

An Introduction to Algebra ^{x=8}

So far your maths lessons have only used numbers but everything is about to change. When you enter the weird world of algebra strange things start to happen! ... you will start to swap numbers with letters.

Let's get started. Imagine the number **5**. Suddenly a wizard appears and turns your number **5** into the letter **h**. The number **5** has not gone forever, it will just be stuck as a letter **h** until the wizard changes it back.



So now we're stuck without a number **5** ... but it's OK because we still have the letter **h** which (as we all know) is actually the number **5**.

Let's try some sums using the letter **h** instead of a number **5**.

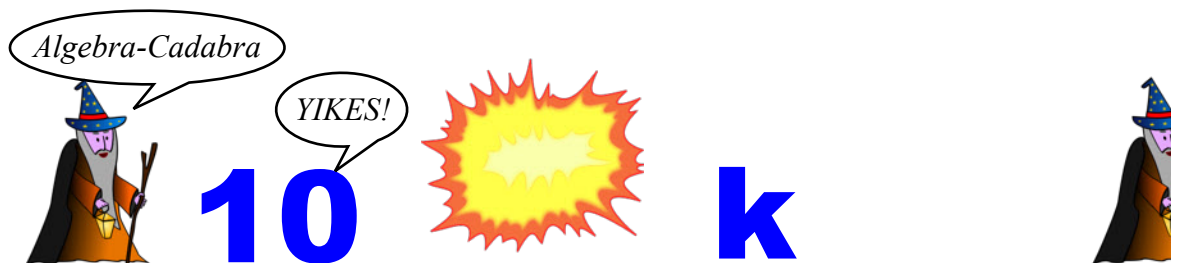
$$h + 2 = 7 \quad h + 4 = 9 \quad h - 1 = 4 \quad h - 3 = 2$$

↑ Don't forget to pretend that h is a 5

We changed a number into a letter and did some sums. That's algebra!

Let's do some more simple algebra. This time imagine the number **10**.

OH NO! ... the wizard is coming back again!



Number **10** has changed into the letter **K** but we know exactly what to do.

$$k + 5 = 15 \quad k + 2 = 12 \quad k - 3 = 7 \quad k - 1 = 9$$

↑ Don't forget to pretend that k is a 10

Now move on to page 2 >>>

$y=3$

$x=8$

An Introduction to Algebra

On the first page we met a wizard who likes to change numbers into letters. He's not a bad wizard. He just wants to help us learn about algebra and understand that sums can sometimes have numbers *and* letters in them.



$h=5$

First the wizard turned a number **5** into a letter **h**.

We then imagined that the letter **h** still had a value of **5**.

In maths we would write this as $h = 5$

Answer



$k=10$

Next the wizard turned a number **10** into a letter **k**.

We then imagined that letter **k** still had a value of **10**.

In maths we would write this as $k = 10$

Sheet

In algebra you will find that any letter can be given any value.

For example $y=3$ $x=8$ $f=23$ $a=50$ $h=73$ $m=150$

Let's do some more sums using random letters instead of numbers.

If $g=9$ then $g+3= 12$	If $a=2$ then $a+5= 7$	If $x=5$ then $x+1= 6$
If $c=7$ then $c+6= 13$	If $h=9$ then $h+1= 10$	If $m=1$ then $m+2= 3$
If $e=10$ then $e-5= 5$	If $v=12$ then $v-2= 10$	If $r=15$ then $r-3= 12$
If $y=19$ then $y-6= 13$	If $b=13$ then $b+7= 20$	If $k=18$ then $k-9= 9$
If $t=20$ then $t+10= 30$	If $w=26$ then $w-6= 20$	If $s=30$ then $s+7= 37$

Now you understand the basics you could try the following harder sums.

If $g=3$ then $g+g= 6$	If $a=5$ then $a+a= 10$	If $x=4$ then $x+x= 8$
If $c=2$ then $c+c+c= 6$	If $h=1$ then $h+h+h= 3$	If $m=10$ then $m-m= 0$

Now read our "What is the Point of Algebra Anyway?" information sheet ...