

# “Number Tricks” and Algebra Name \_\_\_\_\_

1. Here is a very interesting number trick. Try the trick out first. We will then use algebra to explain why the trick works. Eventually, you will be asked to devise your own number trick, and show why it works. (1)

Instructions	My Example	Your Example
Think of a Number	12	
Add 3	15	
Double your answer	30	
Add 4	34	
Divide the result by 2	17	
Take away the original number	5	
The answer is always (ta da) 5!	By golly! It works!	

Why is the answer always 5? We will use algebra to find out.

Instructions	My Example	The Algebra
Think of a Number	12	
Add 3	15	
Double your answer	30	
Add 4	34	
Divide the result by 2	17	
Take away the original number	5	
The answer is always (ta da) 5!	By golly it works!	Wow! Amazing!

2. Now use algebra to show why this trick works. The first few steps are done for you.

(1)

Instructions	My Example	The Algebra
Think of a number	13	$n$
Double it	26	$2n$
Add 10	36	$2n + 10$
Take away 6	30	
Halve your answer	15	
Take away 2	13	
The answer is the original number!	By gum! It works!	

3. And show why this number trick always works.

(1)

Instructions	Example	The Algebra
Think of a number		
Take away 1		
Multiply by 5		
Add 15		
Divide by 5		
Take away the original number		
The answer is always 2!	What a trick!	

4. I'll start this next trick for you. Your task is to figure out a set of instructions that will finish it. You may need a bit of trial and error. Use algebra to explain the trick.

(Hint: because you multiplied by 3, you will eventually have to divide by 3.)

(2)

Instructions	Example	The Algebra
Think of a number	4	$n$
Add 5	9	$n+5$
Multiply by 3	27	$3(n+5) = 3n+15$

5. Finish off this trick also. Use algebra to explain how it works.

(3)

Instructions	Example	The Algebra
Think of a number		
Double your answer		
Take away 3		

6. Now make up your very own number trick. Use algebra to explain why it works

(4)

Instructions	Example	The Algebra

