

NAME	MARKSCHEME
TEACHER	

Year 9 Mathematics
End of Year Assessment 2025

Paper 1
NON-CALCULATOR

60 minutes

~~66~~ marks

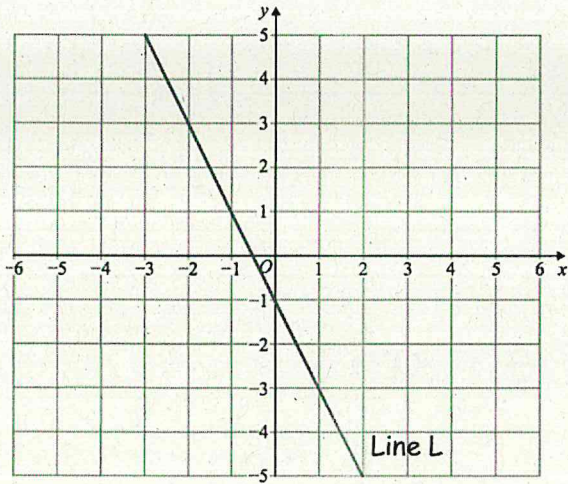
68

corrected

(see Qn 14).

Show all your working next to the question

1



- (a) Find the gradient of line L

Answer: -2 A1

- (b) Write down the equation of the line

Answer: $y = -2x - 1$
A2 A1 gradient

(3 marks)

2 Work out:

(a) 2^3

Answer: 8 A1

(b) 4^0

Answer: 1 A1

(c) 2^{-1}

Answer: $\frac{1}{2}$ A1

Simplify:

(d) $\frac{a^2 \times a^5}{a^4} = \frac{a^7}{a^4} = a^3$

M1 for correct \div or \times 'rule' seen used.

Answer: a^3 A1

(e) $(a^2)^3$

Answer: a^6 A1

(6 marks)

