LEARNING GOALS

1. I can describe the set of numbers that make an inequality true.
2. I can graph the solution to an inequality in one variable.

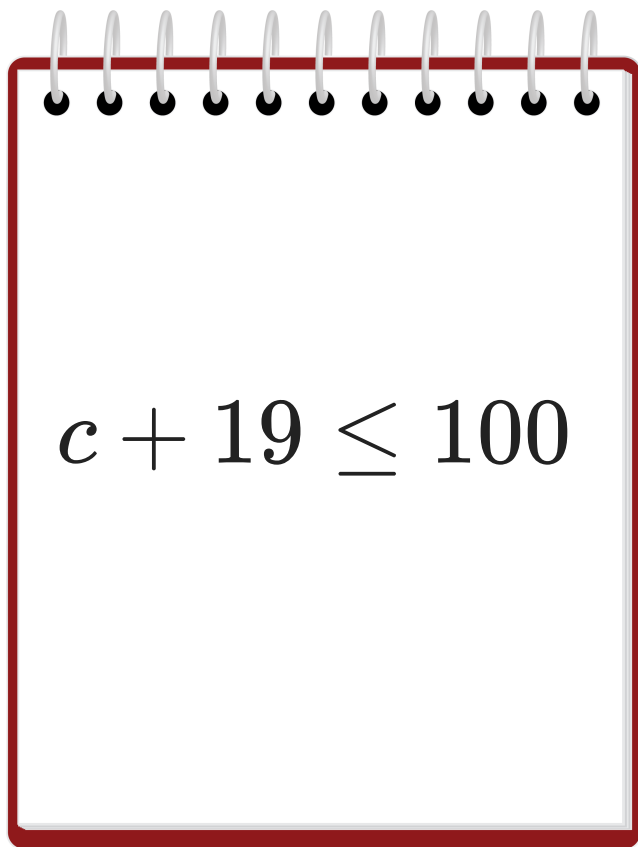# KEY VOCABULARY

1. **solution set**
2. **ray**

THOMAS BUYS SOCCER EQUIPMENT

Thomas went to the store with $100 to buy a new soccer ball and cleats. The soccer ball he found was $19.

After Thomas found the soccer ball, he wrote an inequality on his notepad:

$$c + 19 \leq 100$$

Fill in the blank
In algebra, c is called a:

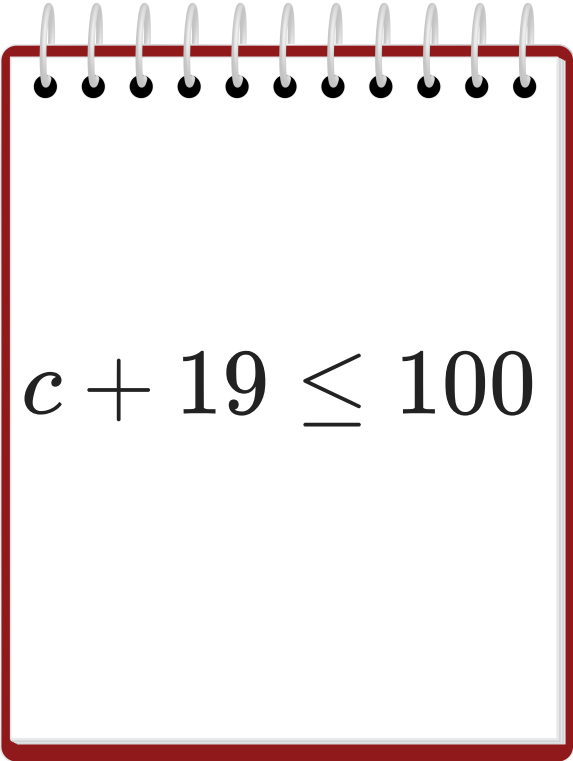He said that c represents the cost of a pair of cleats that he *could* buy.

Once he wrote his inequality, he went to look for a pair of cleats.

