

1 k stands for a number.

[2010]

Complete the number sentences below.

One has been done for you.

5 more than k is $k + 5$ 2 less than k is _____3 more than twice k is _____6 more than half of k is _____

[2 marks]

2

Simplify these expressions.

[Extra]

$$5k + 7 + 3k = \dots\dots\dots$$

$$k + 1 + k + 4 = \dots\dots\dots$$

[2 marks]

3When $x = 8$, what is the value of $5x$?

[Extra]

Tick (✓) the correct box below.

 5 13 40 58 None of these

[1 mark]

4

Match each statement to the correct expression.

[Extra]

The first one is done for you.



Add 2 to a	2
Subtract 2 from a	$2 - a$
Multiply a by 2	$a + 2$
Divide a by 2	$2a$
Multiply a by itself	$a - 2$
	$\frac{2}{a}$
	a^2
	$\frac{a}{2}$

[2 marks]

5When $x = 8$, what is the value of x^2 ?

[Extra]

Tick (✓) the correct box below.

 8 10 16 64 None of these

[1 mark]

6

Here is an expression.

[Extra]

$$2a + 3 + 2a$$

Which expression below shows it written as simply as possible?

Put a ring round the correct one.

$7a$

$7 + a$

$2a + 5$

$4a + 3$

$4(a + 3)$

Here is a different expression.

$$3b + 4 + 5b - 1$$

Write this expression as simply as possible.



[2 marks]

7

Complete the statements below.

[Extra]

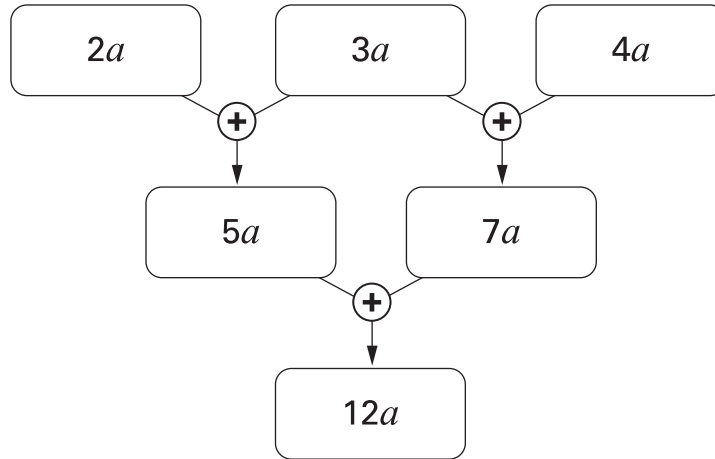
When x is $\dots 8 \dots$, $4x$ is \dots When x is \dots , $4x$ is $\dots 48 \dots$ When x is $\dots 8 \dots$, \dots is $\dots 48 \dots$

[3 marks]

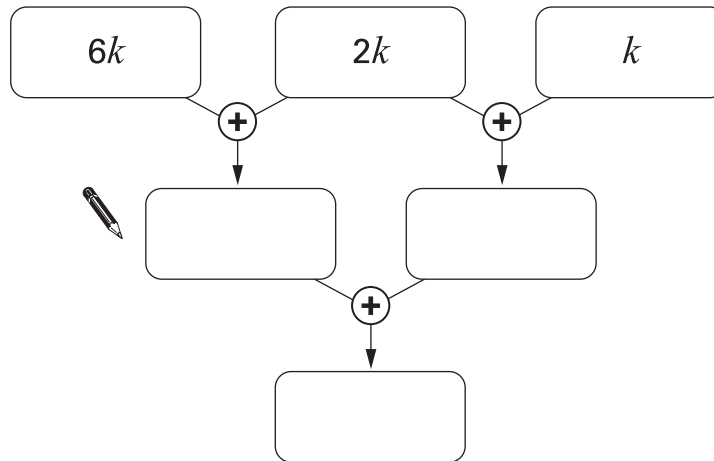
8

Look at this algebra grid.

[Extra]



Complete the algebra grids below, simplifying each expression.

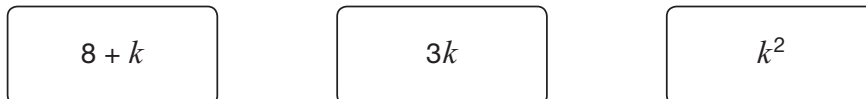


[2 marks]

9

Look at the three expressions below.

[Extra]

When $k = 10$, what is the value of each expression?

$$8 + k = \underline{\hspace{2cm}} \quad 3k = \underline{\hspace{2cm}} \quad k^2 = \underline{\hspace{2cm}}$$

[3 marks]

10A ruler costs k pence.

[Extra]

A pen costs m pence.

Match each statement with the correct expression for the amount in pence.

The first one is done for you.

Statement	Expression
The total cost of 5 rulers	$5k$
The total cost of 5 rulers and 5 pens	$5m$
How much more 5 pens cost than 5 rulers	$5 - 5m$
The change from £5, in pence, when you buy 5 pens	$500 - 5m$
	$5k + m$
	$5(k + m)$
	$5m - 5k$
	$5k - 5m$

[2 marks]

11When $x = 8$, what is the value of $3x - x$?

[Extra]

Tick (✓) the correct box below.

 0 3 16 30 None of these

[1 mark]

12

Write the missing numbers.

[Extra]

$$6x + 2 = 10$$



so $6x + 1 =$ _____

$$1 - 2y = 10$$



so $(1 - 2y)^2 =$ _____

[2 marks]

13When $y = 1$, which expression below has the **largest value**?

