1st Class Maths

Video Solutions

SCAN ME

PRACTICE PAPER FOR

AQA Level 2 Further Maths

Paper 2 (June 2025)

---------- Disclaimer ----------

This paper has been created based on the topics that did not occur on paper 1 and those that frequently appear in past papers. The paper should be excellent at helping students revise for exams, however should not be relied upon as the basis for revision. The topics from this paper may well appear in the real exams, however there is absolutely no guarantee of this for the reasons previously mentioned. Some topics may appear, some may not.

Ultimately the best way to prepare for the exams is to **revise all topics**.

You can find a link to this paper and many more completely free resources at www.1stclassmaths.com

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Answer **all** questions in the spaces provided.

1 $(b + 50)$ is decreased by 40%.
The answer is $(b + 24)$

Work out the value of b. **[3 marks]**

$b =$ _____

2 $f(x) = x^3$ $g(x) = x - 2.8$

Work out the value of $fg(2.5)$ **[2 marks]**

Answer _____

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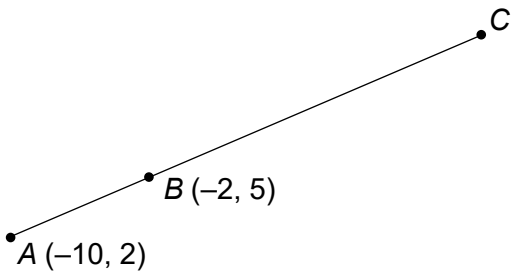
3 ABC is a straight line with $AB : AC = 2 : 7$



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Work out the coordinates of C. **[3 marks]**

Answer (_____ , _____)

4 $x + 1 : y - 1 = 3 : 5$

Express y in terms of x **[4 marks]**

Answer _____

12

Do not write outside the box

5 $y = \dfrac{3x^8 - 2x}{x^3}$

Work out the rate of change of y with respect to x **[3 marks]**

Answer _____

6 Solve $125^{4x} = 0.2$ **[3 marks]**

Answer _____

Do not write outside the box

7 Work out $\sqrt{6.4 \times 10^{143}}$

Give your answer in standard form. **[3 marks]**

Answer _____

8 Factorise fully $x^4 - y^8$ **[3 marks]**

Answer _____

12

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9 $\mathbf{A} = \begin{pmatrix} 1 & 1 \\ 1 & -1 \end{pmatrix}$ $\mathbf{B} = \begin{pmatrix} 3 & 3 \\ -3 & 3 \end{pmatrix}$

I is the identity matrix.

Determine if the following statements are true or false.
You must show working to support your answer. **[4 marks]**

	True	**False**
AB = 6**I**	☐	☐

	True	**False**
BA = 6**I**	☐	☐

Do not write outside the box

10 (a) $\mathbf{A} = \begin{pmatrix} -1 & 0 \\ 0 & 1 \end{pmatrix}$

Describe geometrically the single transformation represented by **A**. **[1 mark]**

Answer _____

_____

10 (b) $\mathbf{B} = \begin{pmatrix} 0 & -1 \\ 1 & 0 \end{pmatrix}$

Describe geometrically the single transformation represented by **B**. **[1 mark]**

