

A = EQUATIONS (2)

e.g. Find the value of A if $A + 3 = 7$

$$A + 3 = 7$$

1) A add 3 equals 7, so

A equals 7 subtract 3

$$A = 7 - 3$$

2) A equals 4

$$\underline{A = 4}$$

*Notice that +3 becomes -3 when it appears on the other side of the =

e.g. Solve the equation $t + 6 = 1$

$$t + 6 = 1$$

$$t = 1 - 6$$

$$\underline{t = -5}$$

B

e.g. Solve the equation $w - 8 = 11$

$$w - 8 = 11$$

1) w subtract 8 equals 11, so

w equals 11 add 8

$$w = 11 + 8$$

2) w equals 19

$$\underline{w = 19}$$

*Notice that -8 becomes +8 when it appears on the other side of the =

C

Checking

The answer to an equation can always be checked by **SUBSTITUTING** the answer for the letter

e.g. Solve the equation $k + 9 = 16$. Answer $k = 7$

To check, substitute 7 for k

$$7 + 9 = 16$$

If both sides are equal, your answer is correct.

D

Signs

1) The answer should always be written with the letter first,
e.g. $y = 6$ (not $6 = y$)

2) If the letter comes out as a **minus**,
change the sides to make it **plus**.

Then write answer correctly (if necessary)

e.g. $-B = 9$
 $-9 = B$
 $B = -9$

a

Solve these equations (find the value of each letter).

ALWAYS SET OUT EACH NEW LINE OF WORKING **BELOW** PREVIOUS LINE, WITH = SIGN **DIRECTLY BELOW** = SIGN.

$$1) y + 4 = 9$$

$$6) x + 1\frac{1}{2} = 6$$

$$11) j + 0 = 15$$

$$2) c + 3 = 11$$

$$7) R + 9 = 9$$

$$12) P + 6 = 1$$

$$3) f + 1 = 4$$

$$8) N + 3 = -2$$

$$13) 2 + E = 7$$

$$4) H + 7 = 8$$

$$9) M + 8.6 = 11.3$$

$$14) 0.4 + n = 2.7$$

$$5) p + 5 = 3$$

$$10) T + 8 = 0$$

$$15) Q + 7 = -4$$

b

Solve these equations

$$1) B - 6 = 5$$

$$6) n - 3 = 0$$

$$11) d - \frac{1}{2} = 3$$

$$2) k - 1 = 1$$

$$7) Y - 7 = -5$$

$$12) h - 5 = -9$$

$$3) W - 3 = 4$$

$$8) a - 8 = 1$$

$$13) r - 21 = 0$$

$$4) s - 12 = 10$$

$$9) G - 1 = -8$$

$$14) U - 7 = -2$$

$$5) e - 2 = 8$$

$$10) M - 1.4 = 3.8$$

$$15) c - \frac{1}{4} = \frac{1}{2}$$

c

Write down the value of N in each of these. Your answer each time should begin N =

$$1) 5 = N$$

$$8) 42 = \frac{N}{6}$$

$$15) 4 - N = -4$$

$$2) -N = 7$$

$$9) 14 = N - 5$$

$$16) -5 = \frac{N}{3}$$

$$3) -2 = N$$

$$10) -N = 12$$

$$17) -4N = 48$$

$$4) -N = -10$$

$$11) 3 = 4 - N$$

$$18) 63 = 7N$$

$$5) 6 = 2N$$

$$12) 11 = -N - 8$$

$$19) 9\frac{1}{2} - N = 0$$

$$6) 8 - N = 3$$

$$13) 1.6 + N = 2.5$$

$$20) 2 = \frac{N}{11}$$

$$7) 7 = N + 1$$

$$14) 7 = N + 12$$

d

Solve these equations. Make sure your answer is written with the letter first, e.g. $m = 3$.

$$1) x - 8 = 20$$

$$6) 7 - q = 1$$

$$11) x + 7.55 = 10.3$$

$$2) c + 3 = 5$$

$$7) 30 = d + 25$$

$$12) t - 7 = 0$$

$$3) u - 7 = 2$$

$$8) H - 11 = -4$$

$$13) 12 + B = 1$$

$$4) K + 33 = 40$$

$$9) 3\frac{1}{2} + p = 8$$

$$14) e - 2 = -1$$

$$5) 8 + G = 3$$

$$10) A - 2 = -10$$

$$15) 6 - y = 8$$

A = EQUATIONS (3)