[Extra]

Put a ring round it.

$3 + y$

$10 - y$

y^2

$3y$

$\frac{y}{2}$

[1 mark]

14

Look at the equation.

[Extra]

$$14n = 98$$

Work out the value of $140n$ 

[1 mark]

15

Look at the equation.

[Extra]

$$n + 3 = 12$$

Use it to work out the value of $n - 3$ 

Now look at this equation.

$$n + 3 = 7$$

Use it to work out the value of $n - 6$ 

[2 marks]

16

Here is some information about three people.

[Extra]

- Jo is 2 years older than Harry.
- Kate is twice as old as Jo.

Write an expression for each person's age using n

The first one is given.

Harry's age n _____

Jo's age _____



Kate's age _____

[2 marks]

17

Match each expression on the left with the equivalent expression on the right.

[Extra]

The first one is done for you.



$3d + d$	3
	$2d$
$3d - d$	$3d$
	$4d$
$3d \times d$	$2d^2$
	$3d^2$
$3d \div d$	$2d^3$

[2 marks]

18When $n = 30$, find the value of $2n + 1$

[Extra]



.....

[1 mark]

19Use $a = 7$ and $b = 28$ to work out the value of these expressions.

[Extra]

The first one is done for you.

$$a + b = \underline{35}$$



$$ab = \underline{\hspace{2cm}}$$



$$\frac{b}{a} = \underline{\hspace{2cm}}$$

[3 marks]

20When $n = 30$, find the value of $2(n + 1)$

[Extra]



.....

[1 mark]

It is Tina's birthday. We do not know how old Tina is.

Call **Tina's age**, in years, n

The expressions below compare Tina's age to some other people's ages.

Use words to compare their ages. The first one is done for you.

Tina's age	n
Ann's age	$n + 3$

Ann is *3 years older than Tina*

Tina's age	n
Barry's age	$n - 1$



Barry is

Tina's age	n
Carol's age	$2n$



Carol is

In one year's time Tina's age will be $n + 1$

Write **simplified expressions** to show the ages of the other people in one year's time.

	Tina	Ann	Barry	Carol
Age now	n	$n + 3$	$n - 1$	$2n$
Age in one year's time	$n + 1$

[3 marks]

One way to make a magic square is to substitute numbers into this algebra grid.

$a + b$	$a - b + c$	$a - c$
$a - b - c$	a	$a + b + c$
$a + c$	$a + b - c$	$a - b$

Complete the magic square below using the values

$$a = 10$$

$$b = 3$$

$$c = 5$$



		5
	10	
15		

[2 marks]

23I add the expressions n and $n + 2$

[Extra]

Put a ring round the expression that shows the result.

$2n$

$4n$

$n(n + 2)$

$n^2 + 2$

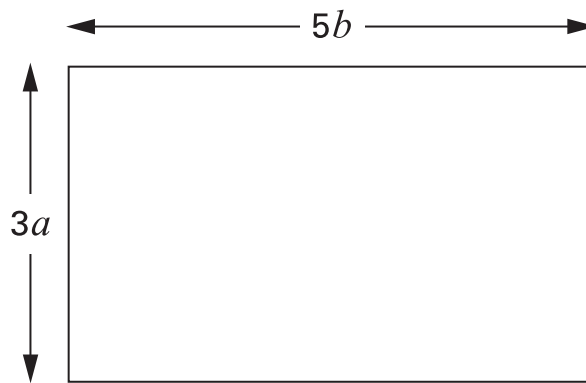
$2n + 2$

[1 mark]

24

The diagram shows a rectangle.

[Extra]

Its dimensions are $3a$ by $5b$ Write **simplified expressions** for the area and the perimeter of this rectangle.

Area:

Perimeter:

[2 marks]

25

Look at this equation.

[Extra]

$$4 + a = b$$

Write a pair of numbers for a and b to make the equation true.

 $a = \underline{\hspace{2cm}}$ $b = \underline{\hspace{2cm}}$

Now write a **different** pair of numbers for a and b to make the equation true.

 $a = \underline{\hspace{2cm}}$ $b = \underline{\hspace{2cm}}$


[2 marks]


26Write the missing numbers so that $2a + 5b = 30$

[Extra]

One is done for you.

$$2a + 5b = 30 \quad \text{when } a = 0 \quad \text{and } b = \underline{6}$$

 $2a + 5b = 30 \quad \text{when } a = 5 \quad \text{and } b = \underline{\hspace{2cm}}$

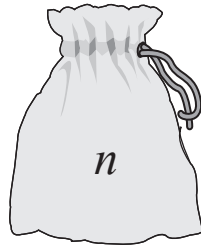
 $2a + 5b = 30 \quad \text{when } a = 15 \quad \text{and } b = \underline{\hspace{2cm}}$

[2 marks]

27

There are n counters in Alfie's bag.

[Extra]



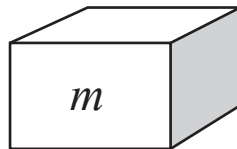
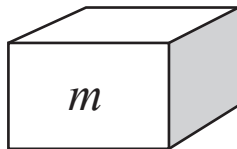
Alfie puts **3** more counters in the bag.

Write an expression for the number of counters that are in the bag now.



Megan has two boxes.

There are m counters in each box.



She puts all her counters together in a pile,
then removes **5** of them.

Write an expression for the number of counters that are in the pile now.



[2 marks]