

IGCSE Mathematics 0580 Extended

Practice Paper B: NON-CALCULATOR (Paper 2 style)

QUESTIONS | 100 marks | NO calculator | Numrahedu.com | Free, no login needed

Time allowed: 2 hours. Total marks: 100.

- **You may not use a calculator for this paper.** This is Paper 2 style, the non-calculator paper that Extended candidates sit alongside Paper 4.
- Answer all questions in the spaces provided.
- Show all your working. Marks are given for correct method even when the final answer is wrong.
- Leave answers as exact surds, exact fractions or in terms of π where the question asks for it. Do not convert them to decimals.
- Diagrams are not drawn to scale.
- Full worked solutions, with every method mark explained, are in the separate Solutions PDF at <https://numrahedu.com/mathematics/>

EXAM TIP

This is an original practice paper written by Numrahedu. It follows the structure and topic spread of a real 0580 Paper 2, but every question is our own. The official past papers are free from Cambridge International at www.cambridgeinternational.org

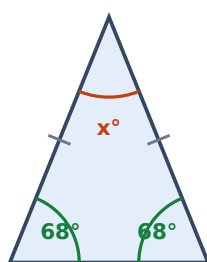
Question 1

2 marks

Angles

The diagram shows an isosceles triangle. Find the value of x .

[2]



NOT TO SCALE

Question 2

3 marks

Stem and Leaf Diagram

The stem and leaf diagram shows the time, in minutes, that 15 people took to finish a puzzle. [3]
The key $1 \mid 2$ represents 12 minutes. Find the mode, the range and the median.

Stem	Leaf
1	2 5 9
2	1 1 4 6 7 8
3	0 0 0 2 5
4	1

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Question 3

2 marks

Complete the Statements

(a) When $x = \dots\dots\dots$, $x - 4 = 9$ [1]

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(b) When $8y = 56$, $100y = \dots\dots\dots$ [1]

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Question 4

3 marks

Shopping Bill

The table shows part of Ayesha's shopping bill. Find the cost of 1 kg of lentils. [3]

Item	Cost per kg	Mass in kg	Cost
Rice	\$1.80	2.5	
Lentils		1.5	
Total			\$9.75

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Question 5

3 marks

Factorise Completely

- (a) $24pq - 18p$ [2]

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- (b) $t^2 - 81$ [1]

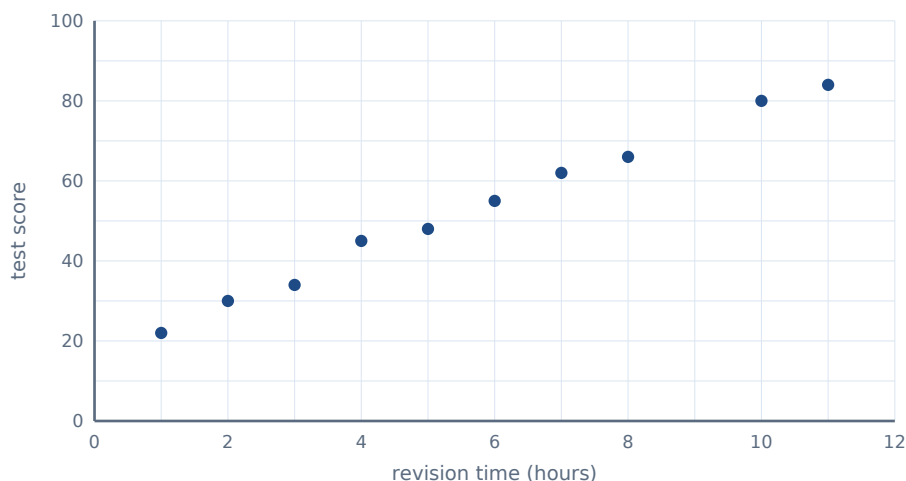
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Question 6

3 marks

Scatter Diagram

- (a) The scatter diagram shows the revision time and test score for 10 students. One student revised for 6 hours. Write down that student's test score. [1]



- (b) Another student revised for 9 hours and scored 74. Plot this on the diagram. [1]

- (c) Write down the type of correlation shown. [1]

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Question 7

1 mark

Currency

- The exchange rate is 1 US dollar = 280 rupees. Find the value of 2100 rupees in US dollars. [1]

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Question 8

2 marks

Standard Form

Calculate $(6 \times 10^{-3}) \times (4 \times 10^8)$. Give your answer in standard form.

[2]

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Question 9

2 marks

Highest Common Factor

Find the highest common factor of 84 and 126.

[2]

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Question 10

5 marks

Indices

(a) Simplify $m^7 \times m^3$

[1]

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(b) Simplify $12k^8 \div 3k^2$

[2]

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.....

(c) Simplify $(16w^{12})^{\frac{3}{4}}$

[2]

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Question 11

3 marks

Inequality

Solve $5(x - 2) \leq 2x + 8$ and show your solution on the number line below.

