

Find the values for the variable that makes the statement true. (SHOW WORK NEATLY)

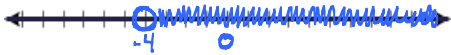
1. $\frac{3x}{3} > \frac{6}{3}$

$x > 2$



3. $\frac{-3x}{-3} < \frac{12}{-3}$

$x > -4$



5. $8a - 12 > 2a$
 $-8a \quad -8a$
 $-12 > -6a$
 $-6 \quad -6$
 $2 < a$

$a > 2$



9. $8 \geq 3(m-4) - 5m$

$8 \geq 3m - 12 - 5m$
 $8 \geq -2m - 12$
 $+12 \quad +12$

$20 \geq -2m$
 $-2 \quad -2$
 $-10 \leq m$

$m \geq -10$



2. $\frac{20}{4} \geq \frac{4m}{4}$

$5 \geq m$

$m \leq 5$



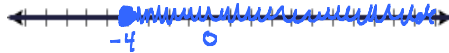
4. $3b + 2 \leq 20$
 $-2 \quad -2$

$\frac{3b}{3} \leq \frac{18}{3}$
 $b \leq 6$



6. $2p - 6 + 2p + 1 \leq 11 + 8p$

$4p - 5 \leq 11 + 8p$
 $-4p \quad -4p$
 $-5 \leq 11 + 4p$
 $-11 \quad -11$
 $-16 \leq 4p$
 $\frac{-16}{4} \leq \frac{4p}{4}$
 $-4 \leq p$
 $p \geq -4$



10. $3x + \frac{3}{4} - \frac{1}{2}x > \frac{5}{2}$

$4 \cdot 3x + \frac{4 \cdot 3}{4} - \frac{4 \cdot 1}{2}x > \frac{4 \cdot 5}{2}$

$12x + 3 - 2x > 10$
 $10x + 3 > 10$
 $-3 \quad -3$
 $10x > 7$
 $\frac{10x}{10} > \frac{7}{10}$
 $x > \frac{7}{10}$
 0.7



I. Eliminate parenthesis by distributing.

Example

$2(3x - 4) > 5$

$6x - 8 > 5$

II. Eliminate fractions by multiplying each term by the lowest common denominator.

Example

$\frac{12}{1} \cdot \frac{1}{3}x - \frac{12}{1} \cdot \frac{1}{2} \leq \frac{12}{1} \cdot \frac{x}{4}$

$4x - 6 \leq 3x$

III. Combine like terms on each side of the equation.

Example

$4x + 2 - 7x > 2 + x + 8$
 $-3x + 2 > 10 + x$

IV. Move the "variable" term to one side of the equation and the constants to the other side using addition or subtraction.

Example

$3x + 2 \geq 6x - 5$
 $-3x \quad -3x$
 $2 \geq 3x - 5$
 $+5 \quad +5$
 $7 \geq 3x$

V. Divide both sides by the coefficient (the number in front of the variable).

Example

$-4x > 12$
 $\frac{-4x}{-4} ? \frac{12}{-4}$
 $x < 3$

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9. $2^x > 32$

$$\begin{aligned} 2^1 &= 2 \quad \times \\ 2^2 &= 2 \cdot 2 = 4 \quad \times \\ 2^3 &= 2 \cdot 2 \cdot 2 = 8 \quad \times \\ 2^4 &= 2 \cdot 2 \cdot 2 \cdot 2 = 16 \quad \times \\ 2^5 &= 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 = 32 \quad \times \\ 2^6 &= 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 = 64 \quad \checkmark \end{aligned}$$

$$\boxed{x > 5}$$



10. $5^x \leq 125$

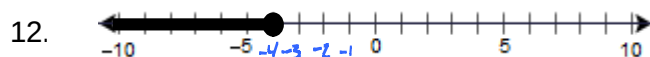
$$\begin{aligned} 5^{-1} &= \frac{1}{5} \quad \checkmark \\ 5^0 &= 1 \quad \checkmark \\ 5^1 &= 5 \quad \checkmark \\ 5^2 &= 5 \cdot 5 = 25 \quad \checkmark \\ 5^3 &= 5 \cdot 5 \cdot 5 = 125 \quad \checkmark \\ 5^4 &= 5 \cdot 5 \cdot 5 \cdot 5 = 625 \quad \times \end{aligned}$$



Write an inequality statement for each graph using x .



$$\boxed{x > 3}$$



$$\boxed{x \leq -4}$$

Solve the following inequalities for the requested variable.

13. $4x - 2y \geq 6 - 2x$ (solved for y)

$$\begin{aligned} \cancel{-4x} - 2y &\geq \cancel{6 - 6x} - \cancel{-4x} \\ \underline{-2y} &\geq \underline{6 - 6x} \\ \underline{-2} &\quad \underline{-2} \end{aligned}$$

$$y \leq -3 + 3x$$

$$\boxed{y \leq 3x - 3}$$

14. $3(a - b) + 5b < 8b - 12$ (solved for a)

$$3a - \underbrace{3b + 5b}_{+2b} < 8b - 12$$

$$3a + \cancel{2b} < \cancel{8b - 12} - \cancel{-2b}$$

$$\begin{aligned} \underline{3a} &< \underline{6b - 12} \\ \underline{3} &\quad \underline{3} \end{aligned}$$

$$\boxed{a < 2b - 4}$$