Week 24 Algebra 1 Assignment:

Day 1: pp. 449-450 #1-21 odd, 23-24, 27-31
Day 2: pp. 452-453 #2-10 even, 11-18, 21-25
Day 3: pp. 458-459 #1-9 odd, 11-22, 25-29
Day 4: pp. 461-462 #1-19 odd
Day 5: pp. 461-462 #6-20 even, 23-27

Notes on Assignment:

Pages 449-450:

General notes for this section: To solve an equation by factoring:

1. Get all of the terms on one side of the equation.
2. Factor completely.
3. Set each factor equal to zero and solve.
4. Check.

Work to show:

#1-21: Write the problem down, leaving room to add or subtract to get all terms on one side. Follow the steps above to solve.
#23-24: 5-step word problems.
#27-31: Show work.

#5: Get all of the terms on the left side first.

#7-15: When it says write the solution set, it means take your answer(s) and write them in set notation, such as {0, 7}.

#17-21: Some of these will have fractions as answers because of the way they factor.

#23-24: These are 5-step word problems. As part of step 2, draw the picture.

#23: The difference of squares looks like this: $(\quad)^2 - (\quad)^2$. Fill the parentheses in from your problem and when you square these 2 quantities, you may have to write them down twice and use FOIL.

#24: When you take the number of plants per row times the number of rows, you should get 86.

#27: Only add like radicals. The 3rd term must be simplified before you try and add like radicals.

#29: Hint: 74 will go into this number.

#31: Use the conjugate.

Pages 452-453:

General notes for this section: When solving an equation by taking square roots, follow these steps:

1. Isolate the squared term.
2. Take the square root of both sides (Don't forget the ±)
3. Simplify the radical.

Work to show:

#2-18: Write the equation down, leaving room to add or subtract to both sides. Follow the steps above to complete the problem.
#21-23: Show any work needed.
#24: Graph
#25: 5-step word problem

#2-8: Solve for x^2 first and then take the square root of both sides.

#10: This has a *quantity* squared instead of x^2. Take the square root of both sides. On the left, the square and square root will undo each other, leaving just x + 4. Now continue to solve the equation.

#11-14: Get the quantity squared on the left and then take square roots of both sides.

#18: Divide both sides by 4 before taking the square root of both sides.

#21: This is factoring by grouping. Pull the GCF out of the first 2 terms, and then pull the GCF out of the 2nd two terms. You should have some common "stuff" to pull out.

#22: Write the answer with only positive integer exponents.

#25: This is a 5-step problem. Use buckets. You can do it with one variable or 2. If you use 2 variables you must come up with a system of 2 equations. Remember that each bucket represents interest, so if you know the interest total for a bucket, put that in the bucket instead of prt.

Pages 458-459:

General notes for this section: Below is a detailed example of completing the square. Follow the same steps for the problems in your assignment.

Example: Solve $x^2 - 6x - 7 = 0$

1. Since $x^2 - 6x - 7$ is not a perfect square trinomial, we must **make** it one. Move the 7 over to the other side of the equation and put in a "+ ____" (blank) on *both* sides, so we can pick the number that will give us a perfect square trinomial and also keep the equation balanced.

   $x^2 - 6x + \_\_\_ = 7 + \_\_\_$

2. Decide what number to put in the blank so that you will be able to factor the trinomial into something of the form $(x - h)^2$. (This is a perfect square trinomial.) To do this, take half of the coefficient of the linear term (the term with the x) and square it.

   Half of 6 is 3. We square the 3 to get 9. This goes in both blanks. (i.e. ½(6) = 3 and $3^2 = 9$)

   $x^2 - 6x + \underline{9} = 7 + \underline{9}$

3. Now we can factor using backwards FOIL.

   $x^2 - 6x + \underline{9} = 16$
   $x^2 - 6x + \underline{9} = 16$
   $(x-3)(x-3) = 16$
   $(x-3)^2 = 16$

   Note: The number in the ( ) will always be half of the coefficient of x in the original function.

