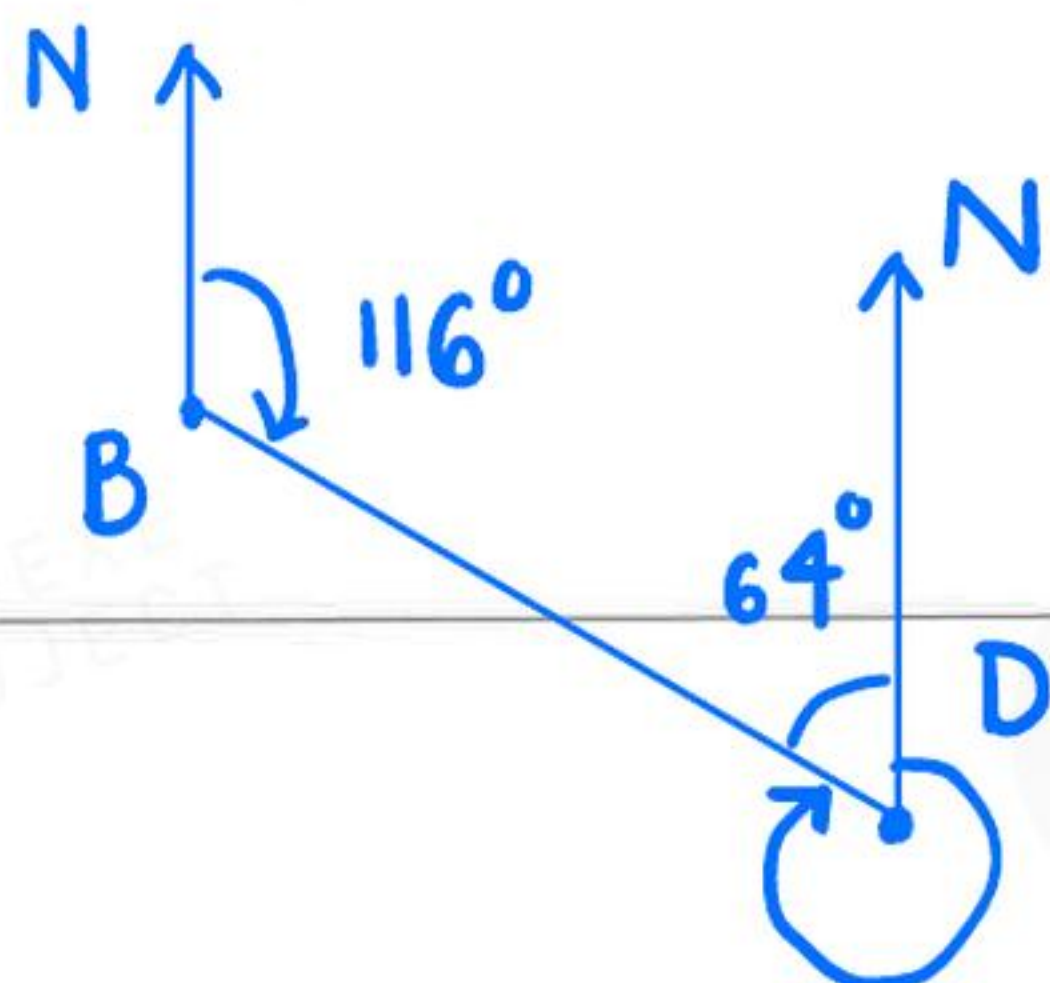
$$\therefore AB = 19.077$$

$$\text{Perimeter} = 19.077 + 30.530 + 36 = \underline{85.607}$$

Answer $\dots\dots\dots 85.6 \dots\dots\dots$ m [2]

- (c) The point D is on a bearing of 116° from B .

Find the bearing of B from D .