Learning goal: I can describe the set of numbers that make an inequality true.

$$c + 19 \leq 100$$

A **solution** is a number that makes an inequality true.

$$c + 19 \leq 100$$
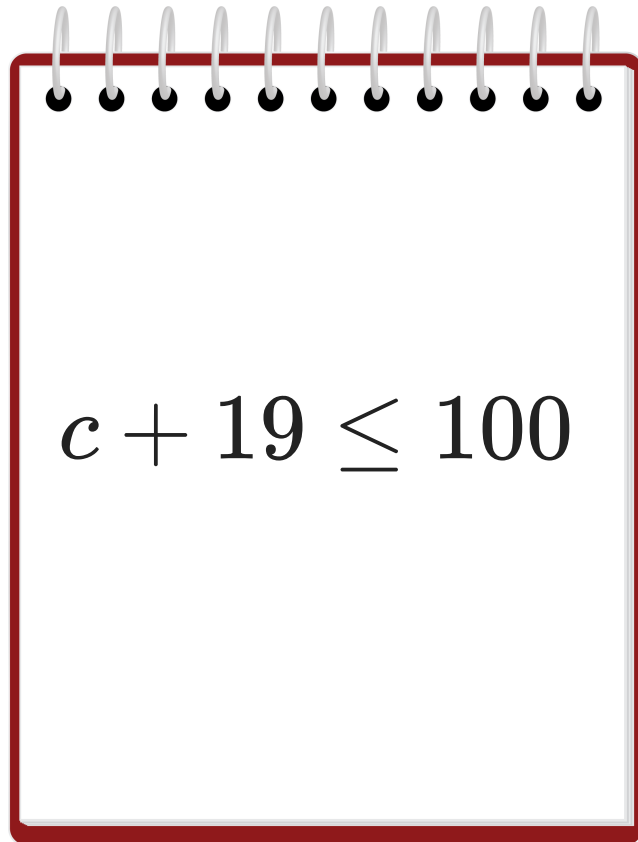
NOT A SOLUTION

$$c = 89$$

SOLUTION

$$c = ?$$

$$c + 19 \leq 100$$

What is one solution to this inequality?

Interpret the solution in this context (Say what it means to Thomas).

JOE'S CELL PHONE

Joe's cell phone costs him $21 per month plus $3 for every 1GB of data downloaded.
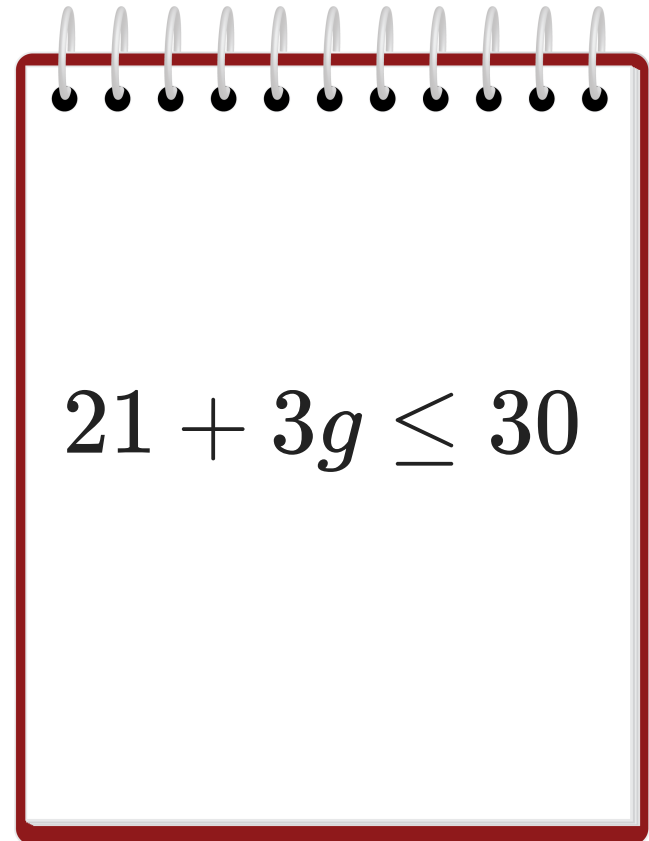
Joe has a monthly cell phone budget of $30.

