



An equation is like a set of scales.

= is the balance point,  
both sides of the equation must always balance after every operation that you do.

eg  $4 + 5 - 7 = 2$ , is a balanced, true equation and both sides = 2

If we add 7 to both sides, we get:-

$$\begin{array}{r} 4 + 5 - 7 = 2 \\ + 7 = +7 \\ \hline 4 + 5 + 0 = 9 \end{array} \quad (-7 + 7 = 0)$$

Both sides = 9

Check for yourself that you maintain balance after each operation.

Eg  $3 \times 4 = 12$  is a balanced, true equation and both sides = 12

Now divide both sides by 4  $\div 4 = \div 4$

both sides now = 3.  $3 \times 1 = 3$  which is obviously true.

### Exercises 1

Only one operation is needed to find the variable.

Eg  $f - 3 = 5$ , this is a subtraction of 3.

If we add 3 to both sides, (+ 3 is the opposite of - 3)

ie

$$\begin{array}{r} f - 3 = 5 \\ + 3 = +3 \\ \hline f + 0 = 8 \end{array} \quad (-3 + 3 = 0)$$

answer  $f = 8$

eg  $7 + g = 10$ , this is an addition of 7.

Subtract 7 from both sides. (- 7 is the opposite of + 7)

ie

$$\begin{array}{r} 7 + g = 10 \\ - 7 \quad - 7 \\ \hline \quad g = 3 \end{array}$$

answer  $g = 3$

Solve the following equations, using the same method as above.:-

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|------------------|----------------|-----------------|----------------|-----------------|
| 1. $w - 6 = 3$   | 2. $y + 2 = 5$ | 3. $9 + r = 13$ | 4. $j - 5 = 7$ | 5. $7 + z = 7$  |
| 6. $-8 + b = 12$ | 7. $z + 7 = 4$ | 8. $g - 9 = 0$  | 9. $8 = f + 3$ | 10. $4 = 5 + t$ |