

# 1 Basic calculation skills

## 1.1 Basic calculations

- **Calculate** means work out the answer. It is always best to show working, even if you use a calculator.
- **Estimate** means give a reasonable numeric value that can be justified by the information in the question.
- **Integer** means any positive or negative whole number, or zero.
- **Sum** means add.
- **Difference** means subtract.
- **Product** means multiply.
- **Quotient** means divide.

### Exercise 1

Do not use a calculator for questions 1–7.

1 Calculate.

- a  $12 - 5 + 6$     b  $1530 - 258$     c  $220 \times 17$     d  $3930 \div 30$     e  $\frac{150}{4} \text{ cm}^2$

#### TIP

Remember to show your working and include any units required on your answer line.

**PS 2** A can of cola costs 75p. A burger costs £1.20. Chips cost £0.80 per portion.

Beth buys three cans of cola, two burgers and two portions of chips.

She pays with a £10 note.

How much change will she get?

**PS 3** Ben delivers 48 leaflets in one hour.

a How many leaflets can he deliver in 24 hours?

Ben needs to deliver a total of 2500 leaflets this week.

b **Estimate** how many hours it would take him.

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**TIP**

Some questions need to be worked out in stages.  
Do not be tempted to do the calculations in your head.

- 4 Subtract the product of 27 and 15 from the sum of 582 and 260.
- 5 Add the difference between 1201 and 725 to the quotient of 27 divided by 3.
- 6 Which of the following numbers have a difference of 42 and a product of 4600?  
**a** 30 and 72      **b** 46 and 100      **c** 50 and 92
- 7 Charlie bought six pads of paper priced at £1.52 each.  
He was asked to pay £15.10, which was not correct.  
Without working out the exact cost, **estimate** how much he should have paid.

**Use a calculator for questions 8–11.**

- 8 Nina changed £420 into euros.  
£1 is worth 1.16 euros.  
How many euros did she receive?

Always look for the command word used in a question to help you work out what you need to do to solve the problem.

**WORKED EXAMPLE**

Biscuits can be bought in packets of 20 or 30.  
All biscuits are identical in size and quality.  
A 20-biscuit packet costs £1.70.  
A 30-biscuit packet costs £2.46.  
Callum asks 'Which biscuit packet is better value?'  
Show your working.

**Solution**

Find the cost of one biscuit in each packet.  
One biscuit in the 20-biscuit packet costs  $£1.70 \div 20 = £0.085 = 8.5p$ .  
One biscuit in the 30-biscuit packet costs  $£2.46 \div 30 = £0.082 = 8.2p$   
As 8.2p is less than 8.5p, the 30-biscuit packet is better value.

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- 9 Tea biscuits can be bought in packets of 20 or packets of 24.

All biscuits are identical in size and quality.

20 tea biscuits cost £1.30.

24 tea biscuits cost £1.68.

Eve says, 'The packet of 24 is better value.'

Is Eve correct?

Explain your answer.

- 10 How many 15-litre containers can be completely filled from a tank containing 564 litres?

- PS 11 In a shop, pens are sold in packs of three for £4.20. Ellis buys 15 pens.

- How many packs of pens does she buy?
- What is the total cost of the 15 pens?
- What is the cost of each pen?

### Exercise 2

**Do not use a calculator for this exercise.**

#### TIP

You should remember the following rules:

Adding a negative number is the same as subtracting the positive version of the number.

For example:  $4 + -3 = 1$

Subtracting a negative number is the same as adding the positive version of the number.

For example:  $5 - -3 = 8$

Multiplying or dividing two numbers with the same sign gives a positive answer.

For example:  $-4 \times -2 = 8$  and  $\frac{-4}{-2} = 2$

- 1 Calculate.

a  $12 - 5 + 8$

b  $-3 - 4 - 8$

c  $3 + 5 - 6$

d  $-2 - 8 + 5$

e  $14 - 3 - 9$

f  $9 - 3 - 4$

g  $-34 + 18 - 12$

h  $25 - 19 - 42$

#### WORKED EXAMPLE

Calculate.  $6 - -3$

#### Solution

$6 - -3$  is equal to  $6 + 3$ , which is 9.

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2 Calculate.

a  $-2 \times -4$

b  $-4 \times \frac{1}{2}$

c  $-300 \div -10$

d  $42 \div -7$

e  $\frac{-40}{5}$

f  $\frac{-12}{-4}$

g  $\frac{30}{-5}$

h  $-\frac{-4}{-2}$

**PS 3** Here is a set of **integers**. $-8, -6, -3, 1, 3, 7$ a Find two numbers with a **difference** of 9.b Find three numbers with a **sum** of 1.c Find two numbers whose **product** is  $-3$ .d Find two numbers that, when divided, give an answer of  $-6$ .**PS 4** Two **integers** have a **sum** of  $-12$  and a **product** of  $-45$ .

Find the two integers.