

## Module F Homework Expectations

Below are examples of how work should be shown for the various sections in this module. Remember to follow the general *Homework Policy* guidelines, write out the directions as well as the problems, show work, and box your answers.

### §3.5, 3.6, 4.4 Don't forget to check your results if the directions specify it.

When solving equations, clearly show all scratch work on the side, not in the middle of the equation!

Example: Solve and check

$$8x + 125 - 2x = 2 - 2x - 5$$

$$6x + 125 = -3 - 2x$$

$$6x + 125 + 2x = -3 - 2x + 2x$$

$$8x + 125 = -3$$

$$8x + 125 - 125 = -3 - 125$$

$$8x = -128$$

$$\frac{8x}{8} = \frac{-128}{8}$$

$$\boxed{x = -16}$$

check:

$8x + 125 - 2x$ $= 8(-16) + 125 - 2(-16)$ $= -128 + 125 + 32$ $= -128 + 157$ $= 29$	$2 - 2x - 5$ $= 2 - 2(-16) - 5$ $= 2 + 32 - 5$ $= 34 - 5$ $= 29 \quad \checkmark$
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$$\begin{array}{r} 16 \\ 8 \overline{) 128} \\ \underline{-8} \phantom{0} \\ 48 \phantom{0} \\ \underline{-48} \\ 0 \end{array}$$

$$\begin{array}{r} 125 \\ + 32 \\ \hline 157 \end{array} \qquad \begin{array}{r} 157 \\ - 128 \\ \hline 29 \end{array}$$

NOTICE HOW THE SCRATCH WORK IS SHOWN ON THE SIDE

### §4.5 Modeling word problems with equations

Whenever you are asked to solve a problem and you use a variable in your work that has not been defined (hasn't been mentioned anywhere in the problem), then you need to define the variable (say what the variable represents) and show all 5 steps of the problem solving process listed below.

#### 5 Steps to Solving Word Problems

1. STATE what you are asked to find in the problem. You may need to read the problem several times to identify the question.
2. DEFINE the variable used. (How many unknowns do you have? Choose a letter to represent one of the unknowns. Then represent all other unknowns with expressions that use the same letter.)
3. SET UP an equation to model the problem.
4. SOLVE the equation.
5. State the CONCLUSION in a complete sentence.

# §4.5 (continued)

Two examples of when you need to show all the 5 steps:

A LITTLE PICTURE CAN HELP YOU VISUALIZE THE PROBLEM!

Example 1: There were 24 more no votes than yes votes. If 80 votes were cast in all, how many no votes were there?

① We need to find the number of no votes

There are 2 unknowns: # of no votes  
# of yes votes

② Let  $x$  = number of yes votes

Then  $x+24$  = number of no votes

$$\text{\# of yes votes} + \text{\# of no votes} = 80$$

$$\textcircled{3} \quad x + (x+24) = 80$$

$$\textcircled{4} \quad \begin{array}{r} 2x + 24 = 80 \\ -24 \quad -24 \\ \hline 2x = 56 \end{array}$$

$$\frac{2x}{2} = \frac{56}{2} \quad \begin{array}{r} 28 \\ 2 \overline{)56} \\ \underline{-4} \\ 16 \end{array}$$

$$\begin{aligned} \text{\# of no votes} &= x+24 \\ &= 28+24 \\ &= 52 \end{aligned}$$

⑤ There were 52 no votes.

LABEL THE STEPS 1 THROUGH 5

Example 2: 10 more than twice a number is 44. Find the number.

① We need to find the unknown number

There is only one unknown: the number

② Let  $x$  = the number

$$\textcircled{3} \quad \begin{array}{r} 10 + 2x = 44 \\ -10 \quad \quad -10 \\ \hline 2x = 34 \end{array}$$

$$\textcircled{4} \quad \frac{2x}{2} = \frac{34}{2}$$

$$\begin{aligned} \frac{2x}{2} &= \frac{34}{2} \\ x &= 17 \end{aligned}$$

$$\begin{array}{r} 17 \\ 2 \overline{)34} \\ \underline{-2} \\ 14 \end{array}$$

SCRATCH WORK ON THE SIDE.

⑤ The number is 17.

Example of when you do not need to follow the 5 steps:

Example: One rope is  $x$  feet long and the other is  $(x-2)$  feet long. If the combined lengths of the two ropes is 16 feet, how long is each rope?

$$\begin{aligned} x + (x-2) &= 16 \\ 2x - 2 &= 16 \\ +2 \quad +2 & \\ \hline 2x &= 18 \\ \frac{2x}{2} &= \frac{18}{2} \\ x &= 9 \end{aligned}$$

$$\begin{aligned} x &= \textcircled{9} \\ x - 2 &= 9 - 2 \\ &= \textcircled{7} \end{aligned}$$

DON'T FORGET TO INCLUDE UNITS IN YOUR ANSWER

One rope is 9 ft. and the other is 7 ft.

In the example above, the variable (in this case  $x$ ) has already been introduced in the problem. Therefore, we did not need to define a variable or use the 5-steps.

## §5.6 Remember to show all scratch work on the side, not in the middle of the equation!