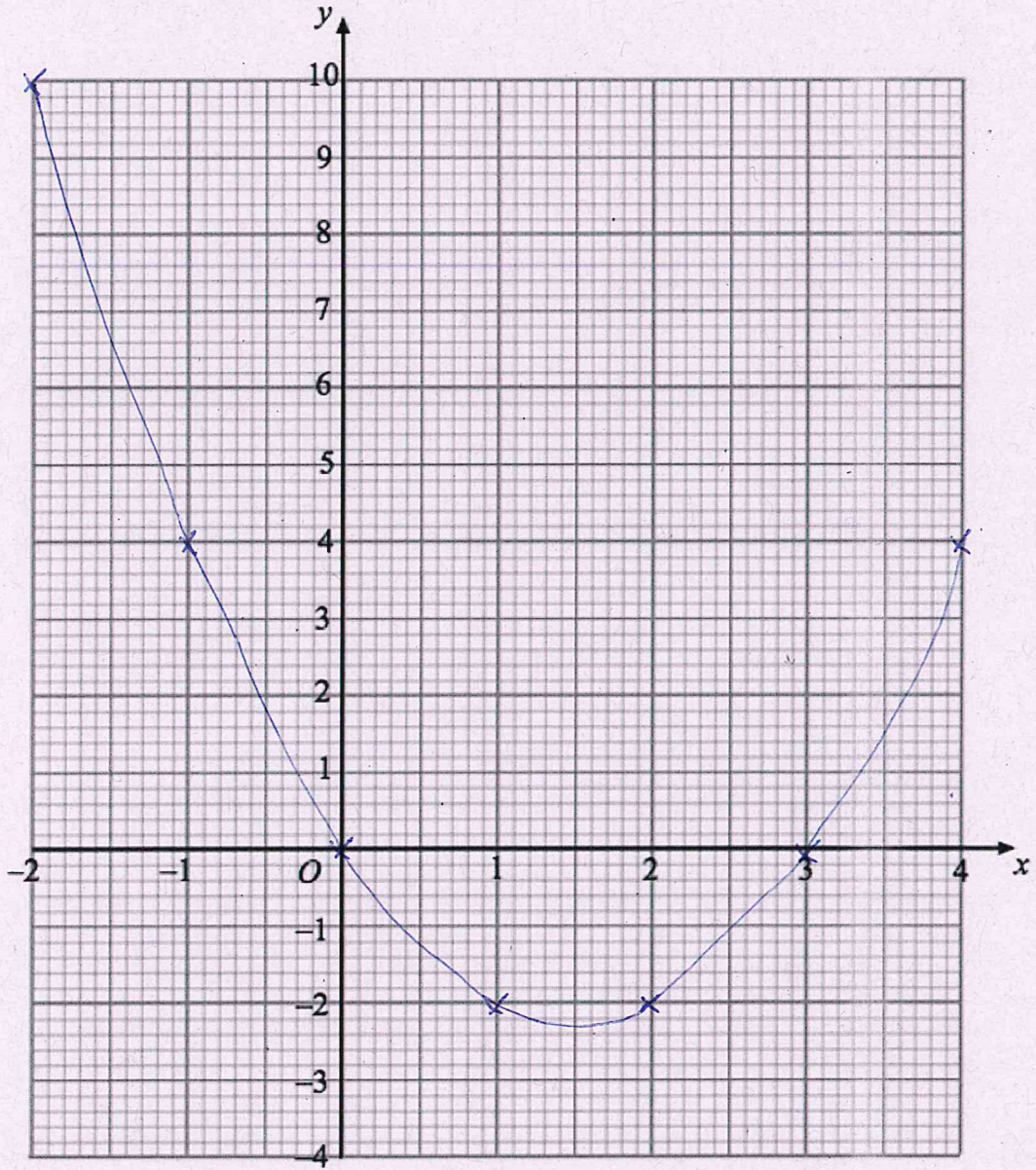
3

(a) Complete the table of values for $y = x^2 - 3x$

x^2	4	1	0	1	4	9	16
x	-2	-1	0	1	2	3	4
y	10	4	0	-2	-2	0	4
$-3x$	6	3	0	-3	-6	-9	-12

M1 method of x^2 seen
 A1 1 correct
 2nd. A1 all correct

(b) On the grid, draw the graph of $y = x^2 - 3x$ for $-2 \leq x \leq 4$



A1 points plotted correctly
 ft.
 A1 correct smooth curve

(c) State the roots of the equation $y = x^2 - 3x$

Answer: $x=0, 3$ A1

(6 marks)

4

(a) Expand and simplify: $(y+5)(y-3)(y+2)$

eg

$$= (y^2 - 3y + 5y - 15)(y+2)$$

$$= (y^2 + 2y - 15)(y+2)$$

$$= y^3 + 2y^2 - 15y + 2y^2 + 4y - 30$$

$$= y^3 + 4y^2 - 11y - 30 \text{ A1}$$

or

$$= (y+5)(y^2 + 2y - 3y - 6)$$

$$= (y+5)(y^2 - y - 6)$$

$$= y^3 - y^2 - 6y + 5y^2 - 5y - 30$$

$$= y^3 + 4y^2 - 11y - 30 \text{ A1}$$

Answer: $y^3 + 4y^2 - 11y - 30$

(b) Fully factorise: $12ab^2 + 8b^3$

B1 partially factorised
or 1 part fully correct

A1 fully correct.

Answer: $4b^2(3a + 2b)$

(6 marks)

5 Solve:

eg

or

or

(a) $\frac{4(x+3)}{3} = 20$

M1 ($\div 4$)

$$\frac{x+3}{3} = 5$$

$$4(x+3) = 60$$

$$4x+12 = 60$$

$$x+3 = 15$$

$$4x = 48$$

$$x = 12$$

$$x = 12$$

M1 ($\times 3$)

$$x+3 = 15$$

$$x = 12$$

A1

Answer: $x = 12$

(b) $3x + 2 = 7x - 1$

$$2 = 4x - 1$$

M1 ($4x$ seen)

$$3 = 4x$$

$$x = 3/4$$

A1

Answer: $x = 3/4$

(5 marks)

6 Given that $A=2^3 \times 3$ and $B = 2 \times 3^2 \times 5$ find:

(a) the HCF of A and B

$$2 \times 3 = 6$$

Answer: 6 AI

(b) the LCM of A and B

$$\begin{aligned} & 2^3 \times 3 \times 3 \times 5 & \text{MI} \\ & = 8 \times 9 \times 5 \\ & = 40 \times 9 \\ & = 360 & \text{AI} \end{aligned}$$

