

Cambridge IGCSE · Mathematics (0580) · Mock Paper Set 1

Mock Paper Set 1

Paper 2 (Non-calculator) · Paper 4 (Calculator), with worked solutions and mark schemes

Extended tier, written for the Cambridge IGCSE Mathematics 0580 syllabus for examinations in 2025, 2026 and 2027.

What is inside this set

Paper	Format	Time	Marks
Paper 2 · Non-calculator (Extended)	22 compulsory questions, short and structured, in rising order of difficulty; answer on the paper; no calculator	2 hours	100
Paper 4 · Calculator (Extended)	21 compulsory questions, including a graph to draw and a cumulative frequency diagram; scientific calculator required	2 hours	100
Solutions	Answer summary; a full worked solution and an M/A/B mark scheme for every part; topic map; "If you lost marks on..." table; self-check bands	–	–

How to use this set

1. Sit each paper in one go, timed (2 hours each), with a pen, pencil, ruler, compasses and protractor. Paper 2: no calculator. Paper 4: scientific calculator.
2. Write your answers on the answer lines and draw on the grids provided. Print the pages if you can.
3. Mark your paper with the mark scheme. Give a mark only where your work matches a marking point. Each badge is one mark.
4. Read the worked solution for every part where you dropped marks, then use the topic map to go back to the right chapter of the notes.

Mark-scheme labels

- M** method mark: a correct method, even if the arithmetic then slips
- A** accuracy mark: the correct answer, which depends on the method mark before it
- B** independent mark for a correct value or statement

oe = or equivalent · ft = follow through from your earlier answer · grey notes: allow / do not allow

★ **Exam tip:** A correct final answer normally scores all the marks for that part, unless the question says "show", "you must show all your working" or "give a reason".

Notes Bazar independent practice papers. These papers are not endorsed by, affiliated with or produced by Cambridge University Press & Assessment. "Cambridge IGCSE" is used only to identify the syllabus. All questions, contexts, data and diagrams are original. Grade boundaries are set by Cambridge for each live series and are not reproduced here.

MATHEMATICS**0580 · Mock Set 1****Paper 2 Non-calculator (Extended)****2 hours**

Candidate name

Centre number

Candidate number

You must answer on the question paper.

You will need: geometrical instruments.

INSTRUCTIONS

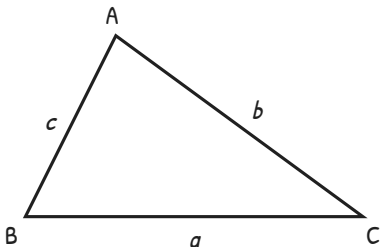
- Answer **all** questions.
- Use a black or dark blue pen. You may use an HB pencil for any diagrams or graphs.
- Write your name, centre number and candidate number in the boxes at the top of the page.
- Write your answer to each question in the space provided.
- Do not use an erasable pen or correction fluid.
- Calculators must **not** be used in this paper.
- You may use tracing paper.
- You must show all necessary working clearly.

INFORMATION

- The total mark for this paper is 100.
- The number of marks for each question or part question is shown in brackets [].

Notes Bazar mock paper · original questions · not a Cambridge paper

List of formulas

Area, A , of triangle, base b , height h .	$A = \frac{1}{2}bh$
Area, A , of circle of radius r .	$A = \pi r^2$
Circumference, C , of circle of radius r .	$C = 2\pi r$
Curved surface area, A , of cylinder of radius r , height h .	$A = 2\pi rh$
Curved surface area, A , of cone of radius r , sloping edge l .	$A = \pi rl$
Surface area, A , of sphere of radius r .	$A = 4\pi r^2$
Volume, V , of prism, cross-sectional area A , length l .	$V = Al$
Volume, V , of pyramid, base area A , height h .	$V = \frac{1}{3}Ah$
Volume, V , of cylinder of radius r , height h .	$V = \pi r^2 h$
Volume, V , of cone of radius r , height h .	$V = \frac{1}{3}\pi r^2 h$
Volume, V , of sphere of radius r .	$V = \frac{4}{3}\pi r^3$
For the equation $ax^2 + bx + c = 0$, where $a \neq 0$,	$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
For the triangle shown, 	$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$ $a^2 = b^2 + c^2 - 2bc \cos A$ $\text{Area} = \frac{1}{2}ab \sin C$

Calculators must not be used in this paper.

