



1 Simplify $a + a + a + a$

(1 mark)

There are four lots of a added together

$$a + a + a + a = 4a$$

$$4a$$

2 Write each of these in its simplest algebraic form.

a. $b \times 5 \times a$

b. $y + y + y$

c. $m \times m \times n$

d. $p \div 4$

(4 marks)

a) number first, letters in order, no $\times$

$$5ab$$

b) three lots of y

$$3y$$

c) $m \times m = m^2$

$$m^2n$$

d) write division as a fraction

$$\frac{p}{4}$$

3 Simplify $d \times d \times d$

(1 mark)

d multiplied by itself three times is d to the power 3

$$d \times d \times d = d^3$$

$$d^3$$

4 Look at 5^3

- Write down the base.
- Write down the index (also called the power or exponent).
- Write $7 \times 7 \times 7 \times 7$ using index notation.

(3 marks)

a) the big number being multiplied

5

b) the small raised number

3

c) four 7s multiplied

7^4

5 Write down whether each of these is an **expression**, an **equation** or a **formula**.

- $3x + 2$
- $2y - 5 = 11$
- $A = lw$
- $4a + b^2$

(2 marks)

no equals sign = expression

equals sign, solve for one value = equation

a rule linking quantities = formula

a) expression

b) equation

c) formula

d) expression

6 Pencils cost c pence each.

Write down an expression, in terms of c , for the total cost, in pence, of 7 pencils.

(1 mark)

Each pencil costs c pence and there are 7 pencils

Total cost = $7 \times c = 7c$ pence

$7c$

7

Amy is x years old.

Ben is 5 years older than Amy.

Chloe is twice as old as Amy.

a. Write down an expression, in terms of x , for Ben's age.

b. Write down an expression, in terms of x , for Chloe's age.

(2 marks)

Ben is 5 more than Amy, so Ben's age is $x + 5$

Chloe is twice Amy's age, so Chloe's age is $2 \times x = 2x$

8

Write an expression for each of these.

a. Square n , then add 4

b. Add 4 to n , then square the answer

c. Cube t , then halve the answer

d. Multiply p by q , then divide by 3

(4 marks)

a) square first

$$n^2 + 4$$

b) add first, so use a bracket

$$(n + 4)^2$$

c) halve means $\div 2$

$$\frac{t^3}{2}$$

d)

$$\frac{pq}{3}$$

9

A plumber charges a fixed call-out fee of £40 plus £28 for each hour of work.

The plumber works for h hours on a job.

The total charge for the job is £ C .

Write a formula for C in terms of h .

(3 marks)

The hourly part of the charge is $28 \times h = 28h$ pounds

Add the fixed £40 call-out fee

$$C = 40 + 28h$$

$$C = 40 + 28h$$

10

Asha thinks of a number, n .

She multiplies her number by 4 and then subtracts 7. Her answer is 25.

a. Write an equation in n .

b. Solve your equation to find Asha's number.

(3 marks)

a) $\times 4$, then $- 7$, equals 25

$$4n - 7 = 25$$

b)

$$\begin{array}{rcl} 4n - 7 & = & 25 \\ +7 & & +7 \\ 4n & = & 32 \\ \div 4 & & \div 4 \\ n & = & 8 \end{array}$$

$$n = 8$$

11

A square tile has sides of length s cm.

- Write a formula for the area, A cm², of one tile.
- Six tiles are put in a row, as shown in the diagram. Write a formula for the perimeter, P cm, of the row of tiles.
- Rearrange your answer to part (a) to write a formula for s in terms of A .

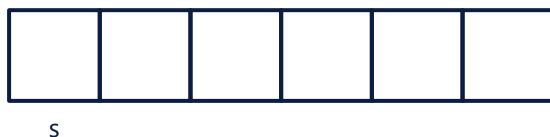


Diagram NOT accurately drawn

(4 marks)

a) side $\times$ side

$$A = s \times s$$

$$A = s^2$$

$$A = s^2$$

b) the row is $6s$ long and s tall

$$P = 6s + s + 6s + s$$

$$P = 14s$$

$$P = 14s$$

c) square root both sides

$$A = s^2$$

$$\sqrt{} \sqrt{A} = s \sqrt{}$$

$$s = \sqrt{A}$$

12

A rectangle has length $(x + 6)$ cm and width x cm.

The perimeter of the rectangle is 40 cm.

- Write an equation in x . Simplify your equation.
- Solve your equation to find the length of the rectangle.

(4 marks)

a) add all four sides

$$x + 6 + x + x + 6 + x = 40$$

$$4x + 12 = 40$$

$$4x + 12 = 40$$

b)

$$4x + 12 = 40$$

$$4x = 28$$

$$\div 4 \quad x = 7 \quad \div 4$$

$$\text{length} = x + 6$$

$$7 + 6 = 13$$

$$13 \text{ cm}$$