Answer _____

_____

10 (c) Matrix **C** represents a single transformation that is

the transformation represented by matrix **A**

followed by

the transformation represented by matrix **B**

Find matrix **C**. **[3 marks]**

$\mathbf{C} = \begin{pmatrix} \_\_ & \_\_ \\ \_\_ & \_\_ \end{pmatrix}$

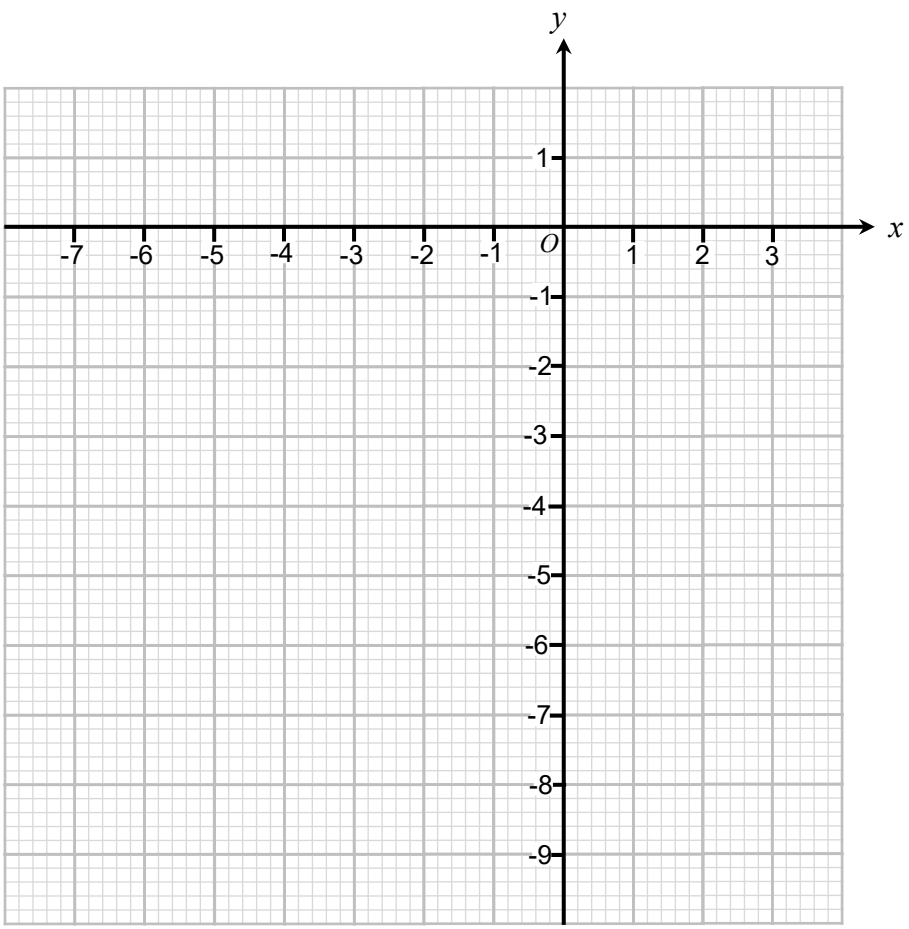
9

Do not write outside the box

11 A function f is given by

$$\begin{aligned} f(x) &= -2 && -7 \le x < -5 \\ &= -3x - 17 && -5 \le x < -3 \\ &= 1 - x^2 && -3 \le x \le 3 \end{aligned}$$

Draw a sketch of $y = f(x)$ for values of x from –7 to 3 **[4 marks]**



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12 Here are the first 5 terms of sequence **A** and sequence **B**.

Sequence **A** : 3 9 19 33 51

Sequence **B** : 10 40 90 160 250

Sequence **C** is formed by dividing the terms of sequence **A** by the terms of sequence **B**. The first 5 terms of sequence **C** are shown below.

Sequence **C** : $\frac{3}{10}$ $\frac{9}{40}$ $\frac{19}{90}$ $\frac{33}{160}$ $\frac{51}{250}$

12 (a) Work out an expression for the nth term of sequence **C**. **[4 marks]**

Answer _____

12 (b) Write down the limiting value of sequence **C** as $n \to \infty$ **[1 mark]**

Answer _____

9

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13 A cone has volume V, radius r and perpendicular height h.

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

where r is the radius
h is the perpendicular height.

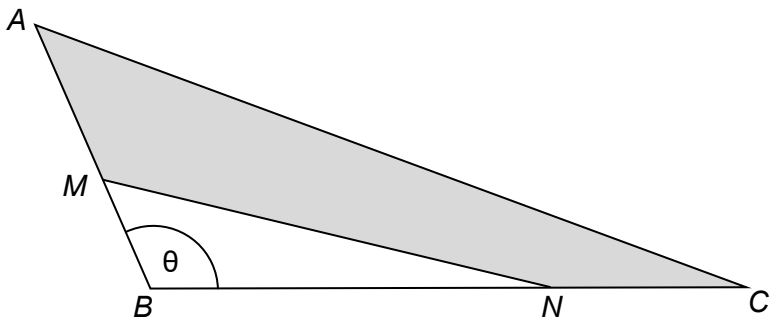
$r : h = 2 : 5$

Express r in terms of V. **[4 marks]**

$r =$ _____

Do not write outside the box

14 *ABC* is a triangle.



AB = 32 cm
BC = 42 cm
AM : *MB* = 5 : 3
BN : *NC* = 5 : 2

$\sin\theta = \frac{11}{12}$

Work out the area of the shaded region. **[4 marks]**

Answer _____ cm^2

8

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15 Solve the simultaneous equations

