

Be able to solve simple equations



\* your teacher may show you an alternative method.

There are various ways of solving equations.

We are going to use the "change side - change sign" method \*

Examples :-

$$\begin{aligned} 1. \quad x + 8 &= 13 \\ \Rightarrow x &= 13 - 8 \\ \Rightarrow x &= 5 \end{aligned}$$

move the + 8 to the other side and change to -8.

$$\begin{aligned} 2. \quad 5p &= 30 \\ \Rightarrow p &= 30 \div 5 \\ \Rightarrow p &= 6 \end{aligned}$$

move the  $\times 5$  to the other side and change to  $\div 5$

$$\begin{aligned} 3. \quad \frac{1}{4}a &= 3 \\ \Rightarrow 4 \times \frac{1}{4}a &= 4 \times 3 \\ \Rightarrow a &= 12 \end{aligned}$$

Multiply both sides by 4 to eliminate the fraction.

$$\begin{aligned} 4. \quad 3m + 9 &= 30 \\ \Rightarrow 3m &= 30 - 9 \\ \Rightarrow 3m &= 21 \\ \Rightarrow m &= 7 \end{aligned}$$

Move the + 9 to the other side and change to - 9.  
move the  $\times 3$  to the other side and change to  $\div 3$ .

$$\begin{aligned} 5. \quad 2k - 7 &= 12 \\ \Rightarrow 2k &= 12 + 7 \\ \Rightarrow 2k &= 19 \\ \Rightarrow k &= 19 \div 2 = 9\frac{1}{2} \end{aligned}$$

Similar method to example 4.  
Note that answers may contain fractions.

### Exercise 4



1. Copy each equation and solve it to find the value of the letter, as shown above :-

a  $a + 6 = 8$

b  $b + 11 = 16$

c  $c - 3 = 4$

d  $d - 10 = 10$

e  $e - 40 = 30$

f  $f + 4 = 3$

g  $g - 6 = 0$

h  $h + 9 = 0$

i  $7 + x = 10$

j  $9 + j = 1$

k  $4 + k = 4$

l  $25 + y = -25$

m  $2m = 14$

n  $5m = 35$

o  $4u = 1$

p  $3p = 20$

q  $6q = 1$

r  $10r = 25$ .

2. Find the value of  $x$  in the following equations (Show each step of working carefully).

a  $\frac{1}{2}x = 5$

b  $\frac{1}{2}x = 3.5$

c  $\frac{1}{3}x = 9$

d  $\frac{1}{4}x = 1.5$

e  $\frac{1}{5}x = 20$

f  $\frac{3}{4}x = 3$ .

g  $3x + 1 = 7$

h  $2x + 7 = 13$

i  $4x + 3 = 35$

j  $7x - 3 = 39$

k  $9x - 1 = 89$

l  $6x + 5 = 53$

m  $2x - 10 = 46$

n  $14x + 14 = 0$

o  $2x - 9 = 0$

p  $3x + 18 = 6$

q  $6x + 5 = 20$

r  $4x - 12 = 7$ .

