


KEY CONCEPT OVERVIEW

In this topic, students apply their knowledge of solving equations to real-world situations. Using knowledge of angle relationships (e.g., a right angle has a measure of 90 degrees, and a straight angle has a measure of 180 degrees), students write and solve one-step equations to find the unknown measure of an angle. Given a real-world situation, students write an equation with two variables (e.g., $t = 7m$), analyze the relationship between the **independent** and **dependent variables**, create a table, and plot the points on the coordinate plane. To wrap up the module, students use their understanding of true and false number sentences to write and **graph inequalities** on a number line diagram.

You can expect to see homework that asks your child to do the following:

- Write an equation to solve for the unknown measure of an angle.
- Identify the independent and dependent variables in a context, write an equation, complete a table, and plot the points from the table on a graph.
- From a set of numbers, choose the number(s), if any, that make a given equation or inequality true.
- Given a phrase (e.g., at least 13), write and graph an inequality (e.g., $x \geq 13$, ).

SAMPLE PROBLEMS (From Lessons 30 and 32)

1. Write an equation that represents the following situation and solve.

$\angle ABC$ measures 90° . It has been split into two angles, $\angle ABD$ and $\angle DBC$. The measures of the two angles are in a ratio of 2:1. What is the measure of each angle?

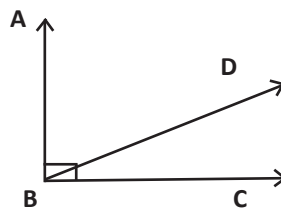
Let x° represent the measure of $\angle DBC$.

$$x^\circ + 2x^\circ = 90^\circ$$

$$3x^\circ = 90^\circ$$

$$3x^\circ \div 3 = 90^\circ \div 3$$

$$x^\circ = 30^\circ$$



The smaller angle ($\angle DBC$) measures 30° . Since the ratio of angle measures is 2:1, the measure of the larger angle ($\angle ABD$) has a value of 60° because $30 \times 2 = 60$.

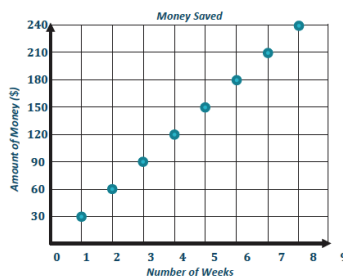
2. Each week, Quentin saves \$30. Write an equation that represents the relationship between the number of weeks that Quentin has saved his money, w , and the total amount of money in dollars he has saved, s . Then, name the independent and dependent variables. Create a table and a graph that show the total amount of money Quentin has saved from week 1 through week 8. Finally, write a sentence that explains this relationship.

$$s = 30w$$

The amount of money saved in dollars, s , is the dependent variable, and the number of weeks, w , is the independent variable.

SAMPLE PROBLEM *(continued)*

Number of Weeks	Total Saved (\$)
1	30
2	60
3	90
4	120
5	150
6	180
7	210
8	240



Therefore, the amount of money Quentin has saved increases by \$30 for every week he saves money.

Additional sample problems with detailed answer steps are found in the *Eureka Math Homework Helpers* books. Learn more at GreatMinds.org.

HOW YOU CAN HELP AT HOME

You can help at home in many ways. Here are some tips to help you get started.

- Encourage your child to identify which number(s) make each inequality true. Given the set of numbers {3, 4, 9, 12, 24}, choose the number(s) that make each inequality true.
 - a. $m + 7 < 12$ (solution: {3, 4})
 - b. $t - 2 \leq 9$ (solution: {3, 4, 9})
 - c. $\frac{k}{3} \geq 2.25$ (solution: {9, 12, 24})
- With your child, write three equations that have a solution of $x = 12$.

(Possible equations: $24 = 2x$, $8 = x - 4$, and $18 = x + 6$.) Then, each of you create an equation for which the solution is a positive whole number between 50 and 100. Exchange equations with your child. Solve each other's equations, and explain why the solution is correct.

TERMS

Dependent variable: A variable whose value depends on the value of another variable. For example, if x represents the number of hours spent studying and y represents the test score, the value of y might change according to the value of x .

Independent variable: A variable (e.g., age) whose value is not affected by the values of other variables.

MODELS

Graphing Inequalities

