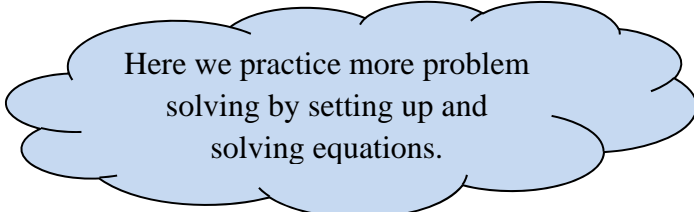


Elementary algebra
Class notes
Further Problem Solving (section 9.4)



Here we practice more problem solving by setting up and solving equations.

We will be forming equations based on story problems. It is never a waste of time to write down what you are letting x represent. **Write it down specifically!** This is called defining the variable.

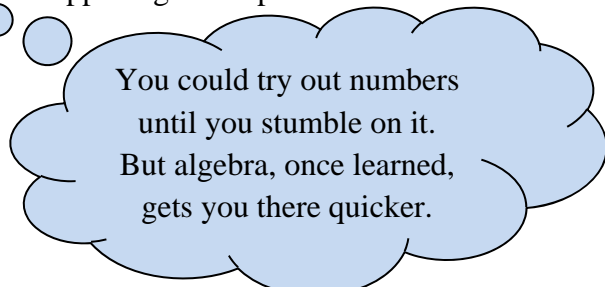
Usually we will let the variable represent what we are asked to find.

A verbal model helps form the equation by writing it in words first. Make sure you label your answer with the appropriate units (feet, miles, etc.). Check your answer by rereading the problem.

expl 1: We will investigate this problem together.

Twice a number minus 3 is equal to the number added to 5. Find the number.

a.) Take a random number and see if it works in this sentence. This method is called “guess and check” and it gives us a good idea of what is happening in the problem.

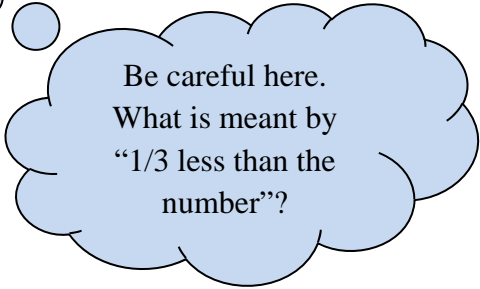


You could try out numbers until you stumble on it. But algebra, once learned, gets you there quicker.

b.) Try again with another random number and see if it works in the sentence.

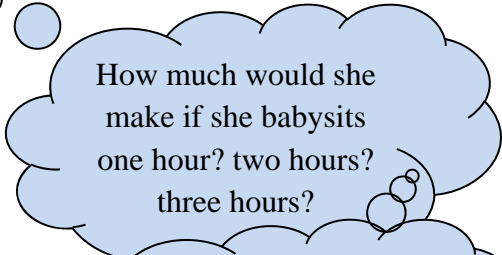
c.) Now, let's use algebra to solve the problem. Whether or not you have gotten the answer yet, what you have learned from the work we did earlier helps you form an equation. Form an equation and solve it to find the unknown number.

expl 2: Twice the sum of a number and 4 is equal to $\frac{1}{3}$ less than the number. Find the number.

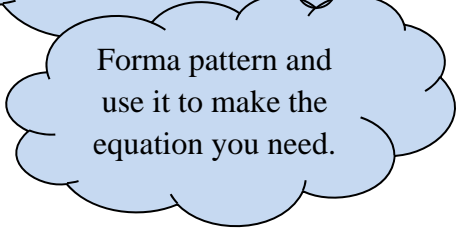


Be careful here.
What is meant by
“ $\frac{1}{3}$ less than the
number”?

expl 3: Maria charges \$15 plus \$10 per hour to babysit. If Maria made \$40 last night, how long did she babysit?

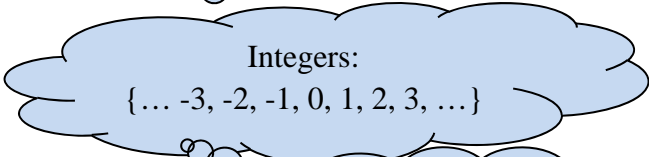


How much would she
make if she babysits
one hour? two hours?
three hours?

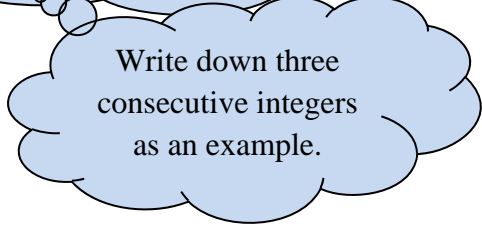


Form a pattern and
use it to make the
equation you need.

expl 4: Let x represent an integer. Express, using x , the next two consecutive integers. Then write an expression for the sum of the second and third integers.



Integers:
{... -3, -2, -1, 0, 1, 2, 3, ...}



Write down three
consecutive integers
as an example.

expl 5: If x is the first of three consecutive **odd** numbers, write their sum as an algebraic expression using x .

Write down an example of three consecutive **odd** numbers like 3, 5, 7.

How are the three numbers related?

What arithmetic would you do to get from 3 to 5 to 7?

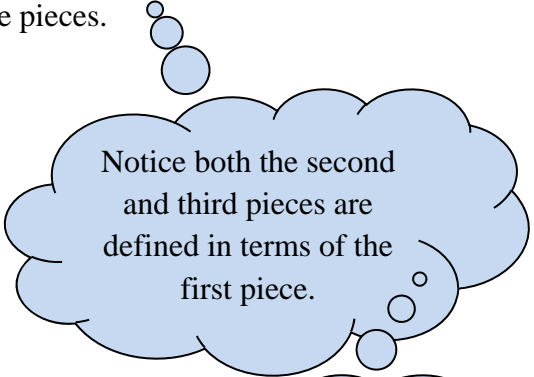
expl 6: A triangle has angle measures that are consecutive even integers. Find the measure of each angle.

Define your variable. Write it down!

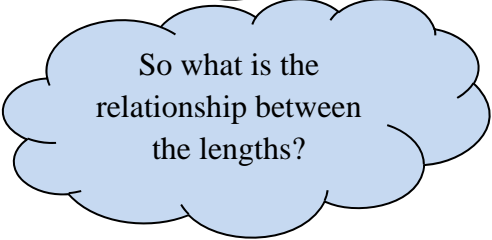
What is the relationship between the angles?

Ooh! A triangle!
What else do you need to know?

expl 7: A thirty foot piece of siding is cut into three pieces. The second piece is four times as long as the first piece and the third piece is five times as long as the first piece. Let x represent the length of the first piece and find the lengths of all of the pieces.



Notice both the second and third pieces are defined in terms of the first piece.



So what is the relationship between the lengths?