Solving Equations

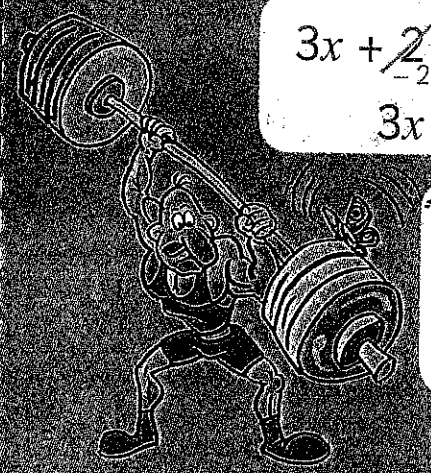
In algebraic equations, the values on the left side of the equation are equal to the values on the right. To find the value of a letter, you need to remove parts of the equation so that you end up with just the letter on its own. To do this, do the **opposite operation** to both sides of the equation. For example:

$3x + 2 = 20$
What is the value of x?

x is a number that is first multiplied by 3 and then 2 is added to make 20.

$3x + 2 = 20$
$-2 \quad -2$
$3x = 18$

The opposite of + 2 is – 2, so subtract 2 from both sides. This means that x is a number that is multiplied by 3 to make 18.



$3x = 18$
$\div 3 \quad \div 3$
$x = 6$

x is being multiplied by 3, so divide by 3 on both sides. This leaves you with x on one side of the equation and 6 on the other, so the answer is...

$x = 6$

In the boxes, write what you need to do to solve the equations.

$x - 8 = 25$

Add 8 to both sides.

$y + 4 = 12$

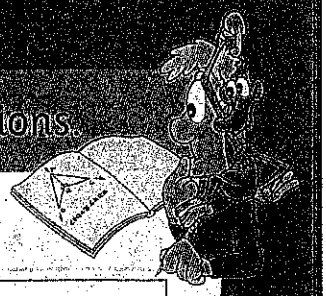
$z + 1 = 13$

$23 = a + 19$

$45 = q - 19$

$67 = c - 26$

In the boxes, write what you need to do to solve the equations.



$3x = 30$	$\frac{s}{4} = 25$
Divide both sides by 3.	
$12z = 36$	$5 = \frac{c}{6}$
$48 = 12g$	$15t = 45$

Solve these algebraic equations. Show your working in the boxes.

$5x = 20$

$\div 5 \quad \div 5$

$x =$ 4

$y + 8 = 18$

$y =$

$4z = 36$

$z =$

$k - 5 = 12$

$k =$

$7s = 56$

$s =$

$2h = 12$

$h =$

$d - 22 = 9$

$d =$

$v + 24 = 40$

$v =$

$8c = 88$

$c =$

$10p = 100$

$p =$

$\frac{e}{3} = 9$

$e =$

$\frac{u}{25} = 5$

$u =$

Solve these algebraic equations. Show your working in the boxes.

$9e + 7 = 88$
$-7 \quad -7$

$9e = 81$
$\div 9 \quad \div 9$

$e = 9$

$5n + 2 = 52$

$10z - 52 = 38$

$7x - 12 = 51$

$11f + 3 = 36$

$9s - 7 = 2$

$15y + 13 = 58$

$4t - 4 = 24$

$8k - 2 = 38$

$\frac{j}{5} + 4 = 6$

$\frac{w}{4} - 2 = 8$

$8p + 2 = 66$

$12v - 60 = 12$

$\frac{b}{3} + 34 = 40$

$\frac{r}{3} + 22 = 31$