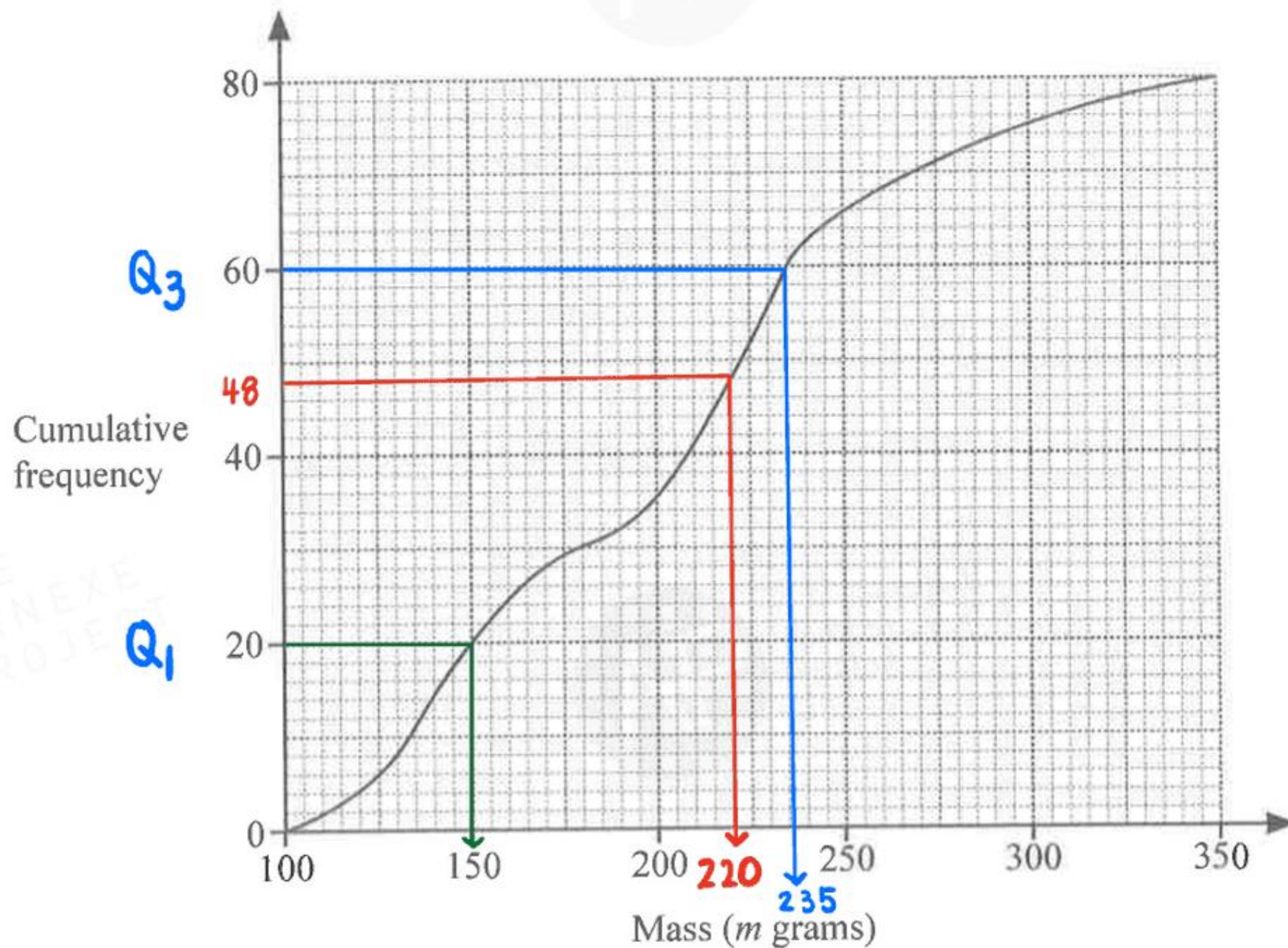
$$180^\circ - 116^\circ = 64^\circ$$

$$360^\circ - 64^\circ = \underline{296^\circ}$$

Answer $\dots\dots\dots 296^\circ \dots\dots\dots$ [1]



- 11 A group of 80 people estimated the mass, m grams, of a potato. The cumulative frequency diagram represents their estimates.



- (a) Use the diagram to find the interquartile range of the estimated masses.

Q_3 : Upper Quartile = 235

Q_1 : Lower Quartile = 150

$$Q_3 - Q_1 = 235 - 150 = 85$$

Answer 85 g [2]

- (b) One of these people is chosen at random. The probability that the person's estimate is greater than k grams is $\frac{2}{5}$.

Find the value of k .

$\frac{2}{5} \times 80 = 32$ people estimated to be greater than k grams.

$$80 - 32 = 48$$

from diagram, $k = 220$ g

Answer $k =$ 220 [2]



THE ANNEXE PROJECT
EDUCATIONAL CENTRE

ESTD 2008

The suggested solutions are prepared by Mr Alvin Yeo. Mr Yeo will hold no liability for any errors.



12

$$D = \frac{a}{b} - bc^2$$

- (a) Find D when $a = 98.31$, $b = 18.31$ and $c = 0.361$.
Give your answer correct to 2 significant figures.

$$D = \frac{98.31}{18.31} - (18.31)(0.361)^2 = 2.9830 = 3.0 \text{ (2 s.f.)}$$

$$\text{Answer } D = \dots\dots\dots 3.0 \quad [2]$$

- (b) Rearrange the formula to make c the subject.

$$bc^2 = \frac{a}{b} - D$$

$$c^2 = \frac{\frac{a}{b} - D}{b}$$

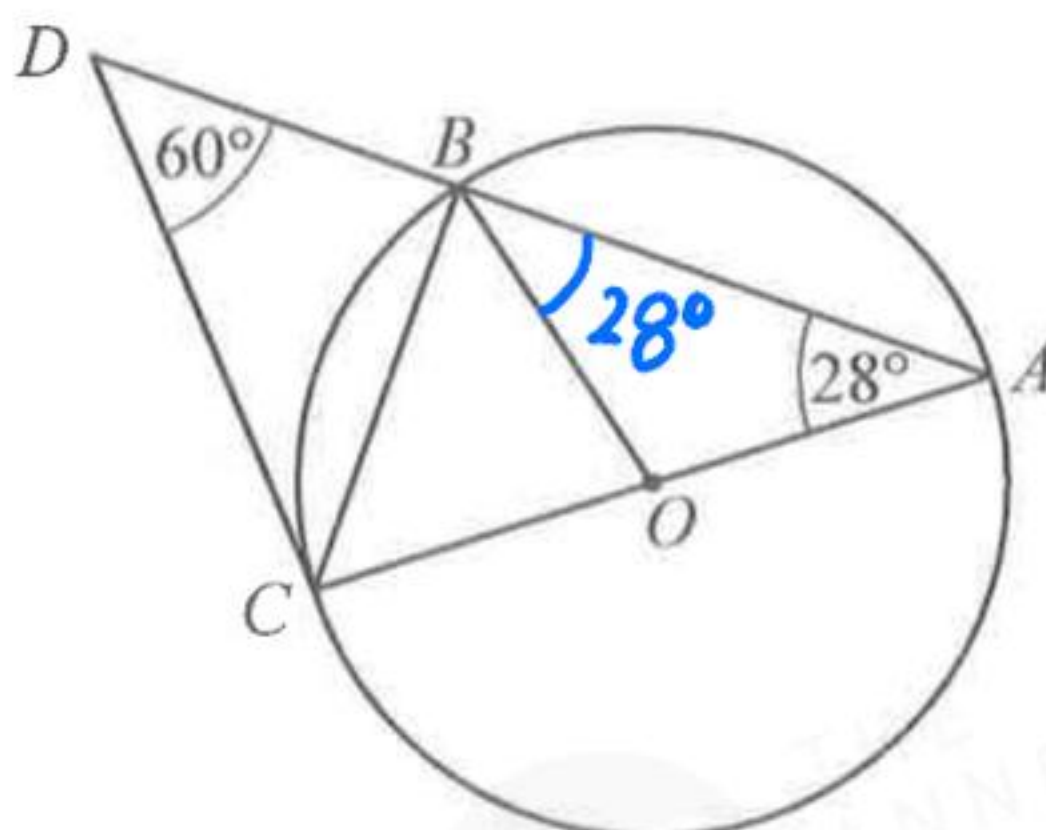
$$c^2 = \frac{a - bD}{b^2}$$

$$c = \pm \sqrt{\frac{a - bD}{b^2}}$$

$$\pm \sqrt{\frac{a - bD}{b^2}}$$

$$\text{Answer } c = \dots\dots\dots \pm \sqrt{\frac{a - bD}{b^2}} \quad [3]$$

13



A , B and C are points on a circle, centre O .
 ABD and AOC are straight lines, angle $CAB = 28^\circ$ and angle $BDC = 60^\circ$.

