Section 7.1 Guided Notebook

Section 7.1 Solving Systems of Linear Equations in Two Variables

- ☐ Work through TTK #1
- ☐ Work through TTK #2
- ☐ Work through TTK #3
- ☐ Work through TTK #4
- ☐ Work through Objective 1
- ☐ Work through Objective 2
- ☐ Work through Objective 3
- ☐ Work through Objective 4

Section 7.1 Solving Systems of Linear Equations in Two Variables

Work through TTK #1 **Applications of Linear Equations** and take notes below.

Work through TTK #2 **Writing the Equation of a Line in Standard Form** and take notes below.

Work through TTK #3 **Sketching Lines by Plotting Intercepts** and take notes below.

Work through TTK #4 **Understanding the Definition of Parallel Lines** and take notes below.

Section 7.1 Objective 1 Verifying Solutions to a System of Linear Equations in Two Variables

Write down the definition of a linear equation in *n* variables.

What is the important thing to remember about the variables of a linear equation?

Work through Example 1 and take notes below.
Show that the ordered pair $(-1,3)$ is a solution to the system

$$3x - 2y = -9$$
$$x + y = 2$$

What is a consistent system? Draw a picture of a consistent system.

What is an inconsistent system? Draw a picture of an inconsistent system.

Section 7.1 Objective 2 Solving a System of Linear Equations Using
the Substitution Method

Watch the video on substitution and take notes below.

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What are the four steps for **Solving a System of Equations by the Method of Substitution?**

Step 1.

Step 2.

Step 3.

Step 4.

Work through Example 2 and take notes below.

Solve the following system using the method of substitution:

$$2x - 3y = -5$$
$$x + y = 5$$

Section 7.1 Objective 3 Solving a System of Linear Equations Using the Elimination Method

Watch the video on the elimination method and take notes below.

What are the five steps for **Solving a System of Equations by the Method of Elimination?**

Step 1.

Step 2.

Step 3.

Step 4.

Step 5.

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Work through Example 3 and take notes below.

Solve the following system using the method of elimination:

$$-2x+5y=29$$
$$3x+2y=4$$

Work through Example 4 and take notes below.

Solve the system $\begin{array}{l} x-2y=11 \\ -2x+4y=\ \ 8 \end{array}$.

What indicates the problem in Example 4 is an inconsistent system?

Why, geometrically, does the system have no solution?

Work through Example 5 and take notes below.

Solve the system $\begin{aligned} -3x+6y &= \ 9 \\ x-2y &= -3 \end{aligned}$.

What is the solution of this system geometrically?

What are the two ways the solution can be expressed using ordered pairs?

Section 7.1 Objective 4 Solving Applied Problems Using a System of Linear Equations

Write the Five-Step Strategy for Problem Solving using Systems of Equations.

Step 1.

Step 2.

Step 3.

Step 4.

Step 5.

Work through Example 6 and take notes below. Be sure to use the two variable system.

Roger Staubach and Terry Bradshaw were both quarterbacks in the National Football League. In 1973, Staubach threw three touchdown passes more than twice the number of touchdown passes thrown by Bradshaw. If the total number of touchdown passes between Staubach and Bradshaw was 33, how many touchdown passes did each player throw?

Work through Example 7 and take notes below.

During one night at the jazz festival, 2,100 tickets were sold. Adult tickets sold for $12, and child tickets sold for $7. If the receipts totaled $22,100, how many of each type of ticket were sold?

Work through the video with Example 8 and take notes below.

Twin City Foods, Inc., created a 10-lb bean mixture that sells for $5.75 by mixing lima beans and green beans. If lima beans sell for $.70 per pound and green beans sell for $.50 per pound, how many pounds of each bean went into the mixture?

Work through the video with Example 9 and take notes below.

A small airplane flies from Seattle, Washington, to Portland, Oregon—a distance of 150 miles. Because the pilot encountered a strong headwind, the trip took 1 hour and 15 minutes. On the return flight, the wind is still blowing at the same speed. If the return trip took 45 minutes, what was the average speed of the airplane in still air? What was the speed of the wind?

What is the formula that relates distance, time and rate?

What effect does the headwind have on the speed of the plane?

What effect does the tailwind have on the speed of the plane?

Why does the time need to be in hours?

Show the complete solution to the problem.