

Name key

Date \_\_\_\_\_

Mixed Review II

- Between what two whole numbers is the square root of 140?  $\sqrt{140} = 11.8$  between 11 and 12.
- Simplify the expression:  $-4 + 2^5 - \sqrt{121} + |-5| = -4 + 32 - 11 + 5 = \boxed{22}$
- Name an irrational number  $\pi, \sqrt{2}, \sqrt{8}, 3.18725 \dots$
- Name a rational square root.  $\sqrt{16}, \sqrt{25}$
- Name an irrational square root.  $\sqrt{2}, \sqrt{6}, \sqrt{10} \dots$
- Multiply the expression:  $9a(a-7) \rightarrow 9a^2 - 63a$
- Simplify the following and express in positive exponential form

Subtract exponents

a)  $\frac{b^7}{b^5} = b^2$     b)  $b^1 \cdot b^7 = b^8$     c)  $(2^{-5})^5 \rightarrow 2^{-25} \rightarrow \frac{1}{2^{25}}$   
 ↑ add exponents    ↑ multiply exponents

8. Simplify the expression  $(x^2 + 5x - 9) - (5x^2 + 6x - 8)$   
 $x^2 + 5x - 9 - 5x^2 - 6x + 8 = \boxed{-4x^2 - 1x - 1}$

9. Translate the following: seven subtracted from one-quarter of a number  
 $\frac{1}{4}x - 7$  let  $x = \text{a number}$

10. Write an equation for the following situation using m and b.

Month (m)	Balance (b)
0	100
1	120
2	140
3	160

$b = 20x + 100$   
 ↑ slope    ↑ y intercept (0, 100)

11. Write 314,000 thousand in scientific notation  $3.14 \times 10^5$

12. Solve the following:  $3x + 10 = 5x - 8$

$3x + 10 = 5x - 8$   
 $-3x \quad -3x$   
 $10 = 2x - 8$   
 $+8 \quad +8$   
 $18 = 2x$   
 $\frac{18}{2} = \frac{2x}{2}$   
 $\boxed{9 = x}$

13. Solve the following:  $4x - 5 + 2x = 25$

$6x - 5 = 25$   
 $+5 \quad +5$   
 $6x = 30$   
 $\frac{6x}{6} = \frac{30}{6}$   
 $\boxed{x = 5}$

14. Evaluate the following:  $5xy - x$  if  $x = -3$  and  $y = 2$

15. Solve and graph the inequality:  $5(-3)(2) - (-3)$   
 a)  $4x \geq 16 \rightarrow x \geq 4$   
 b)  $-2x - 10 < 10$   
 $+10 \quad +10$   
 $-2x < 20$   
 $\frac{-2x}{-2} < \frac{20}{-2}$   
 $x > -10$

16. A map's scale indicates that  $\frac{1}{4}$  inch represents 10 miles of actual distance. Brian is

$\frac{\frac{1}{4}}{10} = \frac{\frac{3}{4}}{x}$

driving from Plainedge to Brooklyn and the distance on the map is  $3\frac{3}{4}$  inches. How

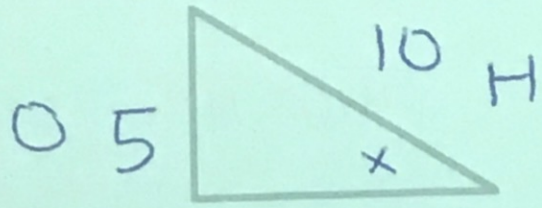
many miles will Brian need to drive to get to Brooklyn?

$\frac{.25x}{.25} = \frac{7.5}{.25}$   
 $\boxed{x = 30 \text{ miles}}$

17. How many solutions does this system of equations have?

a)  $y = -3x + 10$  and  $y = \frac{1}{3}x + 5 \rightarrow$  perpendicular (opposite slope) one solution!  
 b)  $y = 3x + 10$  and  $y = 3x - 5$   
 ↓  
 parallel lines (same slope) no solution!

18. A 10 foot piece of wood is leaning against 5 foot wall. Find the measure of the angle that the wood makes with the ground.



$$\sin x = \frac{5}{10}$$

$$\sin^{-1}\left(\frac{5}{10}\right) = 30^\circ$$

\* anytime you are finding an angle use 2nd button for inverse!