- (a) Find angle OBC .
Give a reason for each step of your working.

$$\angle OBA = 28^\circ \text{ (base } \angle \text{s of isos. } \triangle, OA = OB)$$

$$\angle CBA = 90^\circ \text{ (right angled } \triangle \text{ in semi-circle)}$$

$$\therefore \angle OBC = 90^\circ - 28^\circ = 62^\circ$$

[2]

- (b) Explain why DC is **not** a tangent to the circle.

$$\angle DCA = 180^\circ - 60^\circ - 28^\circ = 92^\circ \text{ (sum of } \angle \text{s in } \triangle \text{ is } 180^\circ)$$

$$\therefore DC \text{ is not tangent to circle at } C.$$

[1]





14 Solve these simultaneous equations.

$$6x + 5y = 2 \quad \text{---} \textcircled{1}$$

$$10x - 4y = 65 \quad \text{---} \textcircled{2}$$

You must show your working.

$$\textcircled{1} \times 4 : \quad 24x + 20y = 8 \quad \text{---} \textcircled{3}$$

$$\textcircled{2} \times 5 : \quad 50x - 20y = 325 \quad \text{---} \textcircled{4}$$

$$\textcircled{3} + \textcircled{4} : \quad 74x = 333$$

$$\underline{x = 4.5}$$

$$\underline{\text{Sub } x = 4.5 \text{ into } \textcircled{1} : \quad 6(4.5) + 5y = 2}$$

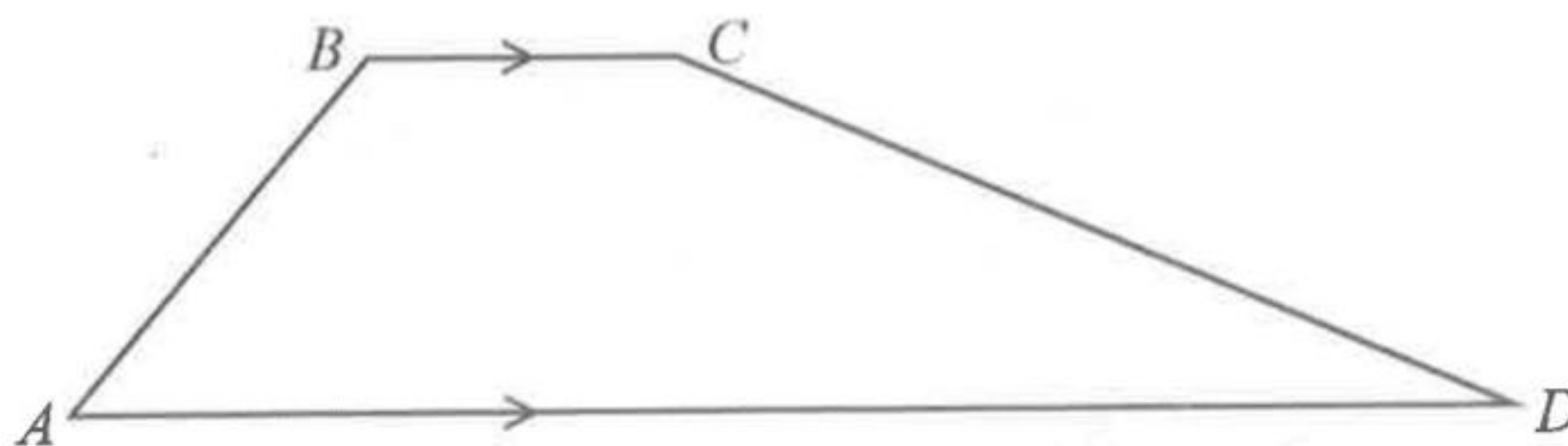
$$5y = 2 - 27$$

$$5y = -25$$

$$\underline{y = -5}$$

$$\begin{aligned} \text{Answer } x &= \dots\dots\dots 4.5 \\ y &= \dots\dots\dots -5 \end{aligned} \quad [3]$$

15



$ABCD$ is a trapezium.

The ratio angle CBA : angle BAD : angle $ADC = 9 : 3 : 2$.

Find angle BCD .

$$\angle CBA : \angle BAD$$

$$9 : 3$$

$$12 \text{ units} = 180^\circ \quad (\text{int. } \angle s, BC \parallel AD)$$

$$1 \text{ unit} = 15^\circ$$

$$\text{Hence, } \angle ADC = 2 \times 15^\circ = 30^\circ$$

$$\therefore \angle BCD = 180^\circ - 30^\circ = \underline{150^\circ} \quad (\text{int. } \angle s, BC \parallel AD)$$

$$\text{Answer Angle } BCD = \dots\dots\dots 150^\circ \quad [3]$$

The suggested solutions are prepared by Mr Alvin Yeo. Mr Yeo will hold no liability for any errors.



- 16 Alice invested some money into an account paying compound interest at 3.2% per year. After 5 years, the money had earned **total interest** of \$2132.16.