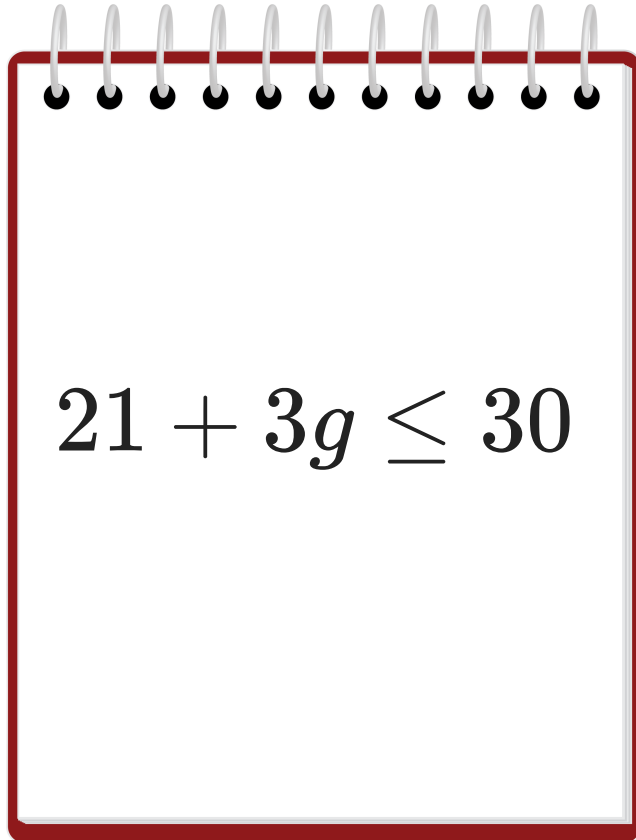## Monthly budget

Monthly service fee

Cost per GB

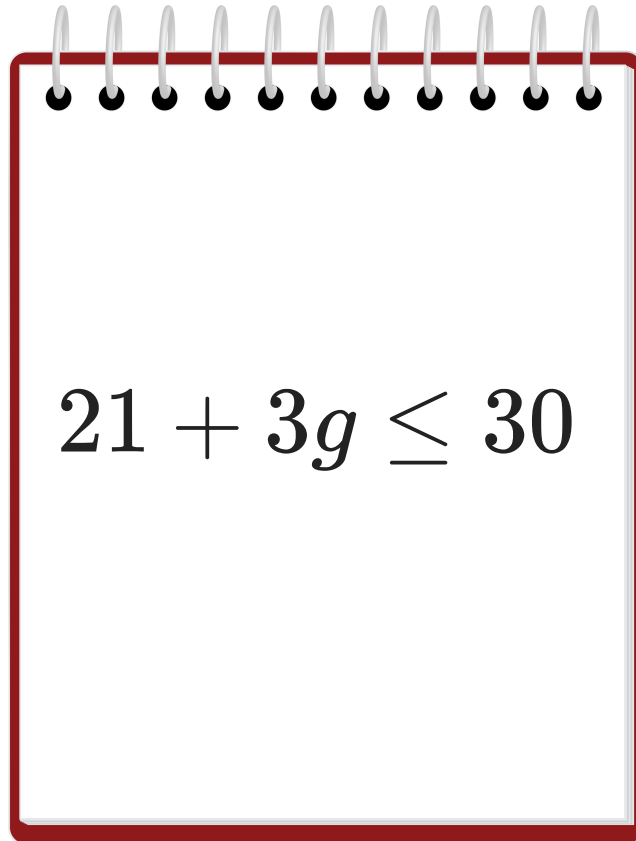To figure out how much video he can stream, Joe wrote an inequality.

$$21 + 3g \leq 30$$

Learning goal: I can describe the set of numbers that make an inequality true.

$$21 + 3g \leq 30$$

Learning goal: I can describe the set of numbers that make an inequality true.

$$21 + 3g \leq 30$$

If he *must* meet his budget, how many GB of data *could* Joe use? (Find one solution.)