- 1 (a) Write 3.07×10^{-3} as an ordinary number.

..... [1]

- (b) Work out $(6 \times 10^5) \div (1.5 \times 10^{-2})$.

Give your answer in standard form.

..... [2]

- 2 (a) Write 1176 as a product of its prime factors.

..... [2]

- (b) Find the lowest common multiple (LCM) of 1176 and 252.

..... [2]

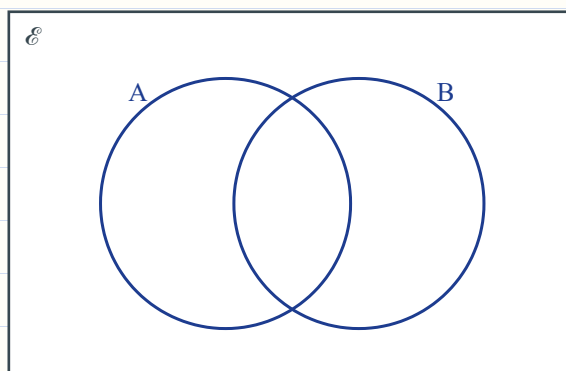
- 3 Without using a calculator, work out $2\frac{3}{5} \div 1\frac{1}{15}$.

You must show all your working and give your answer as a mixed number in its simplest form.

..... [3]

- 4 $\mathcal{E} = \{x : x \text{ is an integer and } 1 \leq x \leq 12\}$
 $A = \{\text{multiples of 3}\}$ $B = \{\text{factors of 12}\}$

(a) Complete the Venn diagram.



[2]

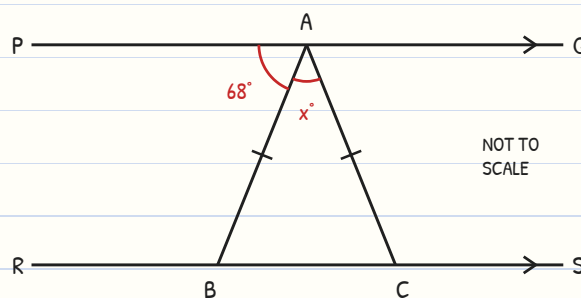
(b) List the elements of $A' \cap B$.

[1]

(c) Find $n(A \cup B)'$.

[1]

- 5 PQ and RS are parallel straight lines. A lies on PQ, and B and C lie on RS.
 Triangle ABC is isosceles with $AB = AC$. Angle $PAB = 68^\circ$.



Find the value of x .

$x = \dots\dots\dots$ [3]

- 6** (a) The price of a ticket increases by 20%. The new price then decreases by 15%.
Find the overall percentage change in the price of the ticket. State whether it is an increase or a decrease.

..... % [2]

- (b) In a sale, the price of a bicycle is reduced by 25%. The sale price is £228.
Find the original price of the bicycle.

£ [2]

- 7** (a) Find the n th term of this sequence.

5 12 19 26 ...

..... [2]

- (b) Find the n th term of this quadratic sequence.

2 7 14 23 34 ...

..... [2]

- 8** Solve the simultaneous equations.
You must show all your working.

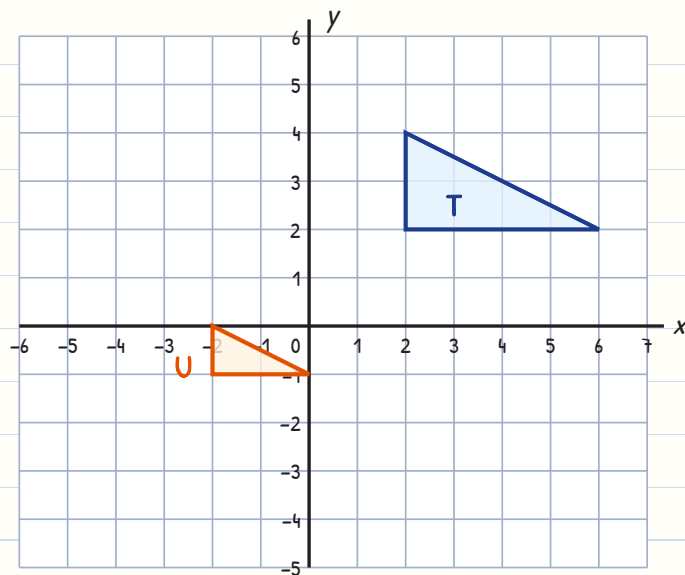
$$3x + 2y = 4$$

$$5x - 3y = 13$$

$$x = ...$$

$$y = ... [3]$$

9



- (a) Draw the image of triangle T after a rotation through 90° anticlockwise about the point $(0, -1)$.

