EUREKA MATH™ TIPS FOR PARENTS

KEY CONCEPT OVERVIEW

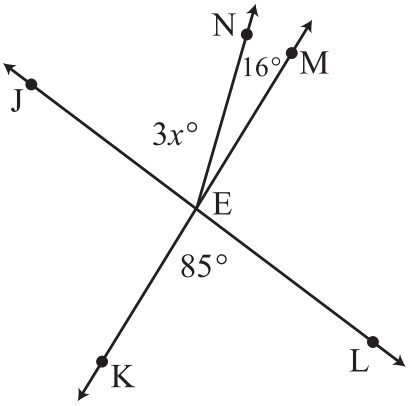
In Topic B, students transition from expressions to **equations** and **inequalities**. Students deepen their understanding of equations by using if–then moves to determine the value of the variable that makes the equation a true number sentence. Students continue to build their knowledge of equations by using angle relationships to calculate the measures of unknown angles. Later in the topic, students discover when the inequality sign is preserved (stays the same) or reversed (flipped) and apply their knowledge of solving equations to solving inequalities. Finally, students will graph solutions to inequalities on a number line.

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

- Determine whether a given value is the solution to an equation.
- Write, solve, and interpret equations and inequalities given various contexts.
- Using angle relationships, write an equation to solve for the value of a variable and/or determine the measure of an unknown angle.
- Use the properties of inequalities to write a true inequality statement.
- Determine when an inequality statement will be true and when the same statement will be false.
- Graph the solution of an inequality on a number line.

SAMPLE PROBLEMS *(From Lessons 10 and 14)*

Write an equation for the angle relationship shown in the figure, and solve for x.



$$3x + 16 = 85$$
$$3x + 16 - 16 = 85 - 16$$
$$3x = 69$$
$$\frac{1}{3}(3x) = \frac{1}{3}(69)$$
$$x = 23$$

The carnival pays the owner of an exotic animal exhibit \$650 for the entire time the exhibit is displayed. The owner of the exhibit has no other expenses except for a daily insurance cost. If the owner of the animal exhibit wants to make more than \$500 profit when exhibiting for $5\frac{1}{2}$ days, what is the greatest daily insurance cost he can afford to pay?

Let i represent the daily insurance cost, in dollars.

$$650 - 5.5i > 500$$
$$-5.5i + 650 - 650 > 500 - 650$$
$$-5.5i + 0 > -150$$
$$\left(\frac{1}{-5.5}\right)(-5.5i) < \left(\frac{1}{-5.5}\right)(-150)$$
$$i < 27.272727\ldots$$

The maximum daily cost the owner can pay for insurance is \$27.27.

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 think of real-world situations in which equations are appropriate and others in which inequalities are appropriate. Together, discuss why one situation lends itself to an equation and why a different situation lends itself to an inequality. For example, suppose a certain type of plant has 2 flowers. If you want exactly 12 flowers in your flower bed, you could write the equation $2p = 12$, where p represents the number of plants you need to buy (6). However, if you are less specific and want *at least* 12 plants in your flower bed, you would represent this with the inequality $2p \geq 12$ (any number greater than or equal to 6).
- In preparation for Topic C, discuss the differences between volume and surface area. When is calculating volume important? When is knowing the surface area of a three-dimensional figure important? For example, a cereal company wants to know the volume of a cereal box to determine how much cereal fits inside. It also wants to know the surface area to determine the amount of material needed to create the box.

TERMS

Adjacent angles: Any two angles with a common side. For example, $\angle BAC$ is adjacent to $\angle CAD$ because they share ray AC. (Figure 1)

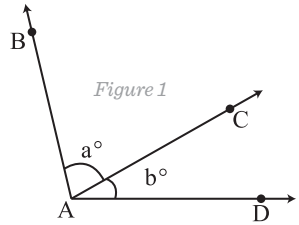


Figure 1

Angles at a point: Angles formed by three or more rays (sides) that share a vertex (the point where rays meet) and whose measures sum to 360 degrees. For example, $m\angle BAC + m\angle CAD + m\angle DAB = 360°$. (Figure 3)

Angles on a line: Two adjacent angles that form a line and whose measures sum to 180 degrees. For example, $m\angle ABC + m\angle CBD = 180°$. (Figure 2)

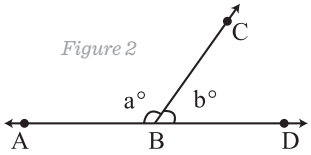


Figure 2

Equation: A statement indicating that two expressions are equal (e.g., $3 \times 4 = 6 \times 2$).

Inequality: A statement comparing expressions that are unequal or not strictly equal. The symbol used to compare the expressions reveals the type of inequality: $<$ (less than), $\leq$ (less than or equal to), $>$ (greater than), $\geq$ (greater than or equal to), or $\neq$ (not equal).

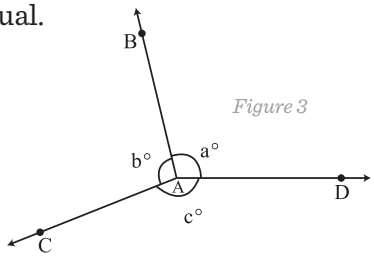


Figure 3

Ray: Part of a line with an initial point at one end and continuing indefinitely in the other direction.

Vertical angles: The pair of opposite angles created when two lines intersect. The angles have the same measures. For example, $m\angle DCF = m\angle GCE$. (Figure 4)

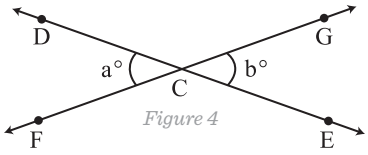


Figure 4

MODELS

Protractor