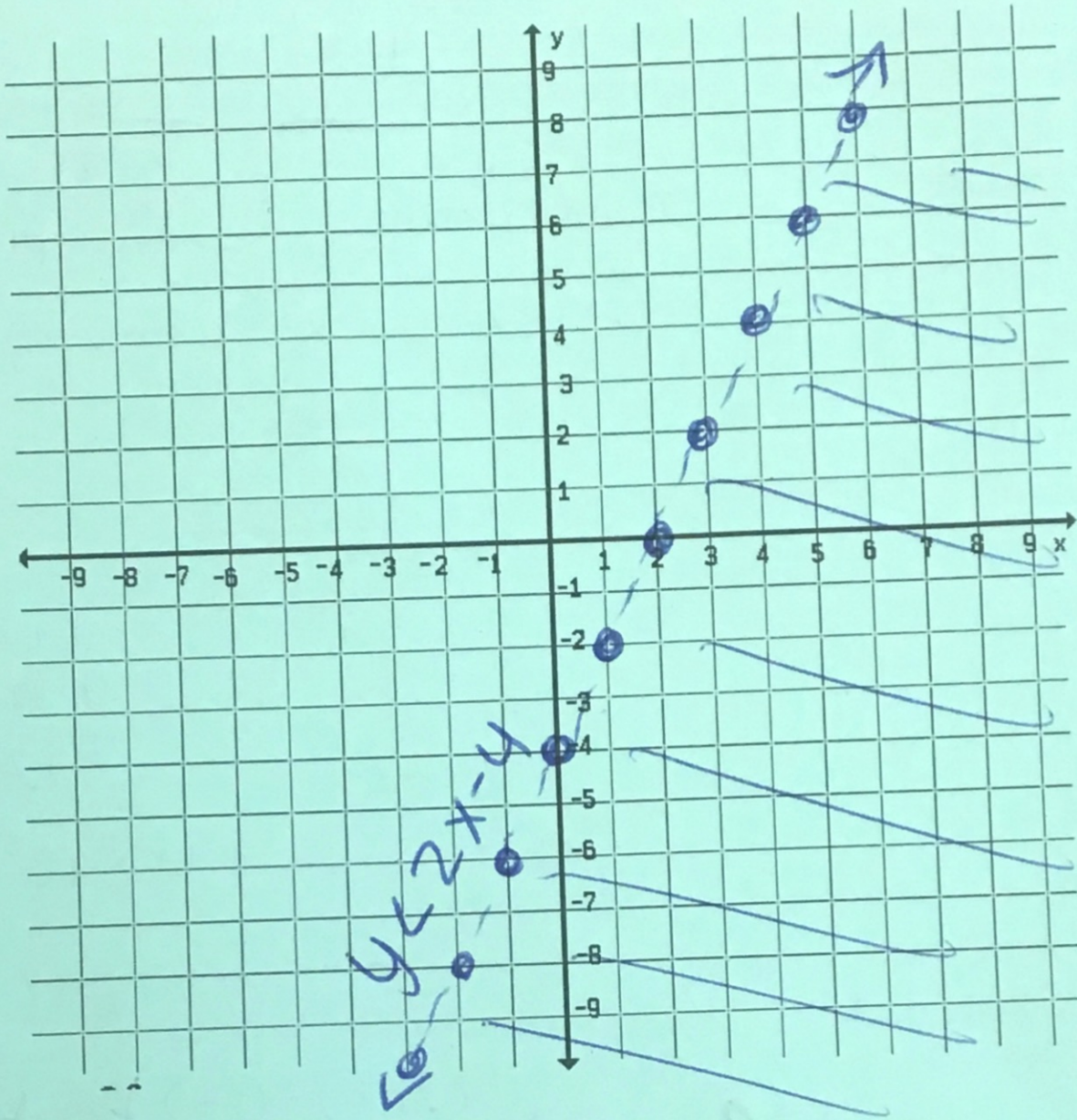
19. Graph the following linear inequality on the graph below.

$$y < 2x - 4$$

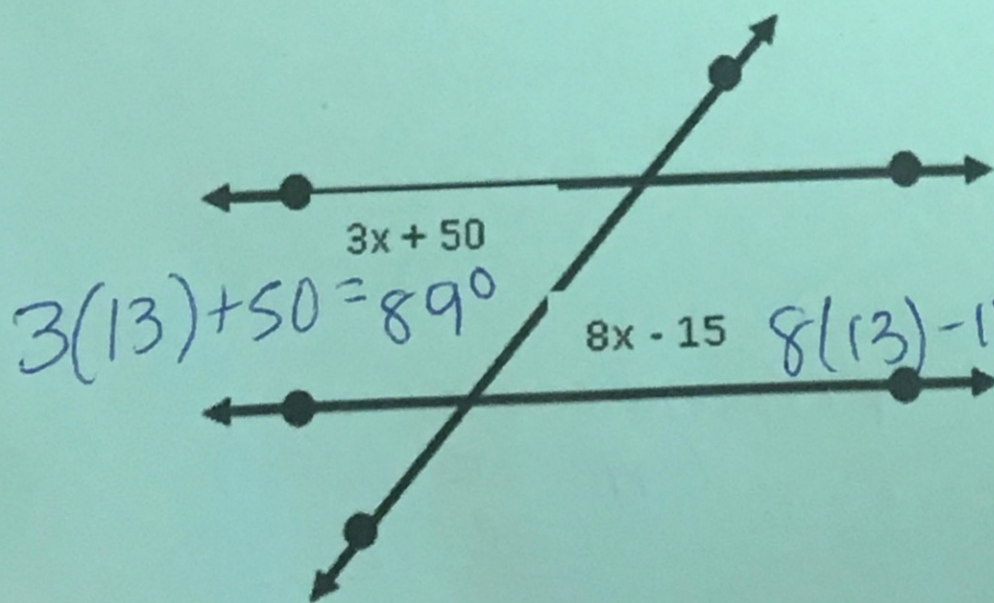
$$m = \frac{2}{1}$$

$$b = -4$$

y is less than (shade below)



20. Find the value of x and the measure of each angle



Angle Pair Name alternate interior angles

Relationship congruent

$$3(13) + 50 = 89^\circ$$

$$8(13) - 15 = 89^\circ$$

$$\begin{array}{r} 3x + 50 = 8x - 15 \\ -3x \quad \quad -3x \\ \hline 50 = 5x - 15 \end{array}$$

$$\begin{array}{r} 50 = 5x - 15 \\ +15 \quad \quad +15 \\ \hline 65 = 5x \end{array}$$

$$\frac{65}{5} = \frac{5x}{5}$$

$$x = 13^\circ$$