[2]

- (b) Describe fully the single transformation that maps triangle T onto triangle U .

[3]

- 10 (a) Find the value of $81^{-\frac{3}{4}}$.

[2]

- (b) Simplify $(3x^2y)^3$.

[2]

- (c) Solve $8^x = 4^{x+1}$.

$x =$ [2]

- 11 A is the point $(-2, 5)$ and B is the point $(4, 1)$.

- (a) Find the coordinates of the midpoint of AB.

(..... , ...) [1]

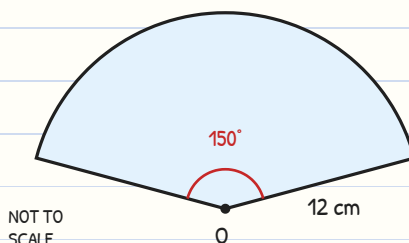
- (b) Find the length of AB.
Give your answer in the form $k\sqrt{13}$.

..... [2]

- (c) Find the equation of the line that is perpendicular to AB and passes through the point $(0, -4)$.
Give your answer in the form $y = mx + c$.

$y =$ [2]

- 12 The diagram shows a sector of a circle, centre O, with radius 12 cm and angle 150° .



- (a) Find the perimeter of the sector.
Give your answer in terms of π .

..... cm [3]

- (b) Find the area of the sector.
Give your answer in terms of π .

..... cm^2 [2]

- 13 (a)** Simplify $\sqrt{75} + \sqrt{12}$.
Give your answer in the form $k\sqrt{3}$.

[2]

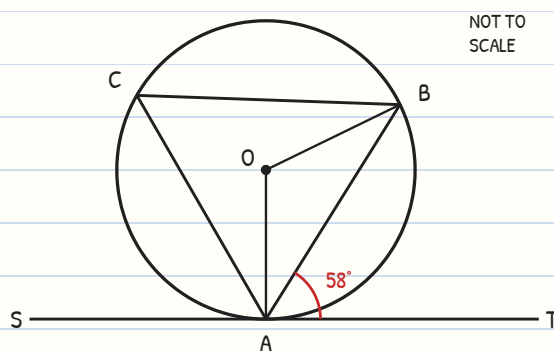
- (b)** Rationalise the denominator and simplify $\frac{10}{3 - \sqrt{5}}$.

[3]

- 14** Simplify fully. $\frac{x^2 - 9}{2x^2 + 5x - 3}$

[3]

- 15** A, B and C lie on the circle, centre O.
ST is a tangent to the circle at A. Angle TAB = 58° .



- (a)** Find angle ACB. Give a geometrical reason for your answer.

Angle ACB = ... because

[2]

(b) Find angle OAB. Give a geometrical reason for your answer.

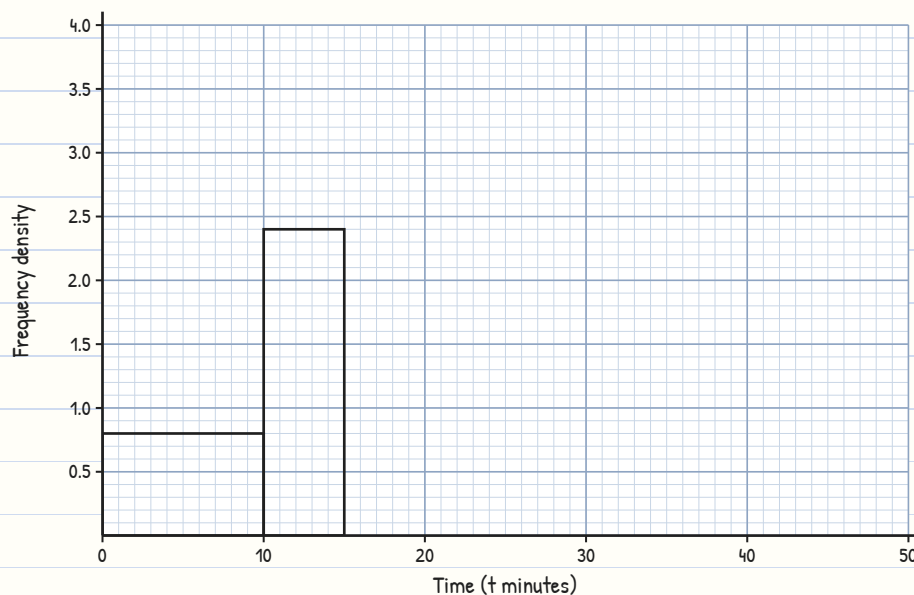
Angle OAB = ... because

[2]