[3]



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Question 12

3 marks

Recurring Decimal

Write $0.2777\dots$, where the 7 recurs, as a fraction in its simplest form. Show all your working. [3]

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Question 13

3 marks

Exponential Decay

A car is worth \$12 000. Its value decreases by 25 percent each year. Find its value after 3 years. [3]

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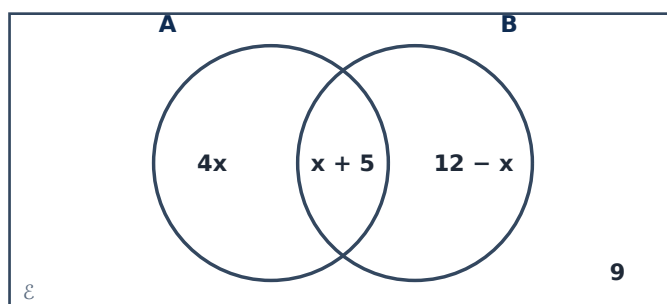
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Question 14

4 marks

Venn Diagrams

- (a) The Venn diagram shows the number of elements in each region. There are 50 elements in the universal set. Find $n(A \cap B)$. [3]

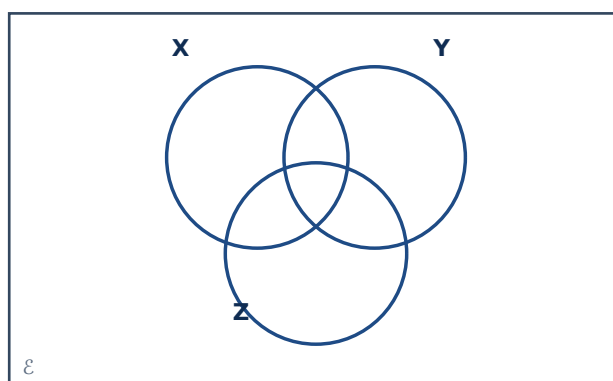


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- (b) On the diagram below, shade the region $X \cap Y \cap Z'$. [1]

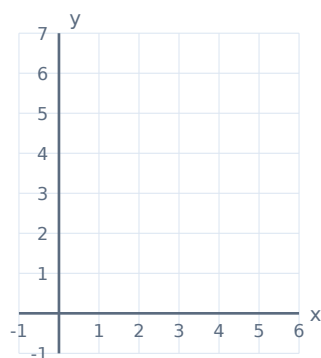


Question 15

5 marks

Region on a Grid

On the grid, draw and label the region R that satisfies all three of these inequalities. Shade the [5] unwanted regions. $y < 5$, $x \geq 1$, $y \geq x + 1$



Question 16

3 marks

Upper and Lower Bounds

A rectangle has length 12 cm and width 7.5 cm, each correct to 2 significant figures. Find the [3] lower bound and the upper bound of the perimeter.

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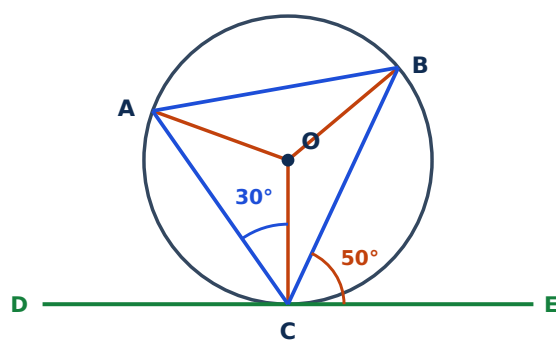
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Question 17

4 marks

Circle Theorems

- (a) A, B and C lie on a circle, centre O. DE is a tangent touching the circle at C. Angle $BCE = 50^\circ$ [2] and angle $ACO = 30^\circ$. Find angle OCB and give a reason.



NOT TO SCALE

(b) Find angle OBC and give a reason. [1]

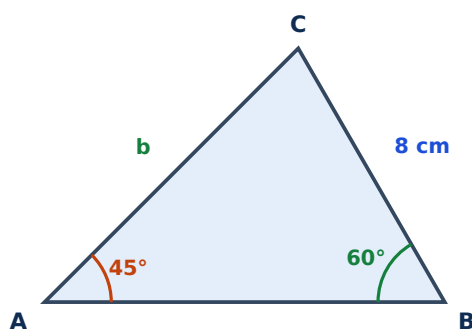
(c) Find angle BAC and give a reason. [1]

Question 18

3 marks

Sine Rule

In triangle ABC, angle A = 45° , angle B = 60° and $a = 8$ cm. Find the exact length of b , giving [3] your answer as a surd in its simplest form.



