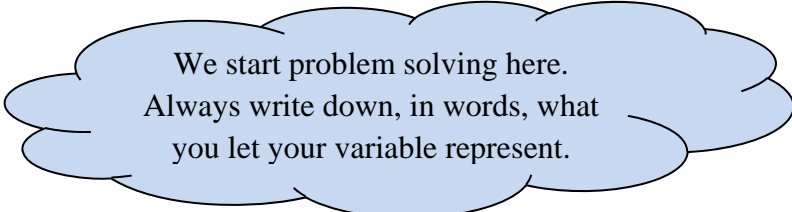


Elementary algebra
Class notes
Linear Equations in One Variable and Problem Solving (section 3.4)



We start problem solving here.
Always write down, in words, what
you let your variable represent.

Plan of Attack:

It helps to approach story problems step-by-step. Here are the general steps I use.

Read the problem twice,

define your variable – usually works to

let x represent what you want to find,

construct a drawing if relevant,

try out some numbers in the setup to get an

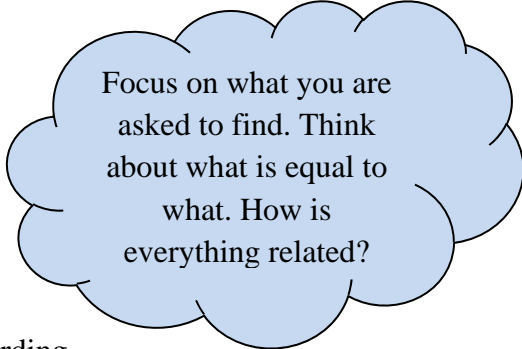
idea of what you are looking for,

create a verbal model with words to show what's equal,

translate to an equation and solve it,

check not only in the equation but also in the problem wording,

celebrate!



Focus on what you are
asked to find. Think
about what is equal to
what. How is
everything related?

First, let's do some preliminary work.

expl 1: Write expressions for the following phrases. Let x represent the unknown number.

a.) the difference of a number and 4

b.) five times the difference of a number and 4

c.) the sum of a number and four times the number

d.) the sum of a number and four, times the number

e.) twice a number added to three

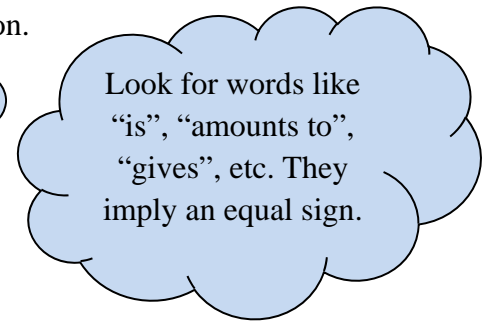
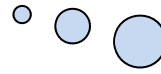
Worksheet: Story Problem Pieces:

This worksheet works on starting story problems by defining variables and using those variables to express the parts of a story problem. Solutions are available online.

expl 2: Let x represent the unknown number.

Write each **sentence** as an algebraic **equation**. Then solve the equation.

a.) The sum of a number and 6 is 10.



b.) The quotient of 15 and a number is equal to 3.

c.) The product of a number and 2, increased by 15, amounts to 45.

Story Problems:

expl 3: Write as an equation and solve. Let x represent the unknown number.

The difference of a number and 4 is equal to twice the number added to three. Find the number.

expl 4: Russia has 4066 more TV stations than China. The total number of TV stations in both countries is 10,546. How many TV stations does each country have?

Let x = number of TV stations in China.
Write it down!

Use x to express the number of stations in Russia.

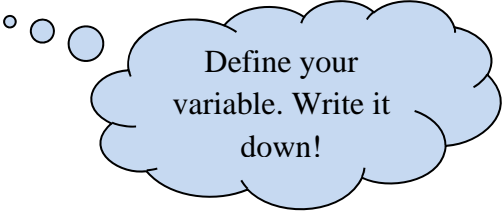
A verbal model may help:

# in China	+	# in Russia	=	Total #
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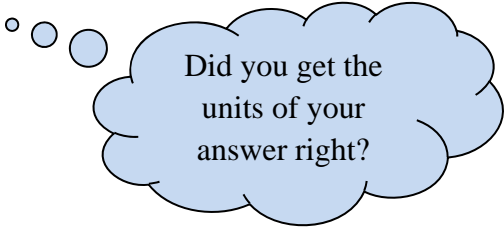
expl 5: I have my favorite book, *To Our Scattered Bodies Go*, open to where I left off reading. The page numbers showing add to 137. If I was reading the right page, what page number am I on?

What is the relationship between the page numbers of any open book? How can we use that?

expl 6: The Pentagon is the world's largest office building. It has 3 times the amount of floor space as the Empire State Building. If the total floor space of the two buildings is approximately 8700 thousand square feet, find the floor space in each building.



Define your variable. Write it down!



Did you get the units of your answer right?

It is never a waste of time to write down what you are letting x represent. Write it down specifically! 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.