e.g. Solve for N

$$3N + 4 = 19$$

*1) Collect all LETTER terms on one side of the = sign, and all the other terms on the other side

$$3N = 19 - 4$$

*2) Make **signs** correct

$$3N = 19 - 4$$

*3) Work out both sides

$$3N = 15$$

*4) Finish off

$$N = \frac{15}{3}$$

$$N = 5$$

e.g. Solve for y

$$\begin{aligned} 2y - 5 &= 21 \\ 2y &= 21 + 5 \\ 2y &= 26 \\ y &= \frac{26}{2} \\ \underline{y} &= \underline{13} \end{aligned}$$

e.g. Find the value of a

$$\begin{aligned} \frac{a}{3} + 5 &= 9 \\ \frac{a}{3} &= 9 - 5 \\ \frac{a}{3} &= 4 \\ a &= 4 \times 3 \\ \underline{a} &= \underline{12} \end{aligned}$$

B Signs. It is sometimes easier, if you prefer, to start with the LETTER TERMS on the right-hand side of the = sign.

e.g. $11 - 4x = 3$

$$\begin{aligned} 11 - 3 &= 4x \\ 8 &= 4x \\ 2 &= x \\ \underline{x} &= \underline{2} \end{aligned}$$

C Brackets. If an equation contains brackets, multiply out the brackets first.

e.g. $3(h - 4) = 15$

$$\begin{aligned} 3h - 12 &= 15 \\ 3h &= 27 \\ \underline{h} &= \underline{9} \end{aligned}$$

e.g. $2(5 - 3N) = 34$

$$\begin{aligned} 10 - 6N &= 34 \\ 10 - 34 &= 6N \\ -24 &= 6N \\ -4 &= N \\ \underline{N} &= \underline{-4} \end{aligned}$$

a Solve these equations

1) $2v + 5 = 7$

2) $4m + 1 = 25$

3) $3F - 2 = 10$

4) $5 + 6c = 23$

5) $2Q - 19 = 13$

6) $\frac{1}{2}N + 3 = 5$

7) $3e - 6 = 0$

8) $2k - 11 = 2$

9) $5T + 5 = 30$

10) $\frac{3}{2} - 4 = 3$

11) $8h - \frac{1}{2} = 7\frac{1}{2}$

12) $6L + 8 = 8$

13) $2b - 25 = 13$

14) $\frac{6}{4} + 6 = 9$

15) $50 = 24S + 2$

b Solve these equations

1) $8 + 11p = 63$

2) $\frac{1}{9} - 1 = 1$

3) $12 - 2j = 4$

4) $1 - 3a = -8$

5) $2 + \frac{1}{2} = 7$

6) $\frac{1}{3}K + 5 = 14$

7) $6r - 9 = 0$

8) $15 = 3 + 2H$

9) $3 - 4f = 1$

10) $\frac{1}{8} + 6 = 12$

11) $8 = 11 - \frac{1}{5}$

12) $V + 8 = -3$

13) $1 + \frac{1}{4}n = 0$

14) $\frac{5}{12} - 6 = -4$

15) $6 - 5Z = 31$

c Solve these equations

1) $4(w + 5) = 24$

2) $3(z - 7) = 6$

3) $5(c + 2) = 0$

4) $2(1 + y) = 12$

5) $6(4 - B) = 6$

6) $4(t - \frac{1}{2}) = 14$

7) $2(2m + 3) = 34$

8) $3(4x - 10) = 66$

9) $20 = 2(D + 4)$

10) $5(6 + R) = 35$

11) $4(J + \frac{1}{2}) = 10$

12) $7(\frac{1}{2} + e) = 7$

13) $9 = 3(U - 10)$

14) $5(3f - 2) = 35$

15) $\frac{1}{2}(4v + 6) = 11$

d Solve these equations

1) $2(1 + 6P) = 26$

2) $\frac{1}{3}(3x - 12) = 7$

3) $2(4N + 5) = 12$

4) $6(\frac{1}{3} + 1) = 24$

5) $4(3 - L) = 0$

6) $3(3r + 1) = -15$

7) $5(2 - E) = 30$

8) $7 = 2(\frac{1}{2}b - 9)$

9) $12(\frac{1}{4} - \frac{1}{2}) = 0$

10) $1 = 2(6c - 1)$

11) $9(2 + \frac{1}{3}) = 6$

12) $\frac{1}{2}(10 + 8T) = 37$

13) $-3(5 + 2A) = 15$

14) $2 = -4(d - 3)$

15) $10(\frac{1}{2} - h) = 4$