



**Test Papers
Hub.**

HAST Year 8 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. A prize of \$80 is divided between two people in the ratio 3 : 5. What is how much more the larger share is than the smaller share, in dollars?

- A 20
- B 10
- C 30
- D 40

2. Write the ratio 39 : 65 in its simplest form.

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

3. Write $7\frac{2}{9}$ as an improper fraction.

- A $\frac{23}{9}$
- B $\frac{9}{9}$
- C $\frac{65}{9}$
- D $\frac{65}{7}$

4. A rectangular screen is 7 inches wide and 24 inches tall. What is the length of its diagonal, in inches?

- A 28
- B 62
- C 31
- D 25

5. A taxi company charges a flat fee of \$5 plus \$4 for each mile traveled. A passenger paid \$65. How many miles did the passenger travel?

- A $\frac{65}{4}$
- B 60
- C 15
- D 20

6. What is $\frac{1}{3} + \frac{5}{8}$? Give the answer in simplest form.

- A $\frac{6}{11}$
- B 1
- C $\frac{5}{24}$
- D $\frac{23}{24}$

7. What is the median of the following data set? 44, 38, 32, 40, 41

- A 40
- B 41
- C 38
- D 39

8. Two parallel lines are cut by a transversal. One of the angles formed measures 107° . What is the measure of the angle that is adjacent to it on the same side of the transversal (they form a straight line)?

- A 107
- B 83
- C 253
- D 73

9. If $f(x) = 4x^2 - 2x - 4$, what is $f(-2)$?

- A 16
- B 24
- C 64
- D -16

MATHEMATICAL REASONING — 35 QUESTIONS

Answers & worked solutions

Answer Key

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

1. A prize of \$80 is divided between two people in the ratio 3 : 5. What is how much more the larger share is than the smaller share, in dollars? [Ratios]

Correct answer: A — 20

- The ratio 3 : 5 means the prize is split into $3 + 5 = 8$ equal parts.
- One part is $\$80 \div 8 = \$10$.
- The smaller share has 3 parts: $3 \times \$10 = \$30$. The larger share has 5 parts: $5 \times \$10 = \$50$.
- How much more the larger share is than the smaller share: \$20.
- Why the other options are wrong:
- B (10): That is the size of ONE part; multiply by the number of parts.
- C (30): That is a different share from the one asked for.
- D (40): The shares are not equal; they are in the ratio 3 : 5.

LOS: Mathematics: ratios

KEY TAKEAWAY

A ratio $a : b$ splits a total into $a + b$ equal parts: find the value of one part first.

2. Write the ratio 39 : 65 in its simplest form. [Ratio]

Correct answer: A — 3 : 5

- Find the highest common factor of 39 and 65: it is 13.
- Divide both by 13: 3 : 5.
- Why the other options are wrong:
- B (6 : 10): That is not fully simplified (or is not equal).
- C (4 : 5): This is the correct answer (3 : 5) plus 1: an extra 1 was added at the end of the calculation (an off-by-1 error).
- D (5 : 3): The ratio order must be kept.

LOS: Mathematics: ratio