Year 10 | Mathematics

IGCSE-pathway diagnostic assessment • Core algebra, number, geometry and data

Student name: _____ Date: _____

Suggested time: 55 minutes. Show working and explain your reasoning. This is an independent diagnostic, not an official examination paper.

1. Solve $3(2x - 5) = 4x + 9$. Show each algebraic step. [5 marks]

2. Factorise $x^2 - 7x + 12$. Hence solve $x^2 - 7x + 12 = 0$. [5 marks]

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3. A jacket costs £80. Its price rises by 15%, then falls by 15%. Calculate the final price and explain why it is not £80. [6 marks]

4. A right-angled triangle has shorter sides 9 cm and 12 cm. Calculate the hypotenuse and its area. [5 marks]

5. The line passes through (2, 7) and (6, 19). Find its gradient and equation in the form $y = mx + c$. [6 marks]

6. A bag contains 5 red, 3 blue and 2 green counters. Two counters are drawn without replacement. Find the probability both are red. [6 marks]

7. The grouped frequencies for test scores are: 0–9: 2, 10–19: 5, 20–29: 8, 30–39: 5. Estimate the mean using class midpoints and state one limitation. [7 marks]

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Parent / Tutor Guide | Mathematics

Keep this section separate from the student during the assessment. The marks are diagnostic prompts, not an official IGCSE mark scheme.

Suggested responses and assessment notes

1. (5 marks) $x = 12$.

2. (5 marks) $(x - 3)(x - 4)$; $x = 3$ or 4.

3. (6 marks) £78.20; $80 \times 1.15 \times 0.85$.

4. (5 marks) 15 cm; 54 cm^2.

5. (6 marks) $m = 3$, $y = 3x + 1$.

6. (6 marks) $(5/10)(4/9) = 2/9$.

7. (7 marks) Using midpoints 4.5, 14.5, 24.5, 34.5: estimated mean = 22.5; grouped data conceal exact scores.

What to observe

Look for subject knowledge, accuracy, use of appropriate terminology, clarity of reasoning, interpretation of command words, and ability to justify or evaluate when asked.

Suggested diagnostic approach

Record which questions were attempted independently, which required prompts, and whether difficulties arose from concepts, literacy, calculations or time management. Plan follow-up teaching around recurring misconceptions.

Curriculum note

This is a general Year 10 IGCSE-oriented diagnostic. It is not endorsed by Cambridge, Pearson Edexcel or the IB. Topic order and examination demands differ by board and school; adjust to the student's actual specification.

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