

C1.6 The four operations

Name: _____ Class: _____ Date: _____

Total: 20 marks

KEY WORDS reciprocal 倒数 • denominator 分母 • ratio 比 • mixed number 带分数
• factor 因数

Objective

Use the four operations to solve Core IGCSE Mathematics problems.

You must be able to:

- Apply the order of operations with signed numbers
- Calculate exactly with fractions and mixed numbers
- Interpret a calculation and check its size

1 Key knowledge and worked examples

■ Key knowledge: The four operations

Do brackets first, then powers, then multiplication and division from left to right, then addition and subtraction. Adding a negative decreases a value; subtracting a negative increases it. For fractions, use a common denominator to add or subtract. Multiply numerators and denominators; to divide, multiply by the reciprocal. Convert mixed numbers before calculating.

■ Worked example: The four operations

brackets

powers

multiply
/ divide

Calculate $1\frac{1}{2} \div \frac{3}{4} - \frac{1}{3}$.

- Convert: $1\frac{1}{2} = 3/2$.
- Divide by multiplying the reciprocal: $Q = (3/2)(4/3) - 1/3 = 2 - 1/3$.
- Common denominator: $Q = 6/3 - 1/3 = 5/3 = 1\frac{2}{3}$.
- For signed integers, $-6 - (-4) = -6 + 4 = -2$.

■ Method check

Evaluate brackets before multiplication or division. Convert mixed numbers to improper fractions before multiplying or dividing.

2 Practice

2.1 Calculate $-8 + 5$ and $-3 \times (-4)$. [2]

2.2 Calculate $18 - 2(3 + 4)$. [2]

2.3 Calculate $5/6 - 1/4$. [2]

2.4 Calculate $2.4 \times 0.5 + 0.36 \div 0.6$. [2]

3 Exam-style questions

3.1 Apply the the four operations methods below. Show working and include units where appropriate.

(a) The temperature is -7°C and rises by 12°C . Find the new temperature. [2]

(b) It then falls by 8°C . Find the final temperature. [2]

- (c) A recipe uses $\frac{3}{4}$ kg flour for one batch. Find the flour needed for $2\frac{1}{2}$ batches. [2]

3.2 A baker has $4\frac{1}{2}$ kg of flour. Each cake uses $\frac{3}{8}$ kg.

- (a) Find the maximum number of whole cakes the baker can make. [3]

- (b) The baker makes 10 cakes, then receives another $\frac{3}{4}$ kg of flour. Find the new amount of flour and the number of further whole cakes possible. [3]
