

1) Simplify the following:

a) $3t + 7t$

b) $3t \times 8t$

c) $12x + 7w - 5x$

d) $3y \times 4t$

e) $2e^5 \times 3e^7$

f) $y^4 \div y^3$

g) $\frac{e^7}{e^3}$

h) $\frac{6t^5}{2t^3}$

2) a) Expand $5(3x - 1)$

b) Expand $3y(2y + 4)$

c) Expand and simplify $2(3y + 5) - 3(4y - 2)$

d) Expand and simplify $5(2x - 3) + 2(y - 1)$

e) Expand and simplify $(3y - 4)(2y - 1)$

3) Find the n^{th} term of the following patterns:

a) 2, 6, 10, 14, 18

b) 6, 15, 24, 33, 42

c) 6, 3, 0, -3, -6

4) a) Write 620000000 in standard form.

b) Write 0.00000712 in standard form.

c) Write 9.16×10^5 as a normal number.

d) Write 8.26×10^{-6} as a normal number.

5) Factorise the following:

- a) $2x + 10$
- b) $3y - 12$
- c) $4m + 8$
- d) $2y^2 + 6$
- e) $x^2 + x$
- f) $5x^2 + 10x$
- g) $7x^2 - 14x$
- h) $9t^2 - 30t$

6) From the table below:

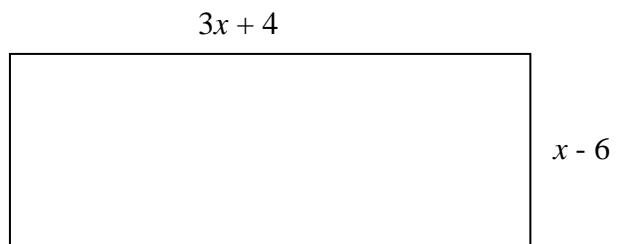
- a) Find the mean number of smarties in a tube.
- b) Find the median number of smarties in a tube.

Number of smarties	Frequency	
29	2	
30	1	
31	5	
32	2	

7) $-2 \leq x \leq 3$ x is an integer. Write down all the possible values.

8) In the rectangle below:

- a) Find an expression in terms of x , for the **perimeter** of the rectangle and simplify the expression.



- b) If the perimeter of the rectangle is 44cm, find the value of x .

9) Solve the following equations:

a) $3y = 12$

b) $y - 9 = 3$

c) $3y + 2 = 14$

d) $\frac{y}{3} + 6 = 4$

e) $2(3y + 2) = 46$

f) $\frac{2y}{5} - 6 = -3$

g) $4y + 5 = 2y - 3$

10) Make the letter in the bracket the subject of the formula.

a) $v^2 = u^2 + 2as$ (s)

b) $\frac{x}{a} + y = c$ (a)

11) The table below shows the probability of an oddly shaped 4 – sided dice landing on 1, 2, 3 or 4.

a) Work out the value of x .

b) If the dice is rolled 1000 times how many 3s would you expect to get?

1	2	3	4
0.28	0.35	0.14	x

12) a) Write as a power of 5

$$5^4 \times 5^2 \times 5$$

b) Write as a power of 4

$$4^9 \div 4^4$$

13) A map has a scale of 1:100000. If town A is 5cm away from town B on the map, what is the actual distance between them in kilometres.