16 The table shows information about the times, t minutes, that 60 people took to complete a task.

Time (t minutes)	$0 < t \leq 10$	$10 < t \leq 15$	$15 < t \leq 20$	$20 < t \leq 30$	$30 < t \leq 50$
Frequency	8	12	18	16	6

(a) Complete the histogram to show the information in the table.

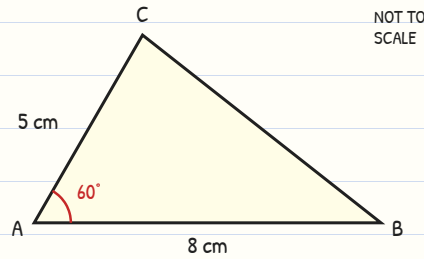


[3]

(b) Estimate the number of people who took more than 25 minutes.

[2]

- 17 In triangle ABC, $AB = 8$ cm, $AC = 5$ cm and angle $BAC = 60^\circ$.



- (a) Find the length of BC.

..... cm [3]

- (b) Find the area of triangle ABC.
Give your answer in the form $k\sqrt{3}$.

..... cm^2 [2]

- 18 $f(x) = 3x - 2$ $g(x) = x^2 + 1$

- (a) Find $g(-3)$.

..... [1]

- (b) Find $f^{-1}(x)$.

$f^{-1}(x) =$ [2]

- (c) Find $gf(x)$, giving your answer in the form $ax^2 + bx + c$.

$gf(x) =$ [2]

(d) Solve $ff(x) = x$.

$x =$ [2]

19 (a) Write $x^2 - 8x + 5$ in the form $(x - p)^2 - q$.

..... [2]

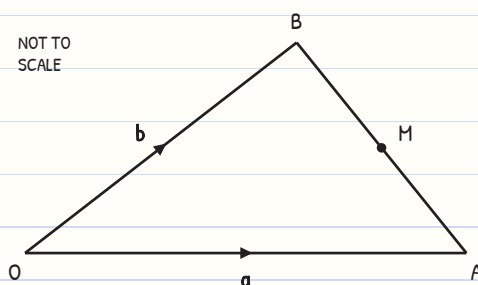
(b) Use your answer to part (a) to solve $x^2 - 8x + 5 = 0$.
Give your answers as exact values.

$x =$ or $x =$ [2]

(c) Write down the coordinates of the turning point of the graph of $y = x^2 - 8x + 5$.

(..... , ...) [1]

20 O is the origin. $\overrightarrow{OA} = \mathbf{a}$ and $\overrightarrow{OB} = \mathbf{b}$. M is the midpoint of AB.



(a) Find $\overrightarrow{AB}$ in terms of $\mathbf{a}$ and $\mathbf{b}$.

$\overrightarrow{AB} =$ [1]

(b) Find the position vector of M. Give your answer in terms of $\mathbf{a}$ and $\mathbf{b}$, in its simplest form.

..... [2]

(c) C is the point with $\overrightarrow{OC} = 2\mathbf{b} - \mathbf{a}$.

Show that A, B and C lie on a straight line.

[2]

21 A bag contains 6 green counters and 4 yellow counters.

Kofi takes two counters at random from the bag, without replacement.

(a) Find the probability that the two counters are the same colour.

[3]

(b) The two counters are the same colour.

Find the probability that they are both green.

[2]

22 The equation of a curve is $y = x^3 - 6x^2 + 9x + 1$.

(a) Find $\frac{dy}{dx}$.

$\frac{dy}{dx} =$ [2]

(b) Find the coordinates of the two turning points of the curve.

(..... , ...)

(..... , ...) [3]

- (c) Determine whether each turning point is a maximum or a minimum.
Show how you decide.

