Dear Family,

Your child is learning about solving problems with inequalities.

An equation uses an equal sign (=) to show that two expressions are equivalent. An inequality uses inequality symbols to show the relationship between two expressions. The inequality symbols are greater than (>), greater than or equal to (≥), less than (<), and less than or equal to (≤).

Here are some examples of inequalities.

$5 < 12$	5 is less than 12.
$\frac{1}{2}r > 55$	$\frac{1}{2}$ times r is greater than 55.

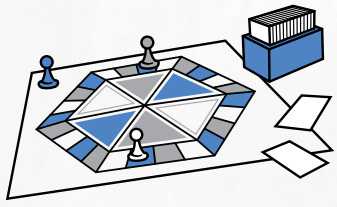
You can use inequalities to represent situations in everyday life. Consider this example:

> *Ms. Ruiz has a family cell phone plan. The plan includes 10 gigabytes of shared data and costs $80 per month. Any additional data usage is billed at $15 per gigabyte. If Ms. Ruiz wants to spend at most $125 on her cell phone bill, how many additional gigabytes of data, d, could the family use?*

This situation can be represented by the inequality $80 + 15d \leq 125$.

Consider this situation:

You want your total score to be 100 points or more after your next turn in a trivia game. Each correct answer is worth 5 points. If you already have 45 points, how many more questions could you answer correctly so that your score is 100 points or more?



The next page shows two ways in which your child may use inequalities to determine how many more correct answers are needed.

NEXT

Solve Problems with Inequalities: Sample Solution

You want your total score to be 100 points or more after your next turn in a trivia game. Each correct answer is worth 5 points. If you already have 45 points, how many more trivia questions could you answer correctly so that your score is 100 points or more?

Your child will begin to solve this problem by writing an inequality. The total number of points you want to have must be greater than or equal to 100. Let c be the number of correct answers.

Points you have $+$ $5 \cdot c$ correct answers must be $>$ or $=$ 100

$45 + 5c \geq 100$

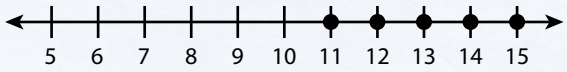
The inequality is $45 + 5c \geq 100$.

Next, solve the inequality.

$$\begin{aligned} 45 + 5c &\geq 100 \\ 45 - 45 + 5c &\geq 100 - 45 \\ 5c &\geq 55 \\ \frac{5c}{5} &\geq \frac{55}{5} \\ c &\geq 11 \end{aligned}$$

Then, graph the solution set on a number line.

Since c is a number of questions, only whole numbers make sense. The inequality $c \geq 11$ means that the solution is any whole number greater than or equal to 11. You can graph the solution set on a number line.



Answer: The inequality and the number line both show that the solution is any whole number greater than or equal to 11, meaning that you could answer 11, 12, 13, 14, 15, . . . questions correctly to have more than 100 points after your next turn.