Answer: 360

(3 marks)

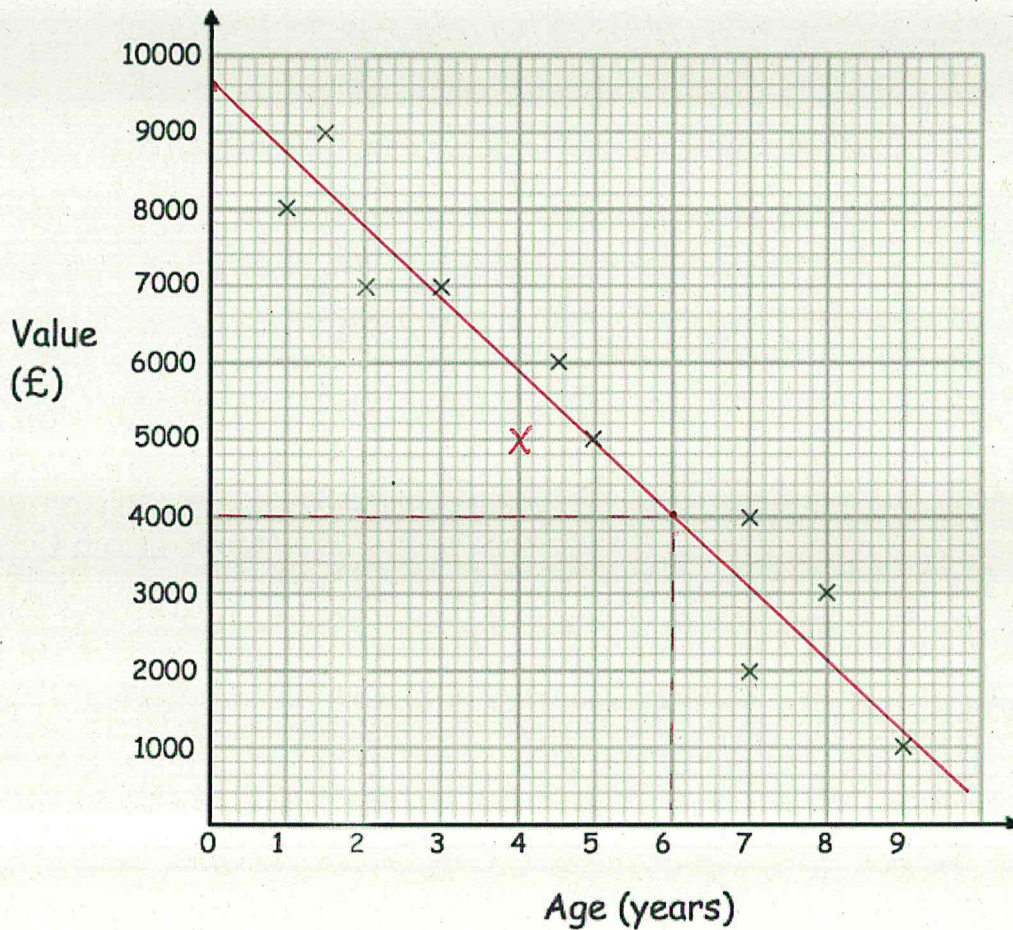
7 Write down the integers that satisfy the inequality $2 < x \leq 5$

Answer: 3, 4, 5 AI

(1 mark)

TURN OVER

8 Scatter graph showing the value of cars that arrive at a garage:



(a) Another car arrives at the garage. It is 4 years old and worth £5000. Show this information on the scatter graph. B1

(b) Describe the correlation between the value of the car and the age of the car.