Calculate the amount of money Alice invested in the account.

$$\text{Total amount} = P \left(1 + \frac{r}{100} \right)^n$$

$$P + 2132.16 = P \left(1 + \frac{3.2}{100} \right)^5$$

$$P + 2132.16 = 1.17057 P$$

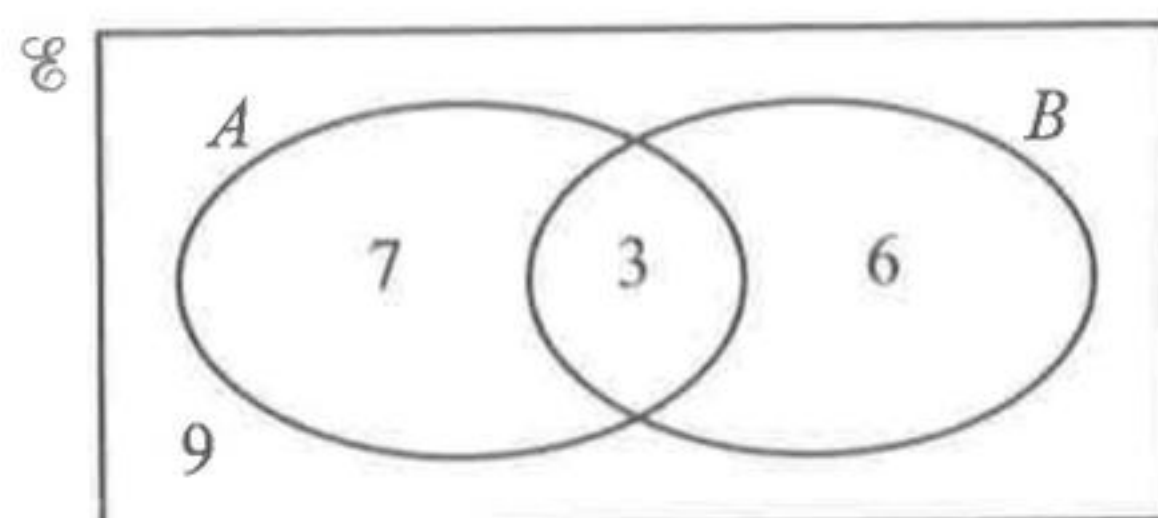
$$1.17057 P - P = 2132.16$$

$$0.17057 P = 2132.16$$

$$\therefore P = \frac{2132.16}{0.17057} = \$12500 \text{ (nearest dollar)}$$

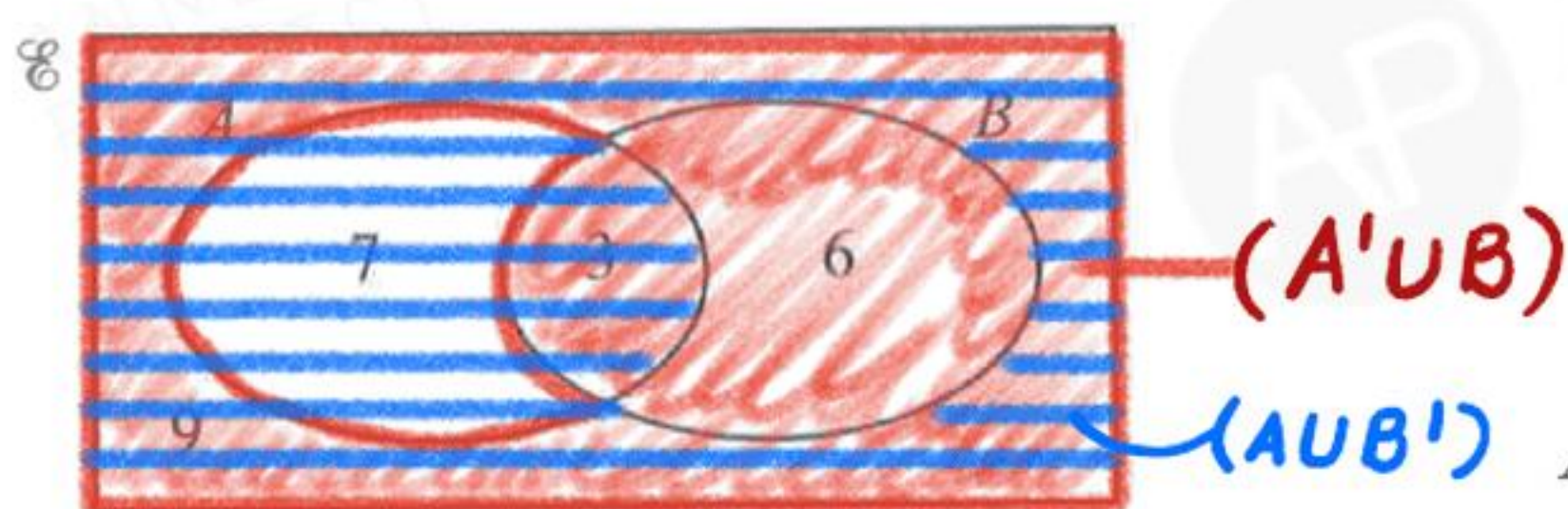
Answer \$ 12 500 [3]

- 17 The Venn diagram shows the universal set and the number of elements in each of its subsets.



