

1010 REVIEW I KEY

$$1. \quad 11x + 1.4 = -61.3 \Rightarrow \frac{11x}{11} = \frac{-62.7}{11} \Rightarrow \boxed{x = -5.7}$$

$$2. \quad 8x - 4 = 4x - 28 \Rightarrow \frac{4x}{4} = \frac{-24}{4} \Rightarrow \boxed{x = -6}$$

$$3. \quad -8(k-1) - (-9k+1) = -5 \Rightarrow -8k + 8 + 9k - 1 = -5 \Rightarrow k + 7 = -5 \Rightarrow \boxed{k = -12}$$

$$4. \quad \frac{1}{5} - \frac{x}{3} = \frac{19}{15} \Rightarrow 3 - 5x = 19 \Rightarrow \frac{-5x}{-5} = \frac{16}{-5} \Rightarrow \boxed{x = -\frac{16}{5}}$$

$$5. \quad -\frac{1}{2}(x+6) - \frac{1}{9}(x-9) = x + 3 \Rightarrow -9(x+6) - 2(x-9) = 18x + 54 \Rightarrow$$

$$-9x - 54 - 2x + 18 = 18x + 54 \Rightarrow -11x - 36 = 18x + 54 \Rightarrow$$

$$\Rightarrow \frac{-90}{29} = \frac{29x}{29} \Rightarrow \boxed{x = -\frac{90}{29}}$$

$$6. \quad \frac{1}{4}(8x-2) = 6\left(\frac{1}{3}x - \frac{1}{2}\right) + 9 \Rightarrow 2x - 3 = 2x - 3 + 9 \Rightarrow 0 = 9 \Rightarrow \boxed{\emptyset}$$

7. Three times the sum of some number plus 2 is equal to 6 times the number minus 18.

$$3(x+2) = 6x - 18$$

$$\Rightarrow 3(x+2) = 6x - 18 \Rightarrow 3x + 6 = 6x - 18 \Rightarrow 24 = 3x \Rightarrow \boxed{x = 8}$$

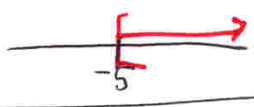
Story problem \Rightarrow Story answer. The number is 8

8. To increase a number by 70%, you multiply by 1.7.

Since we don't know what the population was, we will call it x .

$$\text{so } \frac{1.7x}{1.7} = \frac{31000}{1.7} \Rightarrow x = \boxed{18235 \text{ 5 years ago}}$$

$$9. \quad F = \frac{9}{5}C + 32 \Rightarrow \frac{5}{9}(F-32) = \frac{9}{5}C \cdot \frac{5}{9} \Rightarrow \boxed{C = \frac{5}{9}(F-32)}$$

$$10. \quad 4Z - 4 \geq 3Z - 9 \Rightarrow \boxed{Z \geq -5, [-5, \infty)}$$


$$11. \quad -7(y+1) \leq -9y-7 \Rightarrow -7y-7 \leq -9y-7 \Rightarrow \frac{2y}{2} \leq \frac{0}{2} \Rightarrow \boxed{y \leq 0}$$



$$\boxed{(-\infty, 0]}$$

12. Let x = # of arrows you can buy, including those with the set.
 Now, let's look at the cost of buying arrows. We have to buy the set first, so we must purchase at least 3 arrows

# arrows	3	4	5	6	7	x
cost	62	62+7	62+7·2	62+7·3	62+7·4	62+7·(x-3)
			5-3	6-3	7-3	

Next, since the total cost ≤ 132 , we get

$$62 + 7(x-3) \leq 132 \Rightarrow \frac{7(x-3)}{7} \leq \frac{70}{7} \Rightarrow x-3 \leq 10$$

$$\Rightarrow x \leq 13, \text{ so he can purchase } \boxed{13 \text{ arrows}}$$

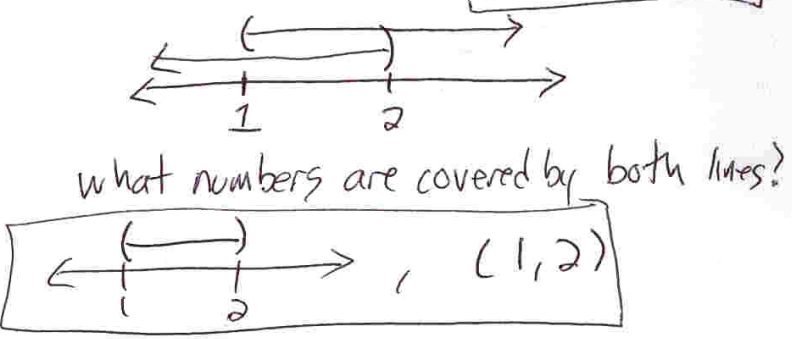
13. $A \cap B$ means A intersect B . \cap = intersect = AND = BOTH.

so what numbers are BOTH in A AND B ? $\boxed{\{47, 49, 50, 51\}}$

$$14. \quad -6x > -12 \text{ and } x+6 > 7$$

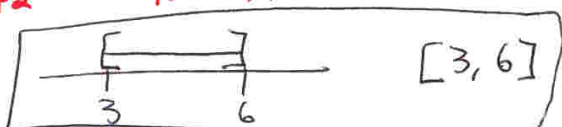
$$\frac{-6x}{-6} \downarrow \frac{-6}{-6} \quad \frac{x+6}{-6} \frac{-6}{-6}$$

$$x < 2 \text{ and } x > 1$$



$<$ means left $>$ is right

$$15. \quad 7 \leq 3t - 2 \leq 16 \quad \Rightarrow \quad \frac{9}{3} \leq \frac{3t}{3} \leq \frac{18}{3} \quad \Rightarrow \quad 3 \leq t \leq 6$$