SOLUTIONS TO THOMAS' INEQUALITY

Thomas found 6 pairs of cleats at the store. The prices were $40, $60, $71, $76, $86, and $90.

Fill in the table to find which values are solutions to his inequality $c + 19 \leq 100$.

c	40	60	71	76	86	90
$c+19$						
Solution or not a solution?						

Solution
Not a solution

Drag the answer blocks to the correct spaces.

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SOLUTIONS TO JOE'S INEQUALITY

Fill in the table to find which values are solutions to Joe's inequality $21 + 3g \leq 30$.

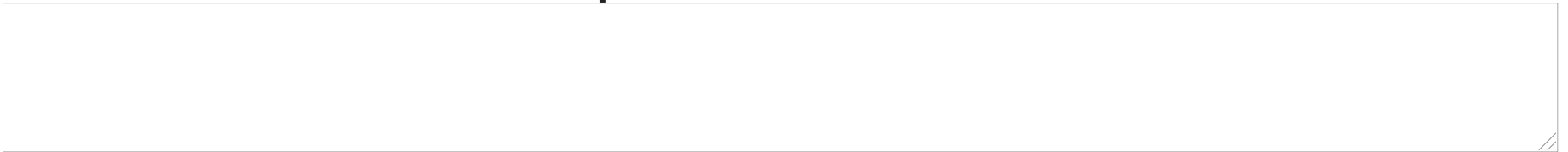| g	-1	0	1	2	3	4	10
$21+3g$							
Solution or not a solution?							

Solution
Not a solution

Drag the answer blocks to the correct spaces.

DESCRIBE THE PATTERN OF THE SOLUTIONS

Learning goal: I can describe the set of numbers that make an inequality true.

How would you describe the pattern of solutions in the previous tables?

Use a number line to show where the solutions are.

$$c + 19 \leq 100$$

$c = $ cost of Thomas' cleats

$$21 + 3g \leq 30$$

-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9
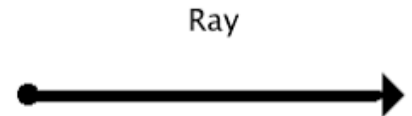
$g = $ number of GB of data that Joe can use
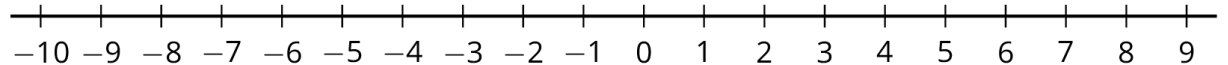
In mathematics, a **ray** is a connected part of a line that has only one end point.

Ray

INDEPENDENT PRACTICE

Your task will be to describe and graph the solutions to two inequalities.

Let's investigate the inequality $x - 3 > -2$. Fill in the table to help you find the solutions to the inequality.

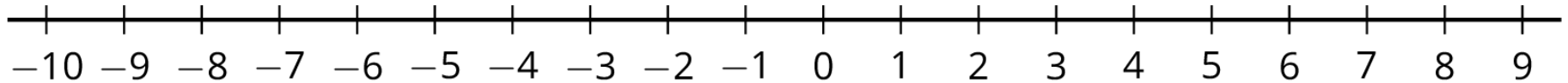| x	-4	-3	-2	-1	0	1	2	3	4
$x - 3$	-7		-5				-1		1

Use the table that you made to answer each question in complete sentences.
For which values of x is it true that $x - 3 = -2$?

For which values of x is it true that $x - 3 > -2$?

Graph the solutions to $x - 3 > \text{-}2$ on the number line:

Predict which values of x will make the inequality $2x < 6$ true. Write one sentence with or without mathematical symbols.

Complete the table to find some solutions to the inequality $2x < 6$. Does it match your prediction?

x	-4	-3	-2	-1	0	1	2	3
$2x$								

Graph the solutions to the inequality
$$2x < 6$$
on the number line

−10 −9 −8 −7 −6 −5 −4 −3 −2 −1 0 1 2 3 4 5 6 7 8 9