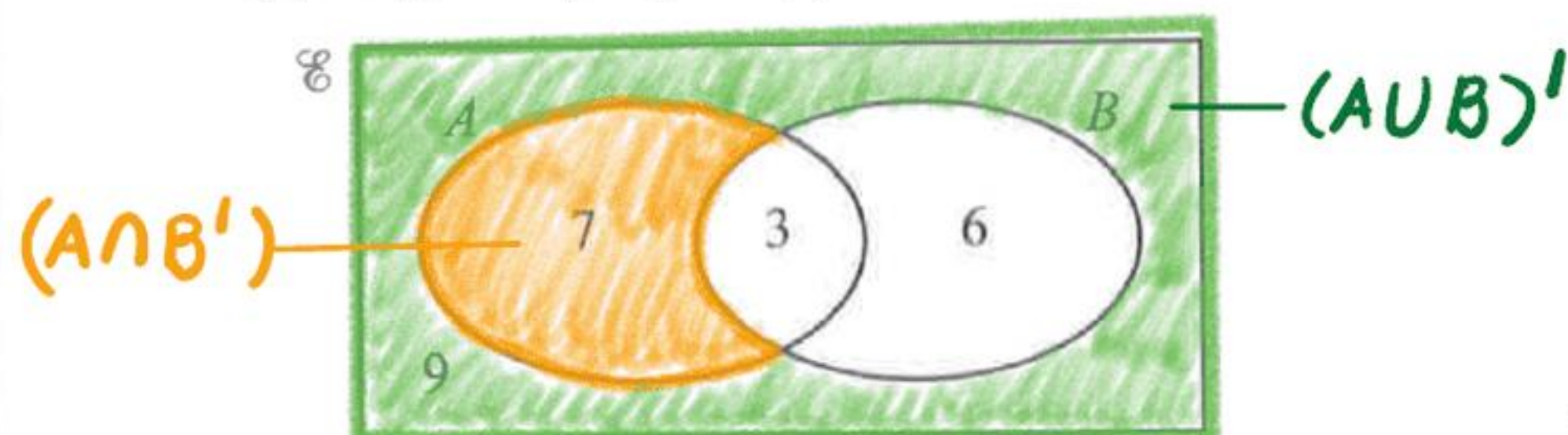
Find the value of

(a) $n((A' \cup B) \cap (A \cup B')) = 9 + 3 = 12$



Answer 12 [1]

(b) $n((A \cap B') \cup (A \cup B)') = 9 + 7$



Answer 16 [1]

The suggested solutions are prepared by Mr Alvin Yeo. Mr Yeo will hold no liability for any errors.



18 (a) Write 263 in standard form.

Answer 2.63×10^2 [1]

(b) (i) Write 3.4×10^{99} in the form $A \times 10^{100}$.

$$\frac{3.4}{10} \times 10^{100}$$

$$= 0.34 \times 10^{100}$$

Answer 0.34×10^{100} [1]

(ii) Work out $(4.7 \times 10^{100}) + (3.4 \times 10^{99})$.
Give your answer in standard form.

$$(4.7 \times 10^{100}) + (0.34 \times 10^{100})$$

$$= (4.7 + 0.34) \times 10^{100}$$

$$= 5.04 \times 10^{100}$$

Answer 5.04×10^{100} [1]

19 Written as a product of its prime factors, $720 = 2^4 \times 3^2 \times 5$.

The highest common factor (HCF) of 720 and N is $2^4 \times 5$.

The lowest common multiple (LCM) of 720 and N is $2^6 \times 3^2 \times 5^3$.

Find the value of N .

$$720 = 2^4 \times 3^2 \times 5$$

$$N = 2^4 \times 2^2 \times 5 \times 5^2$$

$$\text{HCF} = 2^4 \times 5$$

$$\therefore N = 2^6 \times 5^3 = 8000$$

Answer $N = 8000$ [2]

20

$$\sin(2x^\circ) = 0.561$$

Find two possible values of x in the range $0 \leq x \leq 90$.

Step 1: Basic angle for $2x^\circ = \sin^{-1} 0.561$

$$2x^\circ = 34.125^\circ$$

Step 2: $2x^\circ$ lies in 1st quadrant or 2nd quadrant.

$$2x^\circ = 34.125^\circ \text{ or } 2x^\circ = 180^\circ - 34.125^\circ$$

$$x = 17.1^\circ \text{ or } 72.9^\circ$$

Answer $x = 17.1^\circ$ or $x = 72.9^\circ$ [2]



21

12

24

8

21

28

17

 $2p$ $4p^2$

The list shows information about the number of text messages Li received each day for 8 days.

The mean number of text messages per day is 17.5 .

(a) Show that $p = 2.5$.

Answer
$$\frac{(12 + 24 + 8 + 21 + 28 + 17) + 2p + 4p^2}{8} = 17.5$$

$$\therefore 110 + 2p + 4p^2 = 140$$

$$4p^2 + 2p - 30 = 0$$

$$2p^2 + p - 15 = 0$$

$$(2p - 5)(p + 3) = 0$$

$$\underline{p = 2.5} \quad \text{or} \quad p = -3 \quad (p \geq 0)$$

(rej.)

[3]

(b) The standard deviation for Li's data is 7.89 .

For the same 8 days, Li's sister also received some text messages.
For her data, the mean is 20 and the standard deviation is 9.51 .

By commenting on (1.) the means and (2.) the standard deviations, compare the distributions for the number of text messages received by Li and his sister.

1. Li's sister receives more messages than Li during those 8 days as Li's sister's mean is higher.
2. The number of text messages Li receives is more consistent than Li's sister, as Li's standard deviation is smaller.

[2]

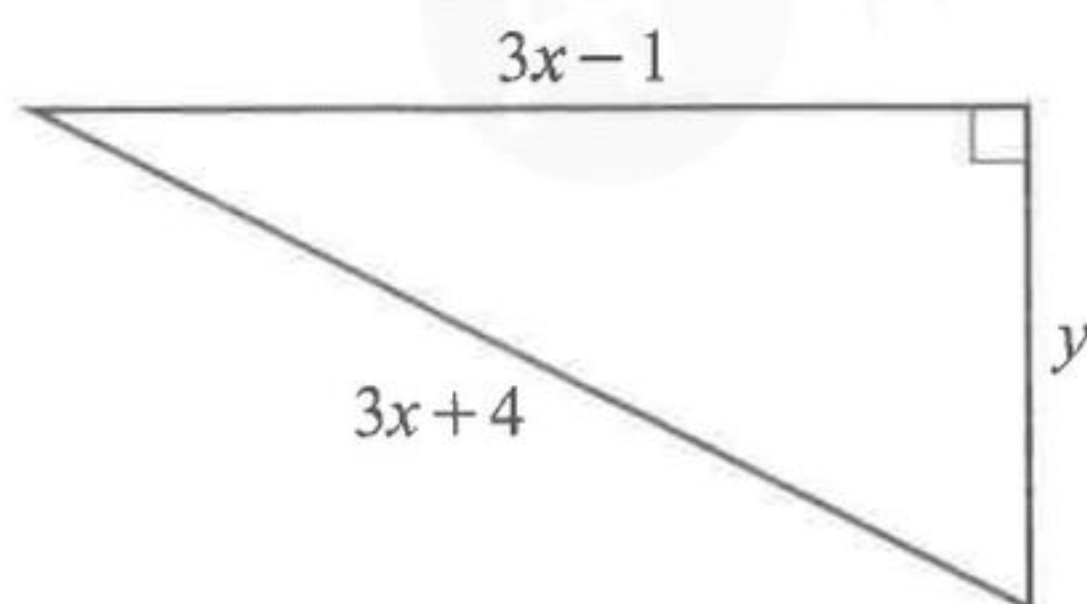
22 Expand $(2x - 3)(3x^2 + 2x - 5)$.

