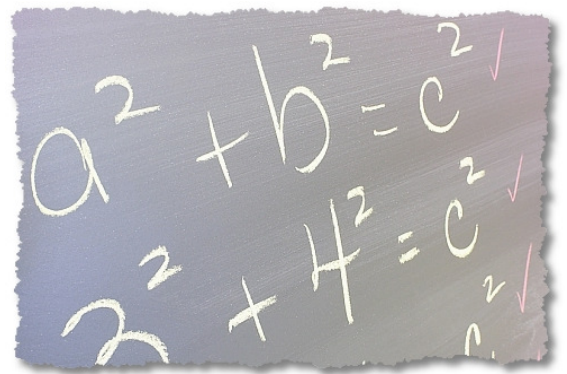


In the previous section, one of the problem solving strategies was "write an equation". This strategy is just a piece of the larger concept of "algebraic thinking". Since algebraic thinking is such an important part of mathematics at all levels, we are devoting an entire section to its study.



I DEVELOPING ALGEBRAIC THINKING SKILLS

One of the lynchpins to algebraic thinking is the notion of "variable". Be aware that "variable" can mean many things in mathematics - from an exact unknown to represent changing quantities. To apply algebra in solving real-world problems, we need to "translate" the words into mathematical symbols.

II TRANSLATING GIVEN INFORMATION INTO A SYMBOLIC EXPRESSION

ENGLISH	ALGEBRA
Three more than twice a number	
Four times as large as half a number	
The difference of a number and two	
The difference of two and a number	
Two consecutive numbers	
Two consecutive odd numbers	
Three consecutive even numbers	
The sum of three consecutive numbers if the middle number is m	
You total salary earned after 3 years if the 1 st year's salary was $\$d$, the 2 nd year was $\$5000$ more, and the 3 rd year was twice as much as the 2 nd year	

III NUMBER TRICKS AND PROVING WHY THEY WORK

Let's try a number trick and then use algebra to see why it works.

Pick any number and add 15 to it. Now multiply that sum by 4. Next subtract 8 and divide by the difference by 4. Finally, subtract 12. Tell me your answer and I will tell you your original number.

So, how did I do this? There is a pattern to the answer!! We can discover this using a little bit of algebraic notation!!

Steps (Instructions)	Symbols	Simplify using Algebra Skills
Pick a number		
Add 15 to it.		
Multiply by 4		
Subtract 8		
Divide by 4		
Subtract 12		