

## Simplifying and Solving Linear Equations

### Hints

1. When you have an answer, always check that you have solved the equation. Substitute for the variable with your answer and see if the left hand side of the equation is indeed equal to the right hand side.
2. If you have a mixture of fraction and decimals, decide which you would rather work in and do any necessary conversions.
3. Whatever you do to the whole of the left hand side, do the same to the whole of the right hand side.
4. If there are denominators in the expressions, multiply by them to simplify the expressions, (but bear in mind hint 3).
5. You can multiply by a whole algebraic expression like  $x - 1$  if necessary – it's just a number.

### Simple

1.  $4x - 7 = 9$
2.  $20 + 2d = 12$
3.  $3x - 18 = 0$
4.  $10 - 7g = 31$
5.  $0.5t + 1.25 = 2$
6.  $100 - 18b = 28$
7.  $200 = 56 + 0.0025x$
8.  $-24 = 3w - 30$
9.  $4x - 5 = 9x$
10.  $p - 8 = 3p - 20$

### Harder

11.  $5d = \frac{22-d}{2}$
12.  $\frac{2}{3}x = 10$
13.  $\frac{1}{8}k + 1 = 3$
14.  $2(x - 1) = 14$
15.  $3(3k + 5) = 4k$
16.  $\frac{3}{8}z - \frac{3}{5} = 0$
17.  $2c - 10 = \frac{3}{4}c$
18.  $\frac{3}{5}x = \frac{1}{2}x + 1$
19.  $\frac{3}{4}e = 0.125$
20.  $10 + \frac{1}{2}y = 0.6y$

### Tricky

21.  $\frac{x-5}{3} = 4$
22.  $\frac{t+5}{8} = 2t$
23.  $9 - z = \frac{z}{2} + 3$
24.  $\frac{5}{x} + 1 = \frac{20}{x}$
25.  $\frac{1}{t-5} = 3$
26.  $\frac{2x+1}{10-x} = 5$
27.  $\frac{k}{k-1} = \frac{3}{5}$
28.  $\frac{1}{5+w} = \frac{1}{2w+1}$
29.  $\frac{1}{n+2} + \frac{5}{n-1} = 0$
30.  $7.5 - 10\left(1 - \frac{0.1}{x}\right) = 0$