$$= 6x^3 + 4x^2 - 10x - 9x^2 - 6x + 15$$

$$= \underline{6x^3 - 5x^2 - 16x + 15}$$

Answer $\underline{6x^3 - 5x^2 - 16x + 15}$ [2]





The right-angled triangle has sides $(3x-1)$, $(3x+4)$ and y , where x and y are integers.

(a) Show that y is an odd number.

Answer

$$\begin{aligned}(3x-1)^2 + y^2 &= (3x+4)^2 \\ 9x^2 - 6x + 1 + y^2 &= 9x^2 + 24x + 16 \\ y^2 &= 30x + 15 \\ y^2 &= 15(2x+1)\end{aligned}$$

For any integers, $2x$ is always even and $2x+1$ is always odd.

$\therefore 15(2x+1)$ is always odd.

Hence, y^2 is always odd.

Since odd $\times$ odd is always odd, y is an odd number.



Important Concept:

1. odd $\times$ odd = odd
2. even $\times$ even = even
3. odd $\times$ even = even

[4]

(b) Find a possible value of y and the corresponding value of x .

$$\begin{aligned}\text{Let } y &= 15, \text{ then } 15^2 = 15(2x+1) \\ 15 &= 2x+1 \\ x &= 7\end{aligned}$$

Answer $x = 7$ $y = 15$ [2]



THE ANNEXE PROJECT
EDUCATIONAL CENTRE

ESTD 2008

The suggested solutions are prepared by Mr Alvin Yeo. Mr Yeo will hold no liability for any errors.



24 Simplify $\frac{3x^2 + 6x}{x^4 - 16}$.

$$\frac{3x(x+2)}{(x^2-4)(x^2+4)} = \frac{3x\cancel{(x+2)}}{(x-2)\cancel{(x+2)}(x^2+4)} = \frac{3x}{(x-2)(x^2+4)}$$

Answer $\frac{3x}{(x-2)(x^2+4)}$ [3]

25 Solve the equation $x^2 - 12x + 17 = 0$ by completing the square.
Give your solutions correct to 2 decimal places.

$$\begin{aligned}(x-6)^2 - 6^2 + 17 &= 0 \\(x-6)^2 &= 19 \\x-6 &= \pm\sqrt{19} \\\therefore x &= 6 \pm \sqrt{19} \\&= \underline{1.64 \text{ or } 10.36}\end{aligned}$$

Answer $x = 1.64$ or 10.36 [3]



THE ANNEXE PROJECT
EDUCATIONAL CENTRE

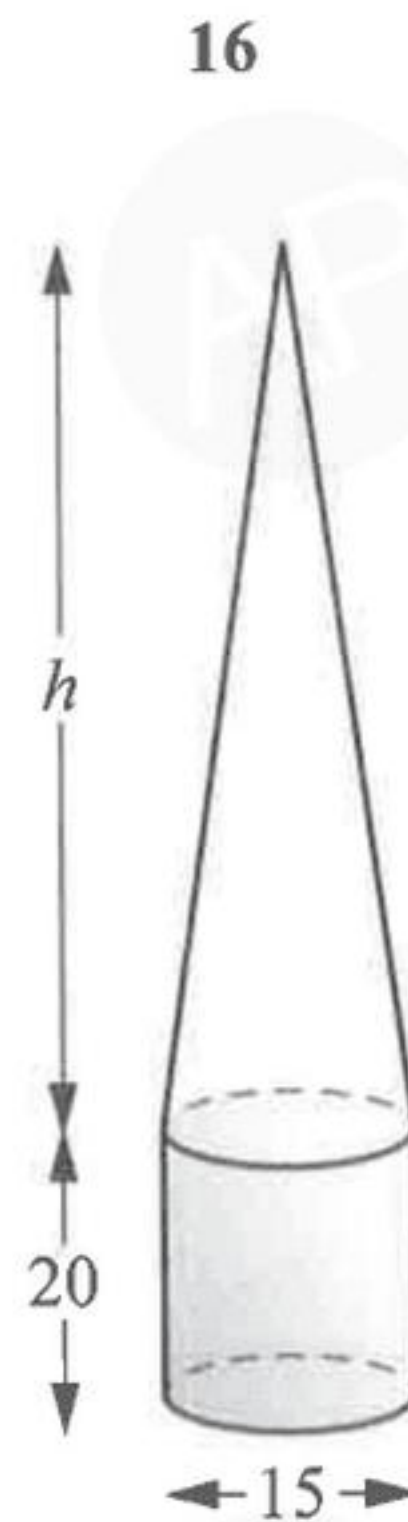
ESTD 2008

The suggested solutions are prepared by Mr Alvin Yeo. Mr Yeo will hold no liability for any errors.





26 (a)



A sealed container is made by joining a cylinder to a cone.
The cylinder has diameter 15 cm and height 20 cm.
The cone has diameter 15 cm and height h cm.

The container is half full of water.
The water exactly fills the cylinder, as shown.

