



**Test Papers**  
**Hub.**

# HAST Year 10 Entry Practice Paper 1

Mathematical Reasoning

**35 questions · 4 options each (A–D) · 40 minutes · No calculator**

## **How to use this booklet**

- There are 35 questions in this section. For each question there are four possible answers, A, B, C and D. Choose the one correct answer.
- This section tests mathematical reasoning: problem solving with number, algebra, measurement, space and data. Use rough paper for working.
- Calculators are not allowed. You have 40 minutes. You will not lose marks for wrong answers, so attempt every question.

## MATHEMATICAL REASONING — 35 QUESTIONS

Multiple choice · 40 minutes

Work through the questions in order. If a question stalls you, move on and come back. Then check your work against the worked solutions.

1. What value of  $x$  satisfies  $9x - 7 = 1x - 3$ ?

- A  $\frac{2}{5}$
- B -1
- C  $-\frac{1}{2}$
- D  $\frac{1}{2}$

2. Write  $3\frac{3}{9}$  as an improper fraction.

- A  $\frac{18}{9}$
- B  $\frac{30}{3}$
- C  $\frac{30}{9}$
- D  $\frac{6}{9}$

3. An isosceles triangle has an apex (top) angle of  $80^\circ$ . What is the size of each of the two equal base angles?

- A  $100^\circ$
- B  $50^\circ$
- C  $60^\circ$
- D  $80^\circ$

4. Estimate  $649 \times 61$  by rounding each number to its leading digit (first digit).

- A 660
- B 3,600
- C 360,000
- D 36,000

**5. A jacket originally priced at \$250 is discounted by 25%. The sale price is then discounted by a further 20%. What is the final price, in dollars?**

- A \$187.50
- B \$167.50
- C \$137.50
- D \$150.00

**6. Write the ratio 9 : 15 in its simplest form.**

- A 3 : 5
- B 5 : 3
- C 6 : 10
- D 4 : 5

**7. What is  $\frac{1}{2} \times \frac{3}{5}$ ? Give the answer in simplest form.**

- A  $\frac{11}{10}$
- B  $\frac{3}{10}$
- C  $\frac{2}{5}$
- D  $\frac{4}{7}$

**8. What is 25% of 480?**

- A 122
- B 120
- C 360
- D 12,000

**9. A prize of \$28 is divided between two people in the ratio 3 : 4. What is the smaller share, in dollars?**

- A 16
- B 14
- C 12
- D 4

# MATHEMATICAL REASONING — 35 QUESTIONS

Answers & worked solutions

## Answer Key

|    |   |    |   |    |   |    |   |    |   |    |   |
|----|---|----|---|----|---|----|---|----|---|----|---|
| 1  | D | 2  | C | 3  | B | 4  | D | 5  | D | 6  | A |
| 7  | B | 8  | B | 9  | C | 10 | C | 11 | B | 12 | A |
| 13 | A | 14 | C | 15 | B | 16 | A | 17 | A | 18 | C |
| 19 | B | 20 | D | 21 | C | 22 | D | 23 | D | 24 | C |
| 25 | A | 26 | B | 27 | B | 28 | C | 29 | A | 30 | A |
| 31 | C | 32 | D | 33 | A | 34 | D | 35 | B |    |   |

### 1. What value of $x$ satisfies $9x - 7 = 1x - 3$ ? [Linear equations]

**Correct answer: D —  $\frac{1}{2}$**

- Our goal is to get  $x$  on its own. First collect all the  $x$  terms on ONE side.
- Subtract  $1x$  from both sides. The left side becomes  $8x - 7$  and the right side becomes  $-3$ .
- Now move the plain number: take away  $-7$  from both sides, so  $8x = -3 - (-7) = 4$ .
- Finally divide both sides by  $8$ :  $x = 4 \div 8 = \frac{1}{2}$ .
- Why the other options are wrong:
  - A ( $\frac{2}{5}$ ): The  $x$  terms were added when they should have been subtracted.
  - B ( $-1$ ): The  $x$  terms were added instead of subtracted.
  - C ( $-\frac{1}{2}$ ): The signs were mixed up when moving the numbers across.

LOS: Mathematics: linear equations

#### KEY TAKEAWAY

To solve an equation, do the same thing to both sides until  $x$  stands alone: collect  $x$  terms, move numbers, then divide.

### 2. Write $3\frac{3}{9}$ as an improper fraction. [Fractions]

**Correct answer: C —  $\frac{30}{9}$**

- Whole  $\times$  bottom:  $3 \times 9 = 27$ .
- Add the top:  $27 + 3 = 30$ .
- The bottom stays  $9$ :  $\frac{30}{9}$ .
- Why the other options are wrong:
  - A ( $\frac{18}{9}$ ): Whole  $\times$  denominator, then add the top.
  - B ( $\frac{30}{3}$ ): The denominator stays the same.
  - D ( $\frac{6}{9}$ ): Multiply the whole number by the denominator first.

LOS: Mathematics: fractions