Answer: negative B1

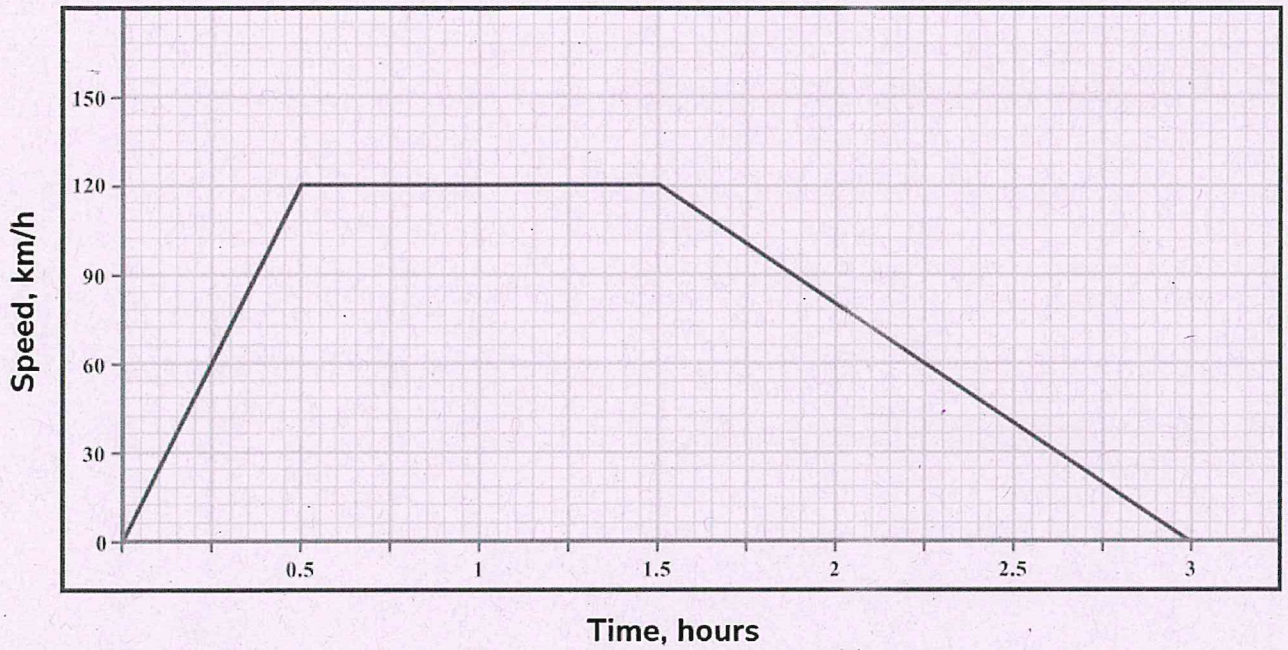
(c) Draw a line of best fit on the graph A1

(d) Use your line of best fit to estimate the value of a car that is 6 years old

Answer: £ 4000 (+/-) A1 ft

(4 marks)

9



The speed time graph for a 3 hour journey is shown above.

- (a) Find the acceleration over the first half an hour.

$$\frac{120 \text{ m/s}}{0.5} = 240$$

Answer: 240 km/h² A1

- (b) Find the total distance travelled.

$$\begin{aligned} \text{area} &= (1+3) \times \frac{120}{2} \text{ m/s} \\ &= 4 \times 60 \\ &= 240 \quad \text{A1} \end{aligned}$$

Answer: 240 km

(4 marks)

10

(a) Express $\sqrt{75}$ in its simplest form

$$= \sqrt{25 \times 3}$$

$$= 5\sqrt{3}$$

Answer: 5√3 AI

Award if either (a) or (b) correct or if (a), (b) both correct but some correct method seen

(b) Express $2\sqrt{3} \times 3\sqrt{5}$ in its simplest form

Answer: 6√15 AI

(c) Rationalise the denominator and fully simplify your answer: $\frac{12}{\sqrt{3}}$

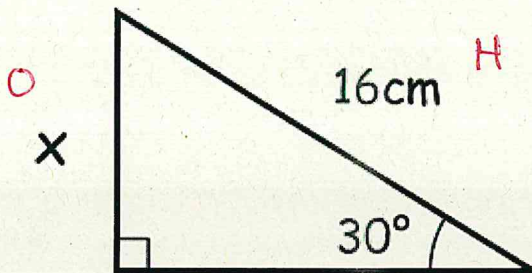
$$= \frac{12}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}} = \frac{12\sqrt{3}}{3} = 4\sqrt{3}$$

MI

Answer: 4√3

(5 marks)

11



SOH BI use of sine ratio

$$x = 16 \times \sin 30$$

$$= 16 \times \frac{1}{2}$$

$$= 8$$

AI

The diagram above shows a right-angled triangle. Calculate x.

