Unit 6 Equations and Inequalities

Remember equations have "=" therefore when solving for a variable make sure what is done to one side is also done to the other!!!

A. $2x + 2 = 12$

$2x + 2 - 2 = 12 - 2$

$\frac{2x}{2} = \frac{10}{2}$

$x = 5$

B. $6x - 4 = 8$

$6x - 4 + 4 = 8 + 4$

$\frac{6x}{6} = \frac{12}{6}$

$x = 2$

C. $3(2x + 1) = 12$

$6x + 3 = 12$

$6x + 3 - 3 = 12 - 3$

$\frac{6x}{6} = \frac{9}{6}$

$x = \frac{9}{6} = 1\frac{3}{6} = 1\frac{1}{2}$

D. $-5(n + 1) = -25$

$-5n - 5 = -25$

$-5n - 5 + 5 = -25 + 5$

$\frac{-5n}{-5} = \frac{-20}{-5}$

$n = 4$

CHECK

L	R
$-5(n+1)$	-25
$-5(4+1)$	
$-5(5)$	
-25 ✓	

E.

$$8-\frac{3}{4}c=5$$

* Eliminate fractions by multiplying each term by LCM

$(4)\,8-\frac{3c}{4}=5\,(4)$

$32-\frac{12c}{4}=20$

$32-3c=20$

$32-32-3c=20-32$

$\frac{-3c}{-3}=\frac{-12}{-3}$

$c=4$

F. $12x+4=20+8x$

$12x-8x+4=20+8x-8x$

$4x+4=20$

$4x+4-4=20-4$

$\frac{4x}{4}=\frac{16}{4}$

$x=4$

g. $3x - 7 = -2x + 8$

Check

$3x + 2x - 7 = -2x + 2x + 8$

$5x - 7 = 8$

$5x - 7 + 7 = 8 + 7$

$\frac{5x}{5} = \frac{15}{5}$

$x = 3$

H. $-2x - 1 = x + 5$

$-2x - 1x - 1 = 1x - 1x + 5$

$-3x - 1 = 5$

$-3x - 1 + 1 = 5 + 1$

$\frac{-3x}{-3} = \frac{6}{-3}$

$x = -2$

I. $6(-2 - x) = -5(2x + 4)$ *

$-12 - 6x = -10x - 20$

$-12 - 6x + 10x = -10x + 10x - 20$

$-12 + 4x = -20$

$-12 + 12 + 4x = -20 + 12$

$\frac{4x}{4} = \frac{-8}{4}$

$x = -2$

Equations that have Fractions!!!

Clear the fractions by multiplying both sides by lowest common multiple

$$\frac{x}{6} - 5 = \frac{1x}{2}$$

(6) (6) (6)

$\frac{6x}{6} - 30 = \frac{6x}{2}$

$x - 30 = 3x$

$1x - 3x - 30 = 3x - 3x$

$-2x - 30 = 0$

$-2x - 30 + 30 = 0 + 30$

$\frac{-2x}{-2} = \frac{30}{-2}$

$x = -15$

$$\frac{2x}{3}+\frac{11}{4}=3-\frac{11x}{6}$$

(12) (12) (12) (12)

$\frac{24x}{3}+\frac{132}{4}=36-\frac{132}{6}$

$8x+33=36-22x$

$8x+22x+33=36$ $-22x+22x$

$30x+33=36$

$30x+33-33=36-33$

$\frac{30x}{30}=\frac{3}{30}$ $x=\frac{3}{30}$

$$(6)\ \frac{1}{3}(5 - 3y) = {}^{(6)}\frac{5}{6}(y-2)$$

$$\frac{6}{3}(5-3y) = \frac{30}{6}(y-2)$$

$$2(5-3y) = 5(y-2)$$

$2(x-4) - 3(x+2)=23$

$2x - 8 - 3x - 2 = 23$

$2x - 3x - 8 - 2 = 23$

$-1x - 10 = 23$

$-1x - 10 + 10 = 23 + 10$

$\frac{-1x}{-1} = \frac{33}{-1}$ $x = -33$

A taxicab charges $2.50, plus $1.78 per kilometre.

A. Write a Let statement Let "d" represent distance

B. Write an equation for cost. C = 2.50 + 1.78d

C. How long is a trip that costs $21.19?

21.19 = 2.50 + 1.78d ← solve

Jane has a choice of 2 companies to rent a car.

Company A charges $150 per week, plus $0.25 per kilometre driven

A = B

$150 + 0.25d = 175 + 0.20d$

Company B charges $175 per week, plus $0.20 per kilometre driven.

C. Determine the distance that Jane must drive for the two rental costs to be the same.

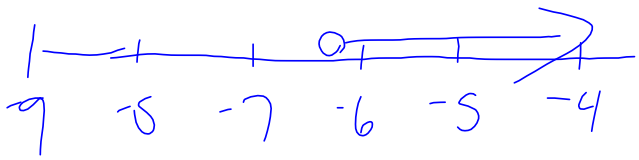
D. Check your answer.

Inequalities

Points to remember:

* Have a > or < sign
* ≤ less than or equal to
* When solving for the most part it is the same as solving equations EXCEPT when multiplying or dividing by a negative in the final step
* represent your answer on a number line

A. Draw a number line to show



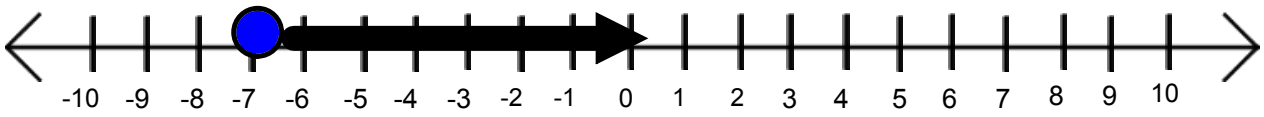
$r > -6\frac{1}{4}$

$r > -6.25$

B. What are 4 possible solutions???

Write an inequality to represent the number line below:

$x \geq -7$



$90 + 5d < 100 + 4d$

A. Solve

B. Graph

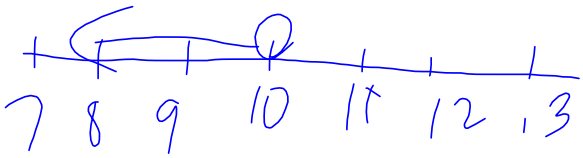
$90 + 5d - 4d < 100 + 4d - 4d$

$90 + 1d < 100$

$90 - 90 + 1d < 100 - 90$

$\frac{1d}{1} < \frac{10}{1}$

$d < 10$



Solve and Graph

$$-6(2 + 6a) > 12 + 2a$$

$-12 - 36a > 12 + 2a$

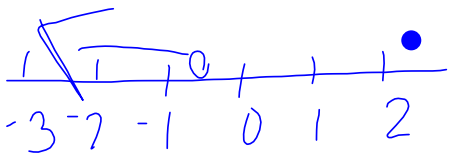
$-12 - 36a - 2a > 12 + 2a - 2a$

$-12 - 38a > 12$

$-12 + 12 - 38a > 12 + 12$

$\frac{-38a}{-38} > \frac{24}{-38}$

$a < -0.63$



Show work

MC Ques 1-15 } Homework

S.A 16-20

21-28 30 min Monday

DO NOT MARK ON SHEET

$$3(-4v + 6) - 2 \geq v - 17$$

DO NOT WRITE ON SHEETS!!!