

Use known algebraic facts to derive other facts

1

$$x + y = 10$$

Use this to work out the value of each expression.

a) $2x + 2y =$ 20

e) $\frac{1}{2}x + \frac{1}{2}y =$ 5

b) $3x + 3y =$ 30

f) $x + y + 7 =$ 17

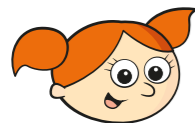
c) $5y + 5x =$ 50

g) $x + 3 + y =$ 13

d) $\frac{1}{2}(x + y) =$ 5

h) $2x + 2y - 11 =$ 9

2



I know that $a + b = 7$,
so $2a + b = 14$

Alex

I don't think you can work
out what $2a + b$ is.



Tommy

Who is correct? Tommy

Explain your answer.

$2a + 2b = 14$ but since we don't know what a and b
are, we can't work out the value of $2a + b$

3

$$p + q = 8$$

Use this information to find expressions that would give these values.

a) $16 =$ $2p + 2q$

e) $0.8 =$ $\frac{1}{10}(p + q)$

b) $32 =$ $4p + 4q$

f) $10 =$ $p + q + 2$

c) $4 =$ $\frac{1}{2}p + \frac{1}{2}q$

g) $1 =$ $\frac{p + q}{8} - 7$

d) $800 =$ $100(p + q)$

4

$$n - m = 7$$

a) Which is the greater number, n or m ? n
Explain your answer.

When m is subtracted from n the answer
is positive. $n - m > 0$ so $n > m$

b) What is the value of $m - n$? -7

c) Explain why $m + 7 = n$.

The difference between m and n is 7 and n is
the greater number so n is 7 more than m .

5

$$c = d + 4$$

Use this information to find expressions that are equivalent to the following.

a) $2c = 2d + 8$

b) $3c = 3d + 12$

c) $10c = 10d + 40$

d) $\frac{1}{2}d + 2 = \frac{1}{2}c$

e) $c - 4 = d$

f) $c + 5 = d + 9$

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$$2x + y = 10$$

a) Find two expressions that will give an answer of 50

eg. $10x + 5y = 50$ $5(2x + y) = 50$

b) Find two expressions that will give an answer of 5

e.g. $x + \frac{1}{2}y = 5$ $2x + y - 5 = 5$

c) All of these expressions equal 1

Work out the missing values.

$$\frac{2x + y}{10}$$

$$2x + y - 9$$

$$\frac{1}{5}x + \frac{1}{10}y$$

7

$$a + b = c + d$$

a , b , c and d are all numbers greater than zero.

Decide whether each statement is always true, could be true or is never true.

Tick the correct answer.

Statement	Always true	Could be true	Never true
$a = c$		✓	
$2a + b = 2c + d$		✓	
$\frac{1}{2}(a + b) = \frac{1}{2}c + \frac{1}{2}d$	✓		
$a + b + c = d$			✓
$a = c + d - b$	✓		

For any statement that you have said could be true, discuss with a partner when this would be the case.

8

If $\frac{n}{2} = 5$, circle the correct statements.

$$\frac{n}{2} - 3 = 2$$

$$n = 10$$

$$\frac{n}{4} = 10$$

$$2n = 10$$

What are the correct answers for the statements that you have **not** circled?

$$\frac{n}{4} = \frac{5}{2} \quad 2n = 20$$