Answer: 8 cm AI

(3 marks)

12 The table shows the ages of a rugby squad:

Age	Frequency
18	5
19	6
20	5
21	7

c.f.
5
11
16 ←

23

(a) Find the median age (you must show your method)

$$\frac{23+1}{2} = 12^{\text{th}} \text{ person.}$$

ml

Answer: 20
A1

↙
NB only award if cancelling method shown.

(b) State the modal age

Answer: 21 A1

(3 marks)

↑
re?

* 13 Make a the subject of $14a + 6y = ac + 8w$

$$14a - ac = 8w - 6y$$

$$a(14 - c) = 8w - 6y$$

$$a = \frac{8w - 6y}{14 - c}$$

M1 (all a's on 1 side)

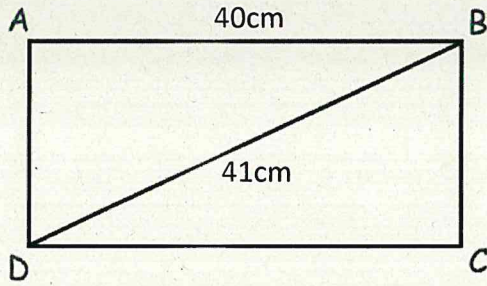
M1 ft factorise with a.

A1

Answer: $a = \frac{8w - 6y}{14 - c}$

(3 marks)

14 Below is a rectangle, ABCD



BD = 41cm
AB = 40cm

Calculate the area of the rectangle ABCD.

$$AD = \sqrt{41^2 - 40^2} \quad \text{M1 or.}$$

$$= \sqrt{1681 - 1600} \quad \text{A1 or better}$$

$$= \sqrt{81}$$

$$= 9 \quad \text{A1}$$

$$\begin{array}{r} 41 \\ \times 41 \\ \hline 1640 \\ 41 \\ \hline 1681 \end{array}$$

$$\begin{aligned} \text{area} &= 9 \times 40 \quad \text{M1 (their AD)} \\ &= 360 \quad \text{A1} \end{aligned}$$

Answer: 360 cm²

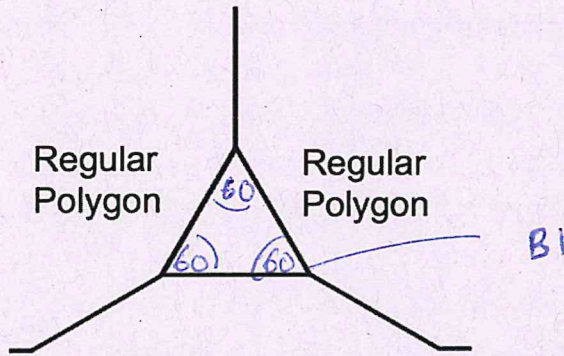
(3 marks)

5

corrected

TURN OVER

15 Shown below are two identical regular polygons and an equilateral triangle:



(a) Calculate the interior angle of each regular polygon.

$$\frac{360 - 60}{2} = \frac{300}{2} = 150^\circ$$

M A1

Answer: 150°

(b) Hence, or otherwise, find the number of sides each regular polygon has.

$$\text{exterior angle} = 180 - 150 = 30^\circ \quad \text{M1 A1}$$

$$\text{no. sides} = \frac{360}{30} = \frac{36}{3} = 12 \quad \text{A1}$$

M1 A1

Answer: 12
(6 marks)

TURN OVER

- (a) Find the gradient of the line $x - 3y = -15$

$$x + 15 = 3y$$

$$y = \frac{x}{3} + 5$$

ml \rightarrow good attempt to rearrange
- allow 1 error
or other valid method

Answer: $\frac{1}{3}$ A1

- (b) Hence, find the equation of the line that is perpendicular to $x - 3y = -15$ and passes through the point (5, -17)

perpendicular gradient = -3 A1

sub in $y = mx + c$

$$-17 = -3 \times 5 + c \quad ml$$

$$-17 = -15 + c$$

$$c = -2$$

A1

Answer: $y = -3x - 2$
(5 marks)

END OF TEST