$$a + 3b + 4c = 10$$
$$2a + b - 3c = 1$$
$$3a + 2b - 5c = 5$$

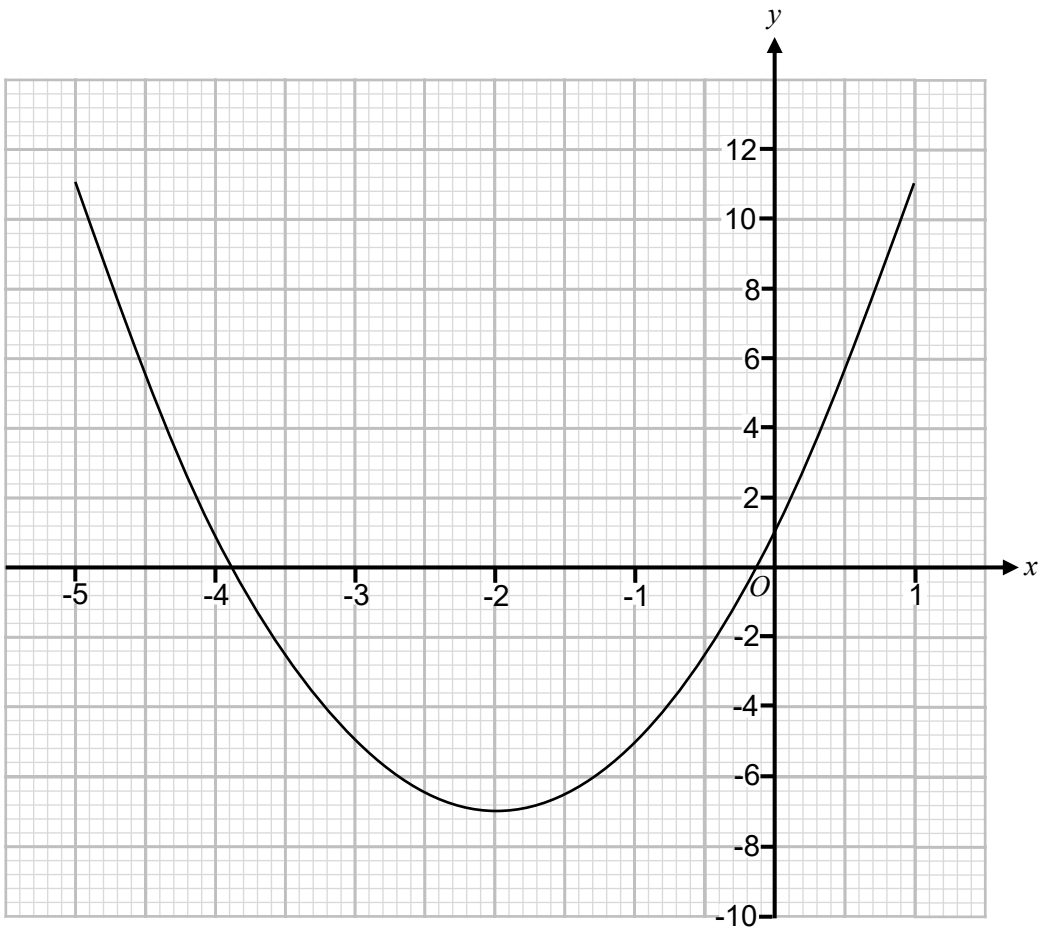
Do **not** use trial and improvement.

You **must** show your working. **[5 marks]**

$a =$ _____ $b =$ _____ $c =$ _____

Do not write outside the box

16 Here is the graph of $y = 2x^2 + 8x + 1$ for x values from -5 to 1



By drawing a suitable linear graph on the grid work out approximate solutions to the equation $2x^2 + 6x - 3 = 0$

Give your solutions to one decimal place. **[4 marks]**

Answer _____

9

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17 *ABCDEFGH* is a cuboid.
GH = 4.4 cm
GC = 11.7 cm
GB = 26.7 cm

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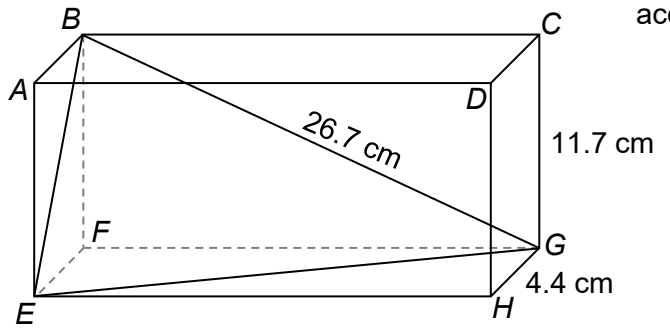

Work out the size of angle *BEG*.
Give your answer to 1 decimal place.

[5 marks]

Answer _____ °

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18 Prove algebraically that $40n - 8n^2 - 53$ is negative for all values of n. **[5 marks]**

10

Turn over ►

Do not write outside the box

19 Solve $0.3\tan^2\theta - 2.3\tan\theta + 1.4 = 0$ for $0° \leq \theta \leq 360°$

Give your answers to 1 decimal place. **[5 marks]**

Answer _____

Do not write outside the box

20 Point A lies on the curve $y = x^2 + 4x$

The x-coordinate of point A is a.

The tangent to the curve at A goes through the point with coordinates (5, 9)

Work out two possible values for a. **[6 marks]**

$a =$ _____ or $a =$ _____

END OF QUESTIONS

11