

## **End-of-Topic Assessment — Foundation Tier (52 Marks)**

**Name:** \_\_\_\_\_

**Student number:** \_\_\_\_\_

**Group:** \_\_\_\_\_

Welcome to your End-of-Topic Assessment. This paper is designed to test your understanding of the key concepts covered in this unit. It consists of 16 questions, with a total of 52 marks available.

**Important:** This is a **non-calculator** paper. You must not use a calculator at any point during the assessment. Please ensure that you show clear working for all questions where appropriate, as marks may be awarded for method even if the final answer is incorrect.

Take your time, read each question carefully, and do your best. Good luck!

**Q1 Standard form — Convert to and from standard form** [4 marks]

[MF14.03] [MF14.04]

(a) Write **0.00072** in standard form, in the form  $a \times 10^n$ .

(b) Write  $3.5 \times 10^6$  as an ordinary number.

(c) Write **4,200,000** in standard form.

In standard form, the coefficient satisfies  $1 \leq a < 10$ .

**Q2 Standard form — Multiply & divide** [4 marks]

[MF14.08][MF14.09]

(a) Calculate  $(2 \times 10^3) \times (4 \times 10^2)$ . Give your answer in standard form.

(b) Calculate  $(9 \times 10^5) \div (3 \times 10^2)$ . Give your answer in standard form.

**Q3 Sequences — Next terms and nth term****[4 marks]****[MF22.01][MF22.07]**

The sequence is: **4, 7, 10, 13, ...**

**(a)** Write the next two terms.

**(b)** Write the nth term (use **n**).

**Q4 Sequences — Using an nth term****[3 marks]****[MF22.03]**

A sequence has nth term  **$5n - 2$** .

**(a)** Find the 6th term.

**(b)** Which term is **43**?

**Q5 Area & perimeter — Rectangles [3 marks]**

**[MF31.03]MF30.02]**

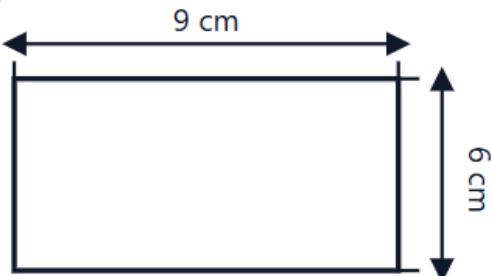


Diagram not to scale.

A rectangle is **9 cm** by **6 cm**.

(a) Area =  cm<sup>2</sup>

(b) Perimeter =  cm

(c) If the length increases to **11 cm** (width stays **6 cm**), new area =  cm<sup>2</sup>

**Q6 Area & perimeter — Triangles** [4 marks]

[MF31.04][MF30.02]

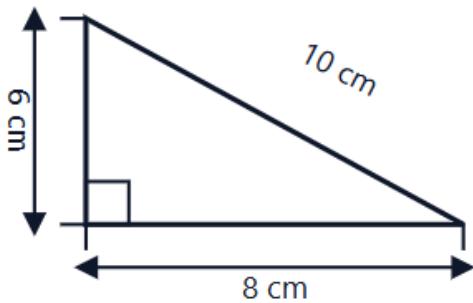


Diagram not to scale.

A right-angled triangle has side lengths **6 cm**, **8 cm**, and **10 cm**.

(a) Area =  cm<sup>2</sup>

(b) Perimeter =  cm

**Q7 Algebra — Expanding expressions** [3 marks]

[MF18.01]

(a) Expand:  $4(2x - 3)$

(b) Expand and simplify:  $3(x + 5) - 2(x - 1)$

**Q8 Algebra — Factorising expressions (HCF)**

[3 marks]

[MF18.08]

(a) Factorise:  $6x + 18$

(b) Factorise:  $10y - 15$

**Q9 Quadratics — Expanding****[3 marks]****[MF18.10]**

(a) Expand:  $(x + 3)(x + 5)$

(b) Expand:  $(2x - 1)(x + 4)$

**Q10 Quadratics — Factorising****[4 marks]****[MF18.15]**

(a) Factorise:  $x^2 + 9x + 20$

(b) Factorise:  $x^2 - 16$

**Q11 Inequalities — Solving** [3 marks]**[MF25.06][MF25.08]****(a)** Solve:  $3x - 5 \leq 10$ **(b)** Solve:  $-2x > 8$  x  

Remember what happens to the inequality sign when you divide or multiply by a negative number 😊.

**Q12 Equations — Solving (multi-step)**

[3 marks]

**[MF19.06][MF19.08]****(a)** Solve:  $5x - 7 = 18$ **(b)** Solve:  $\frac{x}{4} - 3 = 5$

**Q13 Equations — x on both sides**

[2 marks]

[MF19.15]

**(a)** Solve:  $4x + 5 = 2x + 19$

**Q14 Indices — Rules of indices**

[4 marks]

[MF13.07]

**(a)** Simplify:  $x^3 \times x^5$

**(b)** Simplify:  $a^7 \div a^2$

**(c)** Simplify:  $(y^2)^4$

**(d)** Simplify:  $(3x^2)^3$

**Q15 Substitution**

[3 marks]

[MF17.14]

(a) Work out  $2p^2 - q$  when  $p = -3$  and  $q = 5$ .

**Q16 Number machine — Input & output**

[2 marks]

[MF17.12]

A number machine does this:

input  $x \rightarrow x + 3 \rightarrow + 4 \rightarrow$  output  $y$

(a) If the input is 5, what is the output?

(b) If the output is 34, what was the input?

(c) Form an equation for  $y$  in terms of  $x$ .