YEAR 8 | IB MYP DIAGNOSTIC

Mathematics | Concepts and Applications

Student name: _____ Date: _____

Suggested time: 55 minutes | Unofficial MYP-aligned diagnostic | Show your thinking.

This paper samples MYP Mathematics criteria A (knowing and understanding), B (investigating patterns), C (communicating) and D (applying mathematics in real-life contexts).

Number and algebra

1. Calculate 3/4 − 2/5. Show a common-denominator method and simplify.

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2. A jacket costs £64. Its price increases by 15%, then the new price is reduced by 15%. Is the final price £64? Calculate and explain.

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3. Solve 4(2x − 3) = 3x + 18. Check your solution by substitution.

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4. Simplify 3a(2a − 5) − 2a(a + 4). State the coefficient of a^2.

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Patterns and relationships

5. A growing tile pattern uses 5, 9, 13, 17, ... tiles. Find the 20th term and an expression for the nth term. Explain why your rule works.

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6. A taxi charges £3.20 plus £1.80 per kilometre. Write a formula for cost C in terms of distance d; calculate the cost for 7 km and determine the distance for a £21.20 fare.

Geometry, data and reasoning

7. A right-angled triangle has shorter sides of 6 cm and 8 cm. Find its hypotenuse and area. Explain which formula applies to each calculation.

8. The data set is 4, 7, 7, 9, 13, 20. Find mean, median and range. Which average better represents a typical value, and why?

9. A rectangular garden measures 12 m by 8 m. A path 1 m wide runs around the inside edge. Find the planting area and show a labelled method.

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PARENT / TUTOR GUIDE

Keep this section separate from the student during the assessment. The purpose is to identify current understanding and next teaching steps, not to assign an official IB grade.

Suggested answers

• 1. 7/20. 2. £64 × 1.15 × 0.85 = £62.56; percentage changes are applied to different bases.

• 3. x = 6; both sides equal 36. 4. $4a^2 - 23a$; coefficient 4.

• 5. 4n + 1; 20th term = 81. 6. C = 3.20 + 1.80d; £15.80; d = 10 km.

• 7. 10 cm; 24 cm^2. 8. Mean 10, median 8, range 16; median is less affected by 20.

• 9. Inner rectangle 10 m × 6 m = 60 m^2.

MYP-inspired observations

• Criterion A: check fluency with operations, algebra and geometry.

• Criterion B: look for a justified nth-term rule, not guesswork.

• Criterion C: look for organised steps, units and mathematical notation.

• Criterion D: check modelling assumptions and whether answers make sense.

Suggested diagnostic follow-up

Look for clarity of reasoning, correct use of subject vocabulary, the quality of evidence and whether the student can revise an answer after a probing question. Record strengths and one or two priorities for future lessons.

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