YEAR 11 | MATHEMATICS

STUDENT PAPER — original practice assessment

Name: _____ Date: _____

Suggested time: 60–75 minutes. Show reasoning, cite evidence where appropriate, and answer in complete sentences.

Section A — Algebra and functions (20 marks)

1. Solve $3(2x – 5) – 2(x + 4) = 13$. (4)

2. Factorise $2x^2 – 7x – 4$ and solve $2x^2 – 7x – 4 = 0$. (5)

3. The line passes through (–2,5) and (4,–7). Find its equation. (5)

4. A sequence has nth term $3n^2–2n$. Find the 5th term and explain whether differences are constant. (6)

Section B — Geometry, probability and modelling (20 marks)

1. A right triangle has shorter sides x and x+7 and hypotenuse 13. Find x. (5)

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2. A bag has 4 red, 3 blue and 2 green counters. Two are drawn without replacement. Find P(both blue). (5)

3. An investment of £800 grows by 4% annually. Calculate its value after 3 years. (4)

4. A cylindrical tank has radius 0.8 m and height 2 m. Find volume in litres, using π=3.142. (6)

ANSWER KEY & TUTOR GUIDANCE

Mathematics

The following pages contain suggested answers, marking points and tutor guidance. For open-ended tasks, answers are indicative rather than the only acceptable responses.

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TUTOR GUIDE — indicative responses and marking points

Section A — Algebra and functions (20 marks)

1. 6x−15−2x−8=13; 4x=36; x=9.

2. (2x+1)(x−4); x=−1/2 or 4.

3. Gradient −12/6=−2; y=−2x+1.

4. 65; first differences vary, second differences constant 6.

Section B — Geometry, probability and modelling (20 marks)

1. $x^2+(x+7)^2=169$; $2x^2+14x-120=0$; $x^2+7x-60=0$; x=5 (reject −12).

2. 3/9 × 2/8 = 1/12.

3. 800(1.04)^3=£899.89 (to nearest penny).

4. $\pi(0.8)^2(2)=4.02176$ m³ = 4021.76 litres.

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