Chapter 4

The four operations

Learn the ideas below, follow each worked example, then attempt the practice before checking the answers.

4.1 Addition and its properties

Addition combines amounts. Align matching places in column addition and regroup whenever a place totals ten or more. Addition is commutative and associative, so you can change the order or grouping. Adding zero leaves a number unchanged.

Worked example 2,786 + 1,459: ones give 15, so write 5 and carry 1. Tens give 14, hundreds give 12 and thousands give 4. The total is 4,245. Check by estimating 2,800 + 1,500 ≈ 4,300.

4.2 Subtraction and exchanging

Subtraction finds what remains, a difference or a missing amount. Align places and exchange from a higher place when needed. Subtraction is the inverse of addition. Changing the order usually changes the result, so subtraction is not commutative.

Worked example 5,003 − 1,786 = 3,217. Regroup 5,003 as 4 thousands, 9 hundreds, 9 tens and 13 ones. Check: 3,217 + 1,786 = 5,003.

4.3 Multiplication and the distributive property

Multiplication describes equal groups, repeated addition and scaling. Multiply each place and add partial products. The distributive property splits a product into easier products. Multiplication is commutative and associative, and multiplying by 1 keeps the value.

Worked example 236 × 24 = 236 × (20 + 4) = 4,720 + 944 = 5,664. Estimate 240 × 24 ≈ 5,760 to check the scale of the answer.

4.4 Division and remainders

Division shares into equal groups or finds how many groups fit. Dividend = divisor × quotient + remainder. For positive whole number division, the remainder is nonnegative and smaller than the divisor. Division by zero is undefined.

Worked example 157 ÷ 6 = 26 remainder 1, because 6 × 26 + 1 = 157. If 157 children need buses holding 6 children each, 27 buses are needed because the remaining child needs another bus.

4.5 Decimal calculations and inverse checks

Align decimal points when adding or subtracting. For multiplication, multiply as whole numbers then use the total number of decimal places. For division, multiply dividend and divisor by the same power of ten to make the divisor a whole number. Check using the inverse operation.

Worked example 3.6 × 0.4 = 1.44 because 36 × 4 = 144 and there are two decimal places in total. Also, 7.56 ÷ 0.6 = 75.6 ÷ 6 = 12.6. Check: 12.6 × 0.6 = 7.56.

Chapter 4 practice

Work in your notebook. Show your method and include units where needed.

1. Calculate 4,675 + 2,958.
2. Calculate 8,002 − 3,847.
3. Calculate 125 × 48 using a useful partition.
4. Share 245 stickers equally among 8 children.
5. Calculate 6.72 ÷ 0.8.

Answers with methods

1. The sum is 7,633. Check: 7,633 − 2,958 = 4,675.

2. The difference is 4,155. Check: 4,155 + 3,847 = 8,002.

3. 125 × (40 + 8) = 5,000 + 1,000 = 6,000.

4. 245 ÷ 8 = 30 remainder 5. Each gets 30 stickers, with 5 left over.

5. 67.2 ÷ 8 = 8.4. Check: 8.4 × 0.8 = 6.72.

Common mistake to avoid

A remainder must be interpreted. Sometimes round up for containers, sometimes report the remainder, and sometimes continue as a decimal.