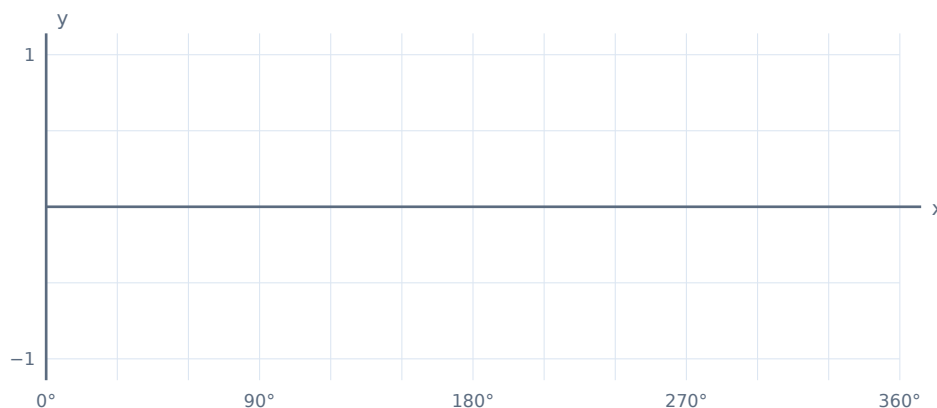
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Question 19

4 marks

Trigonometric Graph

- (a) On the grid, sketch the graph of $y = \sin x$ for $0^\circ \leq x \leq 360^\circ$. [2]



- (b) Solve $\sin x = 0.5$ for $0^\circ \leq x \leq 360^\circ$. [2]

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Question 20

6 marks

Algebraic Fractions

- (a) Simplify $\frac{x^2 + x - 6}{x^2 + 6x + 9}$ [3]

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- (b) Write $\frac{3}{x-2} + \frac{4}{x+1}$ as a single fraction in its simplest form. [3]

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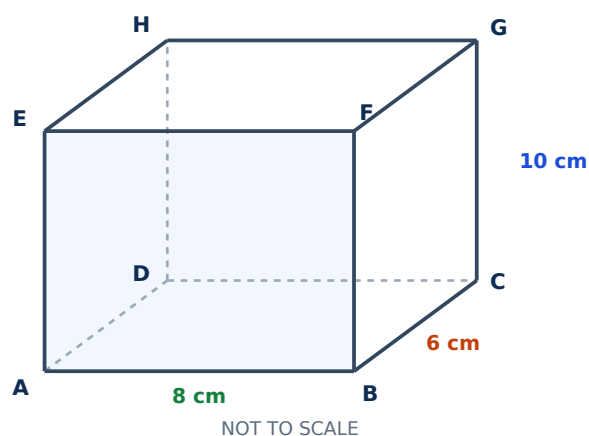
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Question 21

4 marks

Three Dimensional Trigonometry

- (a) ABCDEFGH is a cuboid with $AB = 8$ cm, $BC = 6$ cm and $CG = 10$ cm. Show that the diagonal AC of the base is 10 cm. [2]



- (b) Find the angle that the diagonal AG makes with the base ABCD.

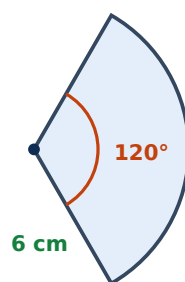
[2]

Question 22

4 marks

Sector of a Circle

- (a) The sector has radius 6 cm and angle 120° . Find the arc length, giving your answer in terms of π .



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

[2]

Question 23

3 marks

Surds

- (a) Simplify $\sqrt{48}$. [1]

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- (b) Rationalise the denominator of $\frac{10}{\sqrt{5}}$. [2]

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Question 24

4 marks

Vectors

- (a) $\mathbf{a} = (4, -1)$ and $\mathbf{b} = (-2, 3)$. Find $3\mathbf{a} - 2\mathbf{b}$. [2]

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- (b) Find $|\mathbf{a} + \mathbf{b}|$, giving your answer as a surd in its simplest form. [2]

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Question 25

5 marks

Probability

- (a) A bag contains 4 red counters and 5 blue counters. Two counters are taken at random without replacement. Find the probability that both are red. [2]

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- (b) Find the probability that the two counters are different colours. [3]

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Question 26

3 marks

Simultaneous Equations

- Solve the simultaneous equations $3x + 4y = 18$ and $2x - y = 1$. [3]

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Question 27

4 marks

Quadratic Equations

- (a) Solve $x^2 - 7x + 10 = 0$. [2]

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- (b) Solve $3x^2 - 10x - 8 = 0$. [2]

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Question 28

3 marks

Sequences

- The first five terms of a sequence are 3, 8, 15, 24, 35. Find the n th term. [3]

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Question 29

2 marks

Reverse Percentage

- The price of a bicycle is reduced by 12 percent to \$176. Find the original price. [2]

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Question 30

4 marks

Functions

- (a) $f(x) = 3x - 2$ and $g(x) = x^2$. Find $gf(2)$. [2]

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- (b) Find $f^{-1}(x)$. [2]

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End of paper. Total 100 marks.

Worked solutions with full method marks are in the Solutions PDF. More free IGCSE and O Level resources at <https://numrahedu.com/mathematics/>

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