Find the value of h .

$$\text{Vol. of cone} = \text{Vol. of cylinder}$$

$$\frac{1}{3} \times \pi r^2 h = \pi r^2 \times 20$$

$$\underline{h = 60 \text{ cm}}$$

Answer $h = \dots\dots\dots 60 \text{ cm} \dots\dots\dots$ [2]



THE ANNEXE PROJECT
EDUCATIONAL CENTRE

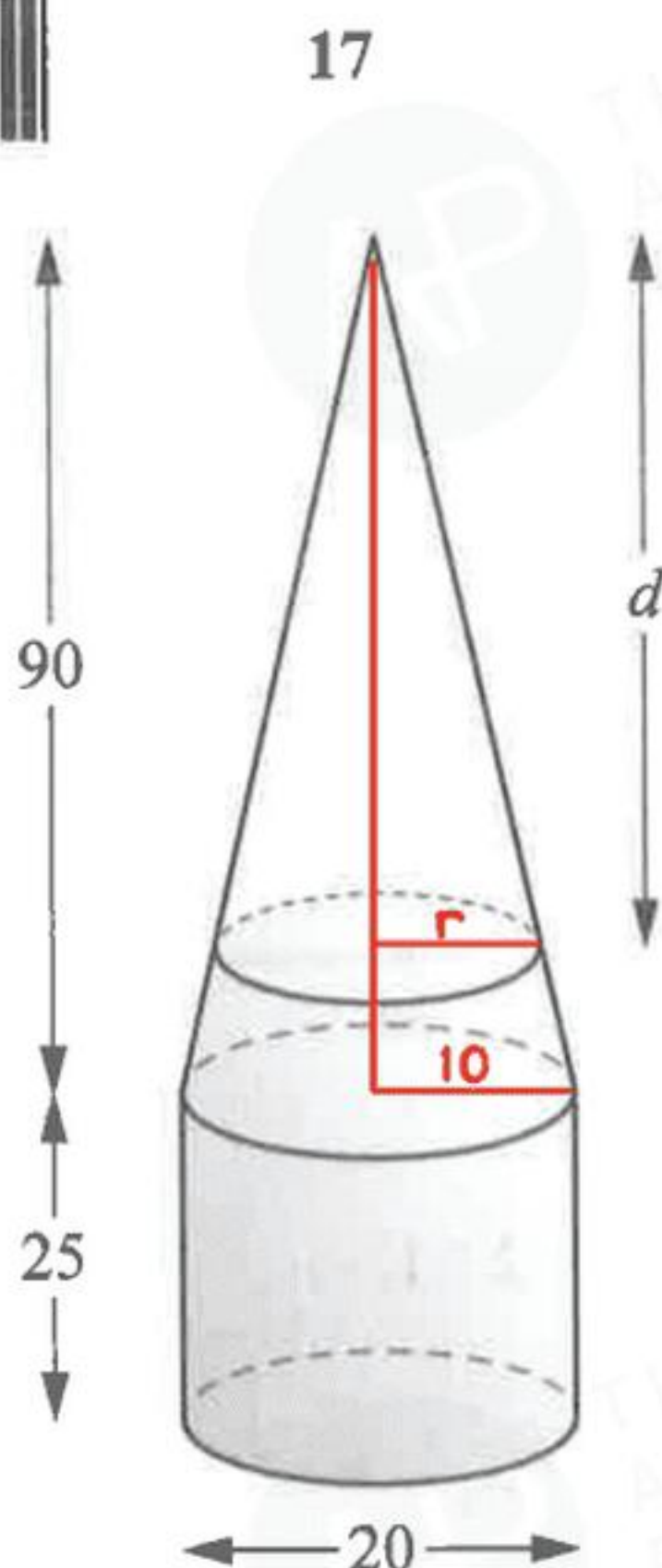
ESTD 2008

The suggested solutions are prepared by Mr Alvin Yeo. Mr Yeo will hold no liability for any errors.





(b)



A second container is also made from a cylinder and cone, each with diameter 20 cm. The height of the cylinder is 25 cm and the height of the cone is 90 cm.

The container is half full of water, as shown.

Calculate the depth, d cm, of the empty space.

Step 1:

By similar $\triangle$:

$$\begin{aligned}\frac{d}{90} &= \frac{r}{10} \\ 10d &= 90r \\ r &= \frac{d}{9}\end{aligned}$$

Step 2 :

vol. of empty space = vol. of water

$$\frac{1}{3}\pi r^2 d = \pi(10^2)(25) + \left[\frac{1}{3}\pi(10^2)(90) - \frac{1}{3}\pi r^2 d\right]$$

$$\frac{1}{3}\left(\frac{d}{9}\right)^2 d = 2500 + 3000 - \frac{1}{3}\left(\frac{d}{9}\right)^2 d$$

