

Equation Route

Model, solve, and graph one-step relationships.

GRADE 6 • TEKS 6.9

6.9 "Expressions, equations, and relationships. The student applies mathematical process standards to use equations and inequalities to represent situations. The student is expected to: write one-variable..."

NAME _____

DATE _____

MATCH THE SITUATION

Use an inverse operation to undo the operation attached to the variable. For an inequality, use an open circle for $<$ or $>$ and a closed circle for $\leq$ or $\geq$. Check whether a situation allows only whole-number answers before you graph it.

WORKED EXAMPLE

Solve $y - 13 = 8$.

1. $y - 13 + 13 = 8 + 13$

2. $y = 21$

Answer: $y = 21$

PRACTICE 6 problems

1 Solve: $x + 7 = 19$

ANSWER _____

2 Solve: $x - 15 = 5$

ANSWER _____

3 Solve: $3x = 27$

ANSWER _____

4 Solve: $x / 5 = 7$

ANSWER _____

5 Solve and graph: $x + 11 \leq 20$

ANSWER _____

6 A club has 36 members. After x members leave, 25 members remain. Write a one-step equation and solve.

ANSWER _____

APPLY IT Show your work

- 1** Each arcade game round costs 5 tokens. You have no more than 45 tokens. Let r represent the number of rounds you can play. Write and solve an inequality. Then graph the possible values of r on a number line.

WORK SPACE

ANSWER _____

- 2** You have saved \$18 for headphones that cost at least \$50. Let x represent the amount of money, in dollars, that you still need to earn. Write and solve an inequality. Then graph the solution on a number line.

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

You have 30 minutes before dinner. Each complete game level takes 4 minutes. Let l represent the number of complete levels you can finish. Write and solve an inequality. List the possible values of l , describe the number-line graph, and explain why the graph is not a continuous shaded line.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Solve: $x + 7 = 19$	$x = 12$
2	Solve: $x - 15 = 5$	$x = 20$
3	Solve: $3x = 27$	$x = 9$
4	Solve: $x / 5 = 7$	$x = 35$
5	Solve and graph: $x + 11 \leq 20$	$x \leq 9$; draw a closed circle at 9 and shade to the left.
6	A club has 36 members. After x members leave, 25 members remain. Write a one-step equation and solve.	$36 - x = 25$; $x = 11$

PART 2 • APPLY IT

1. $5r \leq 45$; $r \leq 9$. Since r counts whole rounds, plot closed dots at 0, 1, 2, 3, 4, 5, 6, 7, 8, and 9 only.

Multiply the number of rounds by 5 tokens and use $\leq$ because you cannot spend more than 45 tokens. The number of rounds must be a nonnegative whole number.

2. $x + 18 \geq 50$; $x \geq 32$. Draw a closed circle at 32 and shade to the right. Add the saved amount and the amount still needed, then use $\geq$ because the cost is at least \$50. Subtract 18 from both sides.

CHALLENGE

$4l \leq 30$, so $l \leq 7.5$. Because l counts complete levels, l can be 0, 1, 2, 3, 4, 5, 6, or 7. Plot closed dots at 0 through 7, not a continuous shaded line, because only whole numbers of complete levels are possible.

Accept equivalent equations and inequalities, such as $25 = 36 - x$. For continuous inequality graphs, accept equivalent descriptions of a closed or open endpoint and the correct shading direction.