ALGEBRA

A Puzzle

What is the missing number?

$$\square$$
 - 2 = 4

OK, the answer is 6, right? Because 6 - 2 = 4. Easy stuff.

Well, in Algebra we don't use blank boxes, we use a **letter** (usually an x or y, but any letter is fine). So we write:

$$x - 2 = 4$$

It is really that simple. The letter (in this case an x) just means "we don't know this yet", and is often called the **unknown** or the **variable**.

And when we solve it we write:

$$x = 6$$

How to Solve

Algebra is just like a puzzle where we start with something like "x-2=4" and we want to end up with something like "x=6".

But instead of saying "obviously x=6", use this neat step-by-step approach:

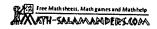
- Work out **what to remove** to get "x = ..."
- Remove it by doing the opposite (adding is the opposite of subtracting)
- Do that to both sides



SOLVE THE EQUATION SHEET 3

Calculate the value of each expression given the value of the variables.

	SOLVE	WORKING	ANSWER	
1)	4a=20		a=5	
2)	b-7=8		b=	
3)	2c-1=11		c=	
4)	10=d+6		d=	
5)	18=3e		e=	
6)	f-7=4+4		f=	
7)	29=7-5		g=	
8)	16-2h=0		h=	
9)	2(i+1)=18		i=	
10)	3(j-1)=21		j=	
11)	5(k+2)=45		k=	
12)	4(1-6)=16		/=	
13)	2m-5=11		m=	
14)	½n+1=8		n=	
<i>15)</i>	20÷0 = 4		0=	
16)	p÷7=3		p=	
<i>17)</i>	q/6=5		9=	
18)	4(r+2)=24		r=	
	20=5(5-3)		s=	
20)	½t +7=13		t=	
21)	$u^2 = 36$		u=	
	$v^2 = 100$		v=	
	w=√25		w=	
24)	3x=20-8		x=	
	18-4y=2		y=	



Unknown Variables in Equations (A)

Name:

Date:

Determine the value of each variable.

1.
$$9 \times n = 45$$

2.
$$p = 24 \div 6$$

3.
$$15 - x = 9$$

4.
$$14 \div 7 = m$$

5.
$$h \div 1 = 8$$

6.
$$4 = v \div 6$$

7.
$$48 = 8 \times b$$

8.
$$y + 5 = 12$$

9.
$$56 \div 8 = k$$

10.
$$j \div 5 = 3$$

11.
$$72 \div 8 = d$$

12.
$$2 = 12 \div z$$

13.
$$10 \div t = 5$$

14.
$$2 = 1 \times a$$

15.
$$3 = 8 - w$$

16.
$$c = 7 + 2$$

17.
$$r = 10 \div 5$$

18.
$$f + 9 = 10$$

19.
$$7 + g = 12$$

20.
$$18 = s \times 6$$

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ALGEBRA WORD PROBLEMS SHEET 2

Write the algebraic expression for each word problem. See if you can spot the trick problem that doesn't need algebra!

1)	In a stable, there are h horses. 6 of them are taken out into	=	h-6
	the yard to exercise.		
	How many are left in the stable?		
2)	There are c cyclists in a cycle race. ¾ of the cyclists finish the	=	
	race. How many cyclists did not finish?		
3)	There are 56 people on a bus. t people get off at the next	=	
	stop and 3 more people get on.		
	How many people are on the bus now?		
4)	In a class of 30 children, there are g girls.	=	
	What fraction of the class are girls?		
5)	In a class of c children, there are 16 boys.	=	
	What fraction of the class are boys?		
6)	There are b people on a bus. At the next stop, 7 people get	=	
	off and 10 more get on.		
	How many more people are on the bus now?		
7)	I cut a long piece of wood into 50cm pieces. I manage to cut	=	
	w pieces of wood, and there is 20cm left over.		
	How long was the wood to start with?		
8)	I have c chocolates which I share equally between by 5	=	
	friends. How many do they each get?		
9)	I have 5 pens already. I am given 2 packs of pens. Each pack	=	
	contains t pens. How many pens do I have now?		
10)	There are d deer and p pheasants in the woods.	=	
	How many legs in total?		