[2]

END OF PAPER 2

Worked solutions and mark schemes

Mark your papers first, then read the solutions. Each badge is one mark. Totals: Paper 2 = 100, Paper 4 = 100.

Paper 2 Non-calculator: answers at a glance

Q	Answers
1	(a) 0.003 07 · (b) 4×10^7
2	(a) $2^3 \times 3 \times 7^2$ · (b) 3528
3	$2\frac{7}{16}$
4	(a) see the diagram · (b) 1, 2, 4 · (c) 5
5	$x = 44$
6	(a) 2% increase · (b) £304
7	(a) $7n - 2$ · (b) $n^2 + 2n - 1$
8	$x = 2, y = -1$
9	(a) vertices $(-3, 1), (-3, 5), (-5, 1)$ · (b) enlargement, scale factor $\frac{1}{2}$, centre $(-6, -4)$
10	(a) $\frac{1}{27}$ · (b) $27x^6y^3$ · (c) $x = 2$
11	(a) $(1, 3)$ · (b) $2\sqrt{13}$ · (c) $y = \frac{3}{2}x - 4$
12	(a) $24 + 10\pi$ cm · (b) 60π cm ²
13	(a) $7\sqrt{3}$ · (b) $\frac{15 + 5\sqrt{5}}{2}$
14	$\frac{x - 3}{2x - 1}$
15	(a) 58° , alternate segment theorem · (b) 32°
16	(a) bars of height 3.6, 1.6 and 0.3 · (b) 14
17	(a) 7 cm · (b) $10\sqrt{3}$ cm ²
18	(a) 10 · (b) $\frac{x + 2}{3}$ · (c) $9x^2 - 12x + 5$ · (d) $x = 1$
19	(a) $(x - 4)^2 - 11$ · (b) $x = 4 + \sqrt{11}$ or $x = 4 - \sqrt{11}$ · (c) $(4, -11)$
20	(a) $\mathbf{b} - \mathbf{a}$ · (b) $\frac{1}{2}\mathbf{a} + \frac{1}{2}\mathbf{b}$ · (c) $\overrightarrow{AC} = 2\overrightarrow{AB}$
21	(a) $\frac{7}{15}$ · (b) $\frac{5}{7}$
22	(a) $3x^2 - 12x + 9$ · (b) (1, 5) and (3, 1) · (c) (1, 5) maximum, (3, 1) minimum

Paper 2 Non-calculator: worked solutions and mark scheme

No calculator: every step below can be done by hand. Where working is required ("show all your working"), the answer alone does not score.

Question 1 · E1.8 · 3 marks

1(a) 0.003 07 [1]

10^{-3} means divide by 1000: move the digits three places to the right of their place value. $3.07 \div 1000 = 0.003\ 07$.

Mark scheme • 0.00307 **(B1)** do not allow 0.000307 or 0.0307

1(b) 4×10^7 [2]

Divide the numbers and subtract the powers: $6 \div 1.5 = 4$ and $10^5 \div 10^{-2} = 10^{5-(-2)} = 10^7$. So the answer is 4×10^7 .

Mark scheme • $6 \div 1.5 = 4$ or $10^5 \div 10^{-2} = 10^7$ **seen, or answer** 40 000 000 **(M1)**
• 4×10^7 **(A1)** answer 4×10^7 only for the A mark (40 000 000 is M1 only)

Question 2 · E1.1 · 4 marks

2(a) $2^3 \times 3 \times 7^2$ [2]

Divide by primes: $1176 \div 2 = 588$, $588 \div 2 = 294$, $294 \div 2 = 147$, $147 \div 3 = 49$, $49 \div 7 = 7$. So $1176 = 2 \times 2 \times 2 \times 3 \times 7 \times 7 = 2^3 \times 3 \times 7^2$.

Mark scheme • at least two correct divisions by a prime (or a correct factor tree with at least two prime branches) **(M1)**
• $2^3 \times 3 \times 7^2$ or $2 \times 2 \times 2 \times 3 \times 7 \times 7$ **(A1)** allow any order; do not allow 1 as a factor

2(b) 3528 [2]

$252 = 2^2 \times 3^2 \times 7$. The LCM takes the highest power of each prime: $2^3 \times 3^2 \times 7^2 = 8 \times 9 \times 49 = 72 \times 49 = 3528$. (Check: $3528 = 3 \times 1176 = 14 \times 252$.)