$$\frac{2}{3}\left(\frac{d}{9}\right)^2 d = 5500$$

$$\frac{2}{243} d^3 = 5500$$

$$d^3 = 668250$$

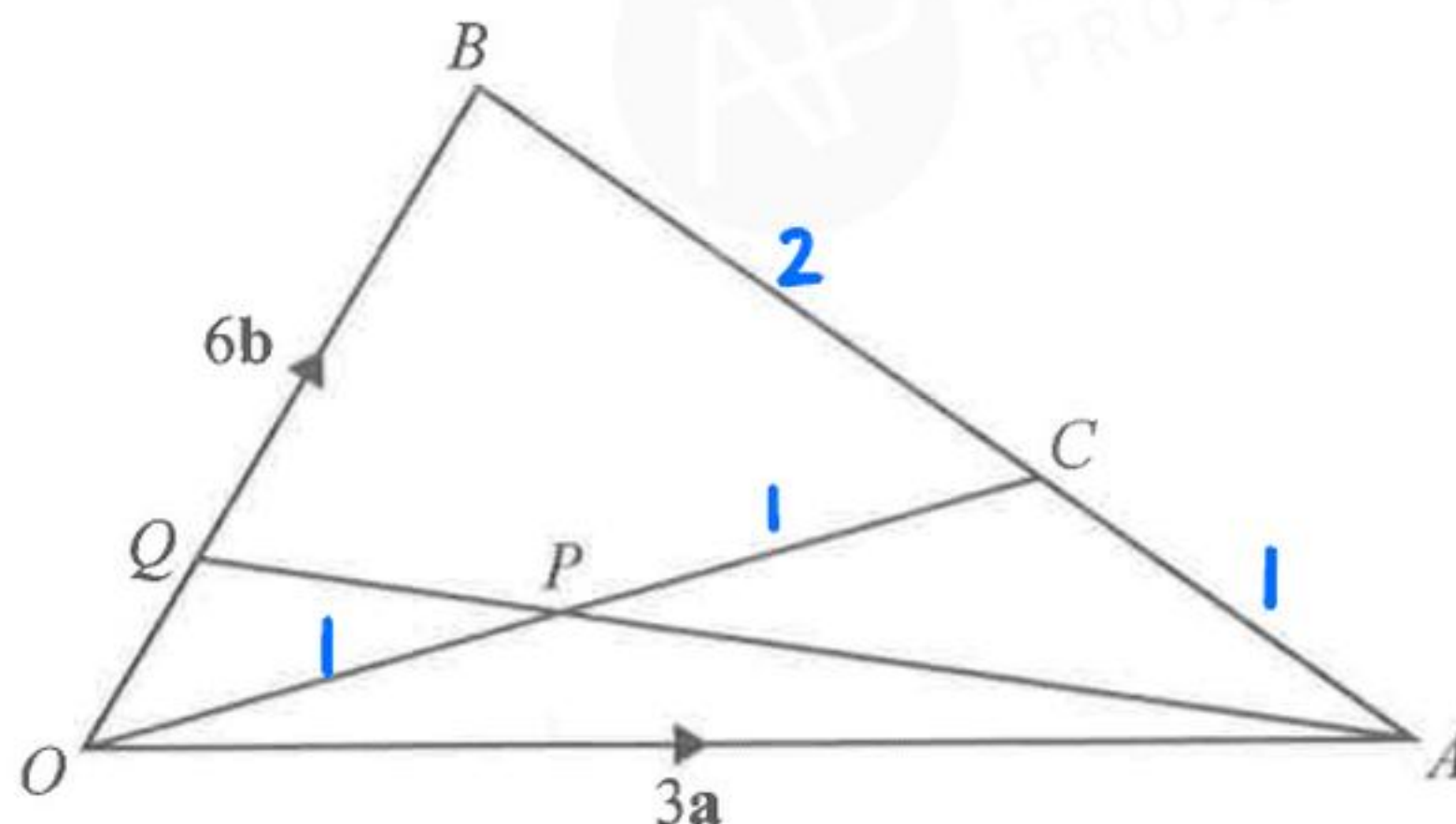
$$\therefore d = 87.4 \text{ cm}$$

87.4 cm

Answer $d = \dots\dots\dots$ [4]

The suggested solutions are prepared by Mr Alvin Yeo. Mr Yeo will hold no liability for any errors.





OAB is a triangle.

C is the point on BA such that $BC : CA = 2 : 1$.

$\vec{OA} = 3\mathbf{a}$ and $\vec{OB} = 6\mathbf{b}$.

- (a) Show that the position vector of C is given by $\vec{OC} = 2\mathbf{a} + 2\mathbf{b}$.

Answer

$$\vec{BA} = \vec{BO} + \vec{OA} = -6\mathbf{b} + 3\mathbf{a}$$

$$\vec{BC} = \frac{2}{3} \vec{BA} = -4\mathbf{b} + 2\mathbf{a}$$

$$\vec{OC} = \vec{OB} + \vec{BC} = 6\mathbf{b} - 4\mathbf{b} + 2\mathbf{a} = \underline{2\mathbf{a} + 2\mathbf{b}}$$

[2]

- (b) P is the midpoint of OC and Q is a point on OB such that APQ is a straight line.
 $AQ = mAP$ and $OQ = nOB$ where m and n are numbers.

Find the ratio $OQ : QB$.

$$\vec{OP} = \frac{1}{2} \vec{OC} = \mathbf{a} + \mathbf{b}$$

Given $\vec{AQ} = m \vec{AP}$

$$\vec{OQ} - \vec{OA} = m(\vec{OP} - \vec{OA})$$

$$\begin{aligned} \vec{OQ} &= \vec{OA} + m(\vec{OP} - \vec{OA}) \\ &= 3\mathbf{a} + m(\mathbf{a} + \mathbf{b} - 3\mathbf{a}) \end{aligned}$$

$$= (3 - 2m)\mathbf{a} + m\mathbf{b} \quad \text{--- (1)}$$

Also, $\vec{OQ} = n \vec{OB}$

$$\vec{OQ} = n(6\mathbf{b}) \quad \text{--- (2)}$$

Comparing (1) & (2): $3 - 2m = 0$
 $m = \frac{3}{2}$

and $6n = m$
 $n = \frac{1}{4}$

Since $\vec{OQ} = \frac{1}{4} \vec{OB}$
 then $\vec{OQ} : \vec{QB} = \underline{1 : 3}$

Answer 1 : 3 [4]



(c) The area of triangle $OBC = 25 \text{ cm}^2$.

Find the area of triangle OAC .

Answer 12.5 cm^2 [1]

$$\frac{\text{Area of } \triangle OBC}{\text{Area of } \triangle OAC} = \frac{\frac{1}{2} \times 2 \times h}{\frac{1}{2} \times 1 \times h} = \frac{2}{1}$$

$$\therefore \text{area of } \triangle OAC = \frac{1}{2} \times 25$$

$$= \underline{12.5 \text{ cm}^2}$$



THE ANNEXE PROJECT
EDUCATIONAL CENTRE

ESTD 2008

The suggested solutions are prepared by Mr Alvin Yeo. Mr Yeo will hold no liability for any errors.





BLANK PAGE

DO NOT WRITE IN THIS MARGIN

DO NOT WRITE IN THIS MARGIN

DO NOT WRITE IN THIS MARGIN

DO NOT WRITE IN THIS MARGIN

DO NOT WRITE IN THIS MARGIN

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (UCLES) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.

Cambridge Assessment International Education is part of Cambridge Assessment. Cambridge Assessment is the brand name of the University of Cambridge Local Examinations Syndicate (UCLES), which is a department of the University of Cambridge.

