

Algebra 2-6/2-8: Solving $ax = b$ and $ax < b$

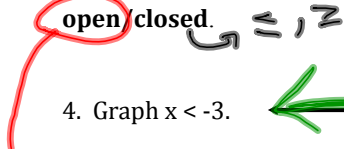
Warm-Up

Fill in the blank with values that are solutions.

1. $4 \cdot \underline{14} = 56$ 2. $4 \cdot \underline{6.28} = 25.12$

$56 \div 4 =$ $25.12 \div 4 = 6.28$

3. Circle the correct bolded word. When graphing $x < -3$ on a number line, the point is **open** / closed.



4. Graph $x < -3$.



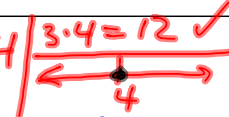
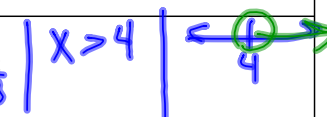
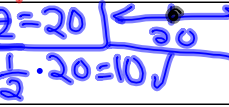

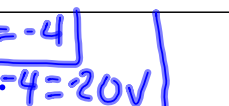
Guidelines for Solving

~~$\frac{5}{5}x = 15$~~ $\frac{1}{5} \cdot \frac{1}{5}$
 $x = \frac{15}{5} = 3$ $\frac{5}{5}x = 15$
 $\frac{5}{5}$ $\frac{5}{5}$

- Start with the side that has the variable.
- If you do an operation to one side, you must do it to the other side.
 > For example, if you divide one side by 5, you must divide by 5 to other side.
- In order to get rid of a fraction, multiply the reciprocal.
- When solving inequalities, if I divide or multiply by a negative #, then I must flip the symbol.

~~$\frac{2}{3}x = 4$~~ $\frac{3}{3} \cdot \frac{3}{3}$
 $x = \frac{12}{2} = 6$

~~$-5x < 20$~~
 $\frac{-5}{-5}$ $\frac{20}{-5}$
 $x > -4$

2-6 Solving $ax = b$	2-8 Solving $ax > b$
Solve. Check. Graph.	Solve. Check. Graph.
$1. \frac{3x}{3} = \frac{12}{3} \quad \quad x = 4 \quad \quad \frac{3 \cdot 4}{3} = \frac{12}{3} \checkmark$ 	$11. \frac{3x}{3} > \frac{12}{3} \quad \quad x > 4$ 
$2. \frac{1z}{1} = \frac{10}{1} \quad \quad z = 10 \quad \quad \frac{1 \cdot 10}{1} = \frac{10}{1}$ $2. \frac{1z}{2} = \frac{20}{2} \quad \quad z = 20 \quad \quad \frac{1 \cdot 20}{2} = \frac{20}{2} = 10 \checkmark$ 	$12. \frac{1z}{2} < 10$
$3. \frac{3n}{2} = 15$	$13. \frac{3n}{2} \geq 15 \quad \quad n \geq 10$ 
$4. -6p = -15$	$14. -6p < -15$
$5. \frac{5m}{5} = \frac{-20}{5} \quad \quad m = -4 \quad \quad \frac{5 \cdot -4}{5} = \frac{-20}{5}$ 	$15. 5m \leq -20$

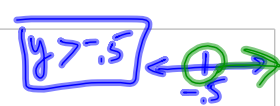


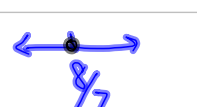
Check

$$\frac{3 \cdot 6}{3} > \frac{12}{3}$$

$$18 > 12$$

$$3 \cdot 12 \geq 15$$

$$36 \geq 15$$

$6. -4y = 2$	$16. -4y < 2$ 
$7. \frac{5}{9} = \frac{2d}{9} \quad \quad d = \frac{15}{18} \quad \quad d = \frac{5}{6}$ $7. \frac{5}{9} = \frac{2d}{9} \quad \quad d = \frac{15}{18} \quad \quad d = \frac{5}{6}$ 	$17. 5 \geq 2d$
$8. -128 = -20x$	$18. -128 > -20x$ 
$9. -3k = 24$	$19. -3k < 24$
$10. \frac{7}{9}w = 4$ $10. \frac{7}{2}w = 4$ 	$20. \frac{7}{2}w \geq 4$

Check

$$-4 \cdot 3 < 2$$

$$-12 < 2$$

$$7 \cdot \frac{8}{7} = 4$$

$$\frac{56}{14} = 4$$

$$\checkmark 4 = 4$$