

Dot and Shade

Represent every one-step solution on a number line.

GRADE 6 • TEKS 6.9.B

6.9.B "represent solutions for one-variable, one-step equations and inequalities on number lines; and"

NAME _____

DATE _____

CONNECT THE REPRESENTATIONS

Undo the same operation on both sides. An equation has a solution dot. For inequalities, use an open dot for $<$ or $>$, a closed dot for $\leq$ or $\geq$, and a ray toward all solutions. Multiplying or dividing by a negative reverses the inequality.

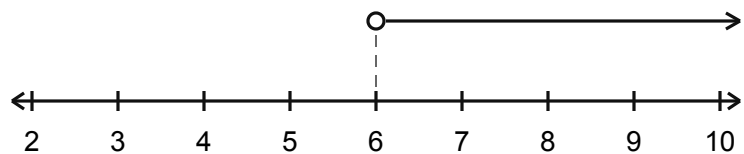
WORKED EXAMPLE

Solve $x / 3 > 2$ and show the solutions.

1. Multiply both sides by positive 3: $x > 6$.
2. Draw above the scale, aligned with its ticks. The dashed guide locates the boundary; the arrow shows the solutions.

Answer: $x > 6$: open dot at 6, ray right.

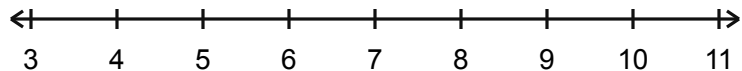
Draw the solution above the scale



PRACTICE 4 problems

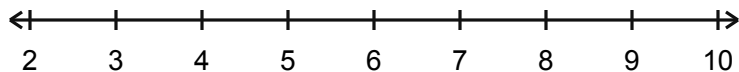
- 1** Solve $x + 7 = 15$. Show the solution with a closed dot above the correct tick.

Draw the solution above the scale



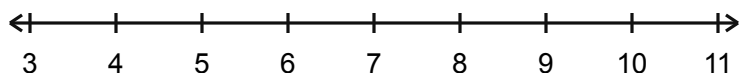
- 2** Solve $x - 9 = -3$. Show the solution above the scale.

Draw the solution above the scale



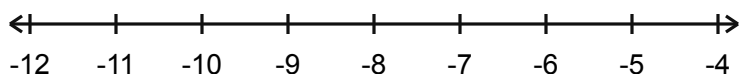
- 3** Solve $5x = 35$. Show the solution above the scale.

Draw the solution above the scale



- 4** Solve $x / 4 = -2$. Show the solution above the scale.

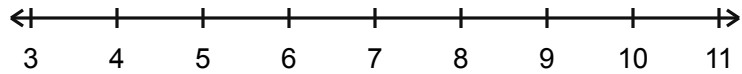
Draw the solution above the scale



APPLY IT Show your work

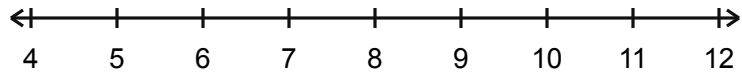
1 The temperature is x C. It rises 3 C and stays below 10 C. Write and solve an inequality, then graph it above the scale. Is 7 C a possible starting temperature?

Draw the solution above the scale



2 An account has x dollars. After a \$6 purchase, at least \$2 must remain. Write and solve an inequality, then graph it above the scale. Is \$8 enough to start?

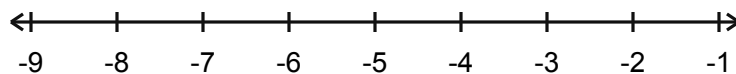
Draw the solution above the scale



CHALLENGE One step up

Solve $-4x < 20$. Graph the solution above the scale. Explain why the inequality sign reverses and check one value in the solution.

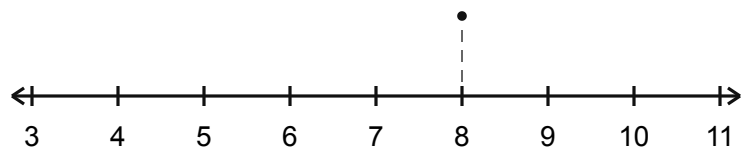
Draw the solution above the scale



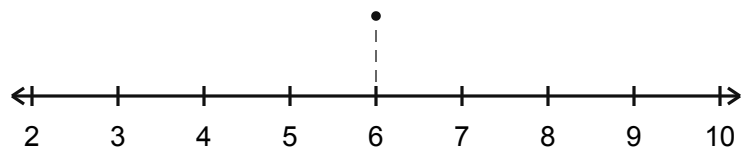
Dots and rays are drawn above the reference scale, aligned with the tick values as in the example. Accept equivalent graphs on the axis. Rays continue without ending at the edge of the displayed window. All variables range over real numbers. C denotes degrees Celsius. The account graph is a real-number model of the dollar balance.

PRACTICE 1

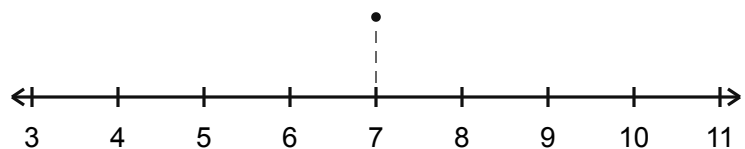
Draw the solution above the scale

 $x = 8$; closed dot at 8.**PRACTICE 2**

Draw the solution above the scale

 $x = 6$; closed dot at 6.**PRACTICE 3**

Draw the solution above the scale

 $x = 7$; closed dot at 7.

PRACTICE 4

$x = -8$; closed dot at -8 .

Draw the solution above the scale



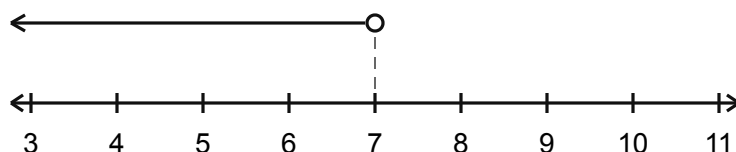
APPLY IT 1

$x + 3 < 10$, so $x < 7$. Open dot at 7; ray left.

No: 7 C rises to 10 C, which is not below 10 C.

Subtract 3 from both sides.

Draw the solution above the scale



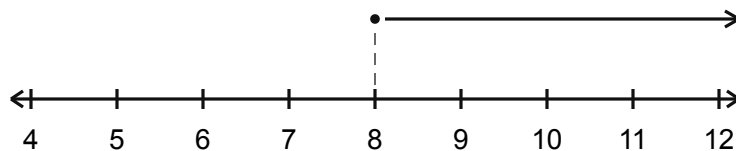
APPLY IT 2

$x - 6 \geq 2$, so $x \geq 8$. Closed dot at 8; ray right.

Yes: \$8 leaves exactly \$2.

Add 6 to both sides.

Draw the solution above the scale



CHALLENGE

$x > -5$; open dot at -5 and ray right.

Dividing by -4 reverses order. Check $x =$

0: $0 < 20$ is true.

Draw the solution above the scale

