

WA7MNAUN8

Understanding number

Core + Challenge

Mental Strategies with Number Laws

I can use the number laws, partitioning and inverse operations to calculate mentally and check statements.

Name: _____ Date: _____ Score: _____ / 55

Key idea

Reorder and regroup (commutative and associative laws): $25 \times 17 \times 4 = (25 \times 4) \times 17 = 1700$ $16 \times 75 = 4 \times 4 \times 3 \times 25 = (4 \times 25) \times 3 \times 4 = 1200$

Partition (distributive law): $7 \times 104 = 7 \times 100 + 7 \times 4 = 728$ $4 \times 2\frac{3}{4} = 8 + 3 = 11$ $99 \times 6 = 600 - 6$

Compensate: $15.3 - 4.8 = 15.3 - 5 + 0.2 = 10.5$ $-27 + 35 = -27 + 27 + 8 = 8$

Check without calculating: $48 \times 2.5 = 12 \times 10$ is true, because $48 \times 2.5 = 12 \times 4 \times 2.5 = 12 \times 10$.

A Fluency *practise the skill*

/ 16 marks

Calculate mentally. Show the strategy you used in the margin.

1. $25 \times 17 \times 4 =$ _____

9. $7 \times 104 =$ _____

2. $16 \times 75 =$ _____

10. $125 \times 16 =$ _____

3. $4 \times 2\frac{3}{4} =$ _____

11. $-27 + 35 =$ _____

4. $99 \times 6 =$ _____

12. $6 \times 1\frac{1}{2} =$ _____

5. $48 \times 2.5 =$ _____

13. $360 \div 15 =$ _____

6. $15.3 - 4.8 =$ _____

14. $0.25 \times 48 =$ _____

7. $3.7 + 2.6 + 6.3 =$ _____

15. $19 + 47 + 81 =$ _____

8. $5 \times 3.8 \times 2 =$ _____

16. $8 \times 45 =$ _____

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B**Core** *apply the skill to problems*

/ 21 marks

- 1 Explain an efficient strategy and calculate $4 \times 17 \times 25$. [2 marks]

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Answer: _____

- 2 Six items cost \$9.99 each. Use a mental strategy to find the total. [2 marks]

.....

Answer: _____

- 3 Use the distributive law to calculate 7×38 mentally. [2 marks]

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Answer: _____

- 4 A canteen sold items worth \$23, \$58, \$77 and \$42. Find the total by pairing numbers cleverly. [2 marks]

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Answer: _____

- 5 12 movie tickets cost \$15.50 each. Calculate the total mentally. [2 marks]

.....

Answer: _____

- 6 Without calculating, decide whether each is true or false, and explain. [3 marks]

(a) $48 \times 2.5 = 12 \times 10$

(b) $15 \times 6 < 15 \times 12 \div 2$

(c) $8 \div 1.8 \div 2 < 8 \div 2 \div 1.8$

.....

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- 7 Use inverse operations to find the missing number. [2 marks]

(a) $\frac{5}{8} - \square = \frac{1}{4}$ (b) $\square \times 3.5 = 16.1$

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- 8 A rectangular paddock is 25 m by 36 m. Find its area mentally, showing your strategy. [2 marks]

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Answer:

- 9 In Nepal the overnight temperature was -12°C . It rose 23 degrees to its daytime peak, then fell 17 degrees overnight. What was the final temperature? [2 marks]

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Answer:

- 10 Eight books cost \$4.95 each. Use a compensation strategy to find the total. [2 marks]

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Answer:

C Reasoning *explain, justify and check*

/ 9 marks

- 1 Explain why 16×75 can be rewritten as $4 \times 25 \times 3 \times 4$, and why this helps. [2 marks]

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- 2 Is $9 \div (0.4 + 3) = 9 \div 0.4 + 9 \div 3$? Explain without a calculator. [3 marks]

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- 3 Sam calculates 38×5 as $38 \times 10 \div 2 = 190$. Explain why this works. [2 marks]

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- 4 Without calculating, is $\frac{3}{8} \times \frac{5}{8} > \frac{5}{8} \times (\frac{1}{5} + \frac{3}{5})$ true or false? Explain. [2 marks]

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D**Challenge** *multi-step and problem-solving*

/ 9 marks

- 1 Calculate 999×37 mentally. Show your strategy. [2 marks]

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Answer: _____

- 2 Find the sum $1 + 2 + 3 + \dots + 100$ without adding one by one. Explain your method. [3 marks]

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Answer: _____

- 3 Calculate $25 \times 44 \times 0.4$ mentally. [2 marks]

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Answer: _____

- 4 Insert one pair of brackets to make this true: $6 + 4 \times 5 - 2 = 48$ [2 marks]

.....

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Answer: _____

How did I go?

Fluency ____ / 16 Core ____ / 21 Reasoning ____ / 9 Challenge ____ / 9 **Total ____ / 55**

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