4. Now we can take the square root of both sides, remembering our +/-.

   $x-3 = \pm 4$

5. Now solve for x by adding 3 to both sides.

   $x = 3 \pm 4$
   $x = 7$ or -1

Work to show:

#1-9: Answer only
#11-22: Show completing the square and solving.
#25-29: Show work as needed.

#1-9: To complete the square, take half of the coefficient of x and square it.

#11: Start by getting rid of the -5 on the left because you want to choose what goes there. Put in your blanks and continue.

#21: This problem will have a fraction for an answer.

#22: This problem will have a radical in the answer.

#25: Solve by squaring both sides, but divide both sides by 3 first.

#27: Graph this on a number line.

#29: You may want to make the factor trees for this.

Pages 461-462:

General notes for this section: Below are two examples of completing the square when the x^2 term has a coefficient other than 1. You can use either method. Please note that in the solutions, your book usually uses Method 2.

Method 1: Solve $2x^2 + 8x + 6 = 0$

If there is a coefficient on x^2, then you need to divide through by it. Divide through by 2. After that, follow the same process as above.

$2x^2 + 8x + 6 = 0$

$\frac{2x^2}{2} + \frac{8x}{2} + \frac{6}{2} = \frac{0}{2}$ — *Divide both sides by 2*

$x^2 + 4x + 3 = 0$

$x^2 + 4x \quad = -3$ — *Get the 3 on the other side.*

$x^2 + 4x + \_\_\_ = -3 + \_\_\_$ — *Put in + ___ on both sides.*

$x^2 + 4x + \underline{\ 4\ }) = -3 + \underline{\ 4\ }$ — *½(4) = 2 ⇒ 2^2 = 4. Put 4 in the blank on the left to complete the square.*

$(x+2)^2 = 1$	*Factor*
$\sqrt{(x+2)^2} = \pm\sqrt{1}$	*Take the square root of both sides.*
$x+2 = \pm 1$	*Take the square root of both sides.*
$x = -2 \pm 1$	*Solve by subtracting 2 from both sides.*
$x = -1$ *or* -3	*Final solution.*

Method 2: Solve $2x^2 + 8x + 6 = 0$

If there is a coefficient on x^2, then you can factor it out after moving the constant to the other side. Then divide through by 2.

$2x^2 + 8x + 6 = 0$	
$2x^2 + 8x \quad = -6$	*Get the 6 on the other side.*
$2x^2 + 8x + \_\_\_ = -6 + \_\_\_$	*Put in + ___ on both sides.*
$2(x^2 + 4x + \_\_) = -6 + \_\_\_$	*Pull out the 2 on the left side.*
$2(x^2 + 4x + \underline{\ 4\ }) = -6 + \underline{\ 8\ }$	*½(4) = 2 ⇒ $2^2 = 4$. Put 4 in the blank on the left to complete the square. Because of the 2 outside the ( ) you are really adding 2(4) to the left, so you must put an 8 in the blank on the right.*
$2(x+2)^2 = 2$	*Factor.*
$(x+2)^2 = 1$	*Solve for the squared quantity by dividing both sides by 2.*
$\sqrt{(x+2)^2} = \pm\sqrt{1}$	*Take the square root of both sides.*
$x+2 = \pm 1$	*Take the square root of both sides.*
$x = -2 \pm 1$	*Solve by subtracting 2 from both sides.*
$x = -1$ *or* -3	*Final solution.*

Work to show:

#1-4: Answer only
#5-20: Show work for solving by completing the square.
#23-27: Show work.

#1-4: Take these problems as far as filling in the blanks. What do you need to complete the square?

#5-20: Some of these will have fractions for answers and some will have radicals.

#26: When you have a negative exponent on a fraction, you can make the exponent positive if you "flip" the fraction.

#27: For the 2^{nd} fraction, "kick it upstairs" to change the sign of the exponent. Square the first binomial and then combine like terms.