Mark scheme • $252 = 2^2 \times 3^2 \times 7$ or $2^3 \times 3^2 \times 7^2$ **seen, or a list of multiples of each number reaching 3528** **(M1)**
• 3528 **(A1)**

Question 3 · E1.4, E1.6 · 3 marks

3 $2\frac{7}{16}$ [3]

Change to improper fractions: $2\frac{3}{5} = \frac{13}{5}$ and $1\frac{1}{15} = \frac{16}{15}$.

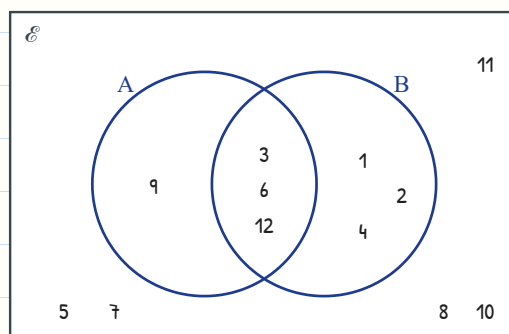
Multiply by the reciprocal: $\frac{13}{5} \times \frac{15}{16} = \frac{13 \times 3}{1 \times 16} = \frac{39}{16} = 2\frac{7}{16}$.

Mark scheme • $\frac{13}{5}$ and $\frac{16}{15}$ (or equivalent fractions with a common denominator, e.g. $\frac{39}{15} \div \frac{16}{15}$) **(M1)**
• $\frac{13}{5} \times \frac{15}{16}$ or $\frac{39}{16}$ or $\frac{195}{80}$ **(M1)**
• $2\frac{7}{16}$ **(A1)** the answer alone, with no working, scores 0 here because working is required

Question 4 · E1.2 · 4 marks**4(a)** see the diagram

[2]

$A = \{3, 6, 9, 12\}$ and $B = \{1, 2, 3, 4, 6, 12\}$. In both: 3, 6, 12. A only: 9. B only: 1, 2, 4. Outside both: 5, 7, 8, 10, 11. Every number from 1 to 12 appears exactly once.



Mark scheme

- 3, 6, 12 in the intersection and 9 in A only (B1)
- 1, 2, 4 in B only and 5, 7, 8, 10, 11 outside the circles (B1) each number placed once only

4(b) 1, 2, 4

[1]

A' is everything not in A ; intersect with B : the elements of B that are not multiples of 3, i.e. 1, 2, 4.

Mark scheme

- 1, 2, 4 (ft their Venn diagram) (B1)

4(c) 5

[1]

$(A \cup B)'$ is the region outside both circles: $\{5, 7, 8, 10, 11\}$, so $n(A \cup B)' = 5$.

Mark scheme

- 5 (ft their diagram; do not allow the list without the number) (B1)

Question 5 · E4.6 · 3 marks**5** $x = 44$

[3]

Angle $ABC = \text{angle } PAB = 68^\circ$ (alternate angles, PQ parallel to RS).

Angle $ACB = \text{angle } ABC = 68^\circ$ (base angles of an isosceles triangle are equal).

Angles in a triangle add to 180° : $x = 180 - 68 - 68 = 44$.

Mark scheme

- angle $ABC = 68$ (may be marked on the diagram) (M1)
- angle $ACB = 68$, or $180 - 2 \times 68$ (M1)
- 44 (A1)

Question 6 · E1.13 · 4 marks**6(a)** 2% increase

[2]

Use multipliers: $1.20 \times 0.85 = 1.02$. A multiplier of 1.02 means an increase of 2%. (Not $20 - 15 = 5\%$: the 15% is a percentage of the larger, increased price.)

Mark scheme

- 1.2×0.85 or 1.02 seen, or a worked example such as $100 \rightarrow 120 \rightarrow 102$ (M1)
- 2% and increase (A1) do not allow 5%

6(b) £304

[2]

The sale price is $100\% - 25\% = 75\%$ of the original price. $75\% = £228$, so $1\% = £228 \div 75 = £3.04$ and $100\% = £304$. Equivalently $228 \div 0.75 = 304$.

Mark scheme

- $228 \div 0.75$ or $228 \div 75 \times 100$ or $75\% = 228$ seen (M1)
- 304 (A1) do not allow 285 ($= 228 \times 1.25$)