

WA7MNAC7

Calculating with number

Core + Challenge

Estimating to Check Reasonableness

I can use rounding, estimation and the context to check whether an answer is reasonable.

Name: _____ Date: _____ Score: _____ / 57

Key idea

Round to friendly numbers, then calculate mentally. $6\frac{3}{7} + 18\frac{5}{9} \approx 6\frac{1}{2} + 18\frac{1}{2} = 25$

Think about the size of the answer: multiplying or dividing by a number **less than 1** makes it smaller (×) or bigger (÷). $695 \div 0.527 \approx 700 \div 0.5 = 1400$

Check the context: a 4.95% interest on \$500 should be about 5% of \$500 = \$25, so \$247.50 must be wrong.

Compare your estimate with the calculator answer. If they are far apart, look for a keying or place-value error.

A Fluency *practise the skill*

/ 16 marks

Estimate each answer. Show the friendly numbers you used. Any sensible estimate earns the mark.

1. $6\frac{3}{7} + 18\frac{5}{9} \approx$ _____

9. $3\frac{7}{8} \times 4\frac{1}{10} \approx$ _____

2. $4.9 \times 6.1 \approx$ _____

10. $59.6 \div 2.9 \approx$ _____

3. $695 \div 0.527 \approx$ _____

11. 24% of 81 $\approx$ _____

4. 4.95% of \$500 $\approx$ _____

12. $7.03 - 2.98 \approx$ _____

5. $38.7 + 51.2 \approx$ _____

13. $199 \times 0.26 \approx$ _____

6. $812 \div 39 \approx$ _____

14. $1\frac{9}{10} + 2\frac{1}{12} \approx$ _____

7. $0.48 \times 205 \approx$ _____

15. $0.98 \times 0.51 \approx$ _____

8. $19.8 \times 5.02 \approx$ _____

16. $402 \div 7.9 \approx$ _____

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

/ 22 marks

- 1 Ella calculated $48.6 \times 3.9 = 18.954$. Use an estimate to show she is wrong, then find the correct answer. [2 marks]

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Answer: _____

- 2 Items cost \$4.95, \$12.10, \$7.85 and \$2.99. Estimate the total, then find the exact total. [2 marks]

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Answer: _____

- 3 Is $695 \div 0.527$ closest to 13, 130 or 1300? Explain. [2 marks]

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Answer: _____

- 4 A tradie quotes \$15 892.50 to lay 32.5 m^2 of tiles at \$48.90 per m^2 . Is the quote reasonable? Estimate, then find the correct cost. [3 marks]

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Answer: _____

- 5 A car uses 7.8 L of fuel per 100 km. Estimate the fuel used on a 412 km trip, then calculate it exactly. [2 marks]

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Answer: _____

- 6 Sam's calculator shows $0.5 \times 64 = 128$. Is this reasonable? Explain. [2 marks]

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Answer: _____

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- 7 A restaurant serves 60 to 80 lunch customers a day and is open 6 days a week. Each customer eats about 0.15 kg of scallops. What range of scallops should the chef order each week? [3 marks]

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Answer: _____

- 8 Estimate 4.95% interest on \$500, then find the exact amount. [2 marks]

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Answer: _____

- 9 A block of land is 19.7 m by 31.2 m. A calculator gives the area as 614.64 m^2 . Use an estimate to decide whether this is reasonable. [2 marks]

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Answer: _____

- 10 Which answer for $9.8 \div 0.49$ is reasonable: 2, 20 or 200? Explain. [2 marks]

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Answer: _____

C Reasoning *explain, justify and check*

/ 9 marks

- 1 Explain, with an example, why dividing by a number less than 1 gives a larger answer. [2 marks]

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- 2 Why is estimating useful when you use a calculator? Give an example of an error it would catch. [2 marks]

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- 3 Two students estimate $6\frac{3}{7} + 18\frac{5}{9}$. Ana rounds each number to the nearest whole and gets 25. Ben ignores the fractions and gets 24. Which estimate is closer? Explain. [3 marks]

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- 4 If you round two positive numbers **up** and multiply, is your estimate always too big? Explain. [2 marks]

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D Challenge *multi-step and problem-solving*

/ 10 marks

- 1 Without calculating exactly, which is largest? Explain. 0.9×48 $48 \div 0.9$ 48×1.1 $48 \div 1.1$ [3 marks]

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Answer: _____

- 2 The digits of $386 \times 52 = 20\,072$. Use estimation to place the decimal point in each answer. [2 marks]
(a) 38.6×5.2 (b) 3.86×0.052

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- 3 A school orders pizza for 94 students. Each student eats about 0.3 of a pizza. Pizzas come in boxes of 5. [3 marks]
(a) Estimate the pizzas needed.
(b) How many boxes should be ordered? Explain.

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Answer: _____

- 4 A calculator shows $27.4 \div 1.05 = 2.6095$. Is this reasonable? Explain, and give the correct answer to 2 d.p. [2 marks]

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Answer: _____

How did I go?

Fluency ____ / 16 Core ____ / 22 Reasoning ____ / 9 Challenge ____ / 10 **Total ____ / 57**

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