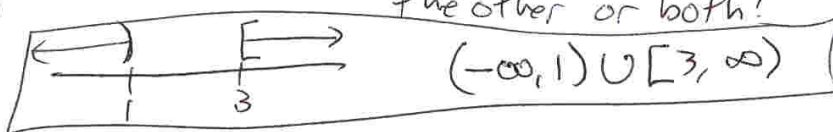


16. \cup means OR means Union, so what numbers are in one set OR the other OR Both? $\{55, 57, 58, 59, 60, 62\}$

$$17. \quad \begin{aligned} 9x - 6 < 3x & \text{ or } -3x \leq -9 \\ -3x + 6 < -3x + 6 & \quad -3x \leq -9 \\ \frac{6x}{6} < \frac{6}{6} & \quad \frac{-3x}{-3} \leq \frac{-9}{-3} \\ x < 1 & \quad x \geq 3 \end{aligned}$$



what numbers are covered by one line or the other or both?



NOTICE THE OR ANSWER can have the \cup symbol.

$$18. \quad |6x + 7| + 8 = 11 \quad \Rightarrow \quad |6x + 7| = 3$$

$$\begin{aligned} 6x + 7 &= 3 & \text{ or } & \quad 6x + 7 = -3 \\ \frac{6x}{6} &= \frac{-4}{6} & & \quad \frac{6x}{6} = \frac{-10}{6} \\ x &= -\frac{2}{3} & \text{ or } & \quad x = -\frac{5}{3} \end{aligned}$$

1st, always isolate the ABSOLUTE VALUE!

2nd, always check your answers with ABSOLUTE VALUE EQUATIONS!

check:

$$\begin{aligned} |6(-\frac{2}{3}) + 7| + 8 &= |-4 + 7| + 8 = |3| + 8 = 3 + 8 = 11 \quad \checkmark \\ |6(-\frac{5}{3}) + 7| + 8 &= |-10 + 7| + 8 = |-3| + 8 = 3 + 8 = 11 \quad \checkmark \end{aligned}$$

$$19. \quad |9x - 5| = 0$$

$$\begin{aligned} 9x - 5 &= 0 & \quad 9x - 5 &= -0 \\ \frac{9x}{9} &= \frac{5}{9} & & \quad \frac{9x}{9} = \frac{5}{9} \end{aligned}$$

$$x = \frac{5}{9}$$

check: $|9(\frac{5}{9}) - 5| = |5 - 5| = |0| = 0 \quad \checkmark$

$$20. |5x-8| = |x-3|$$

$$5x-8 = x-3 \quad \text{or} \quad 5x-8 = -(x-3)$$

$$\begin{array}{r} 5x-8 \\ -x+8 \\ \hline 4x=5 \\ x=\frac{5}{4} \end{array} \quad \text{or} \quad \begin{array}{r} 5x-8 \\ +x+3 \\ \hline 6x=-5 \\ x=-\frac{5}{6} \end{array}$$

$$\boxed{x = \frac{5}{4} \quad \text{or} \quad x = -\frac{5}{6}}$$

Check

$$|5(\frac{5}{4})-8| = |\frac{5}{4}-3| \Rightarrow |\frac{25}{4}-\frac{32}{4}| = |\frac{5}{4}-\frac{12}{4}|$$

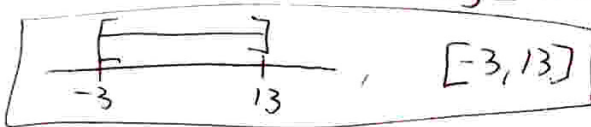
$$\Rightarrow |-\frac{8}{4}| = |-\frac{8}{4}| \checkmark$$

$$|5(-\frac{5}{6})-8| = |-\frac{11}{6}-3| \Rightarrow |-\frac{55}{6}-\frac{18}{6}| = |-\frac{11}{6}-\frac{18}{6}|$$

$$\Rightarrow |-\frac{23}{6}| = |-\frac{23}{6}| \checkmark$$

$$21. |x-5|-4 \leq 4 \Rightarrow |x-5| \leq 8$$

$$\begin{array}{r} -8 \leq x-5 \leq 8 \\ +5 \quad +5 \quad +5 \\ \hline -3 \leq x \leq 13 \end{array}$$



This is an And problem

\leq Less THAN

the condensed inequality is the fastest

$$22. |5k-5| > -3 \quad \text{When is a nonnegative number} > -3?$$

Always

$$\boxed{(-\infty, \infty)}$$

OR

$>$ is an OR problem Greater

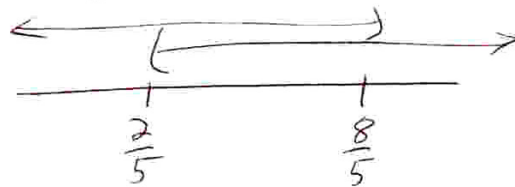
$$20. \quad 5k-5 > -3 \quad \text{OR} \quad 5k-5 < 3$$

$$\frac{5k}{5} > \frac{2}{5}$$

$$k > \frac{2}{5}$$

$$\frac{5k}{5} < \frac{8}{5}$$

$$k < \frac{8}{5}$$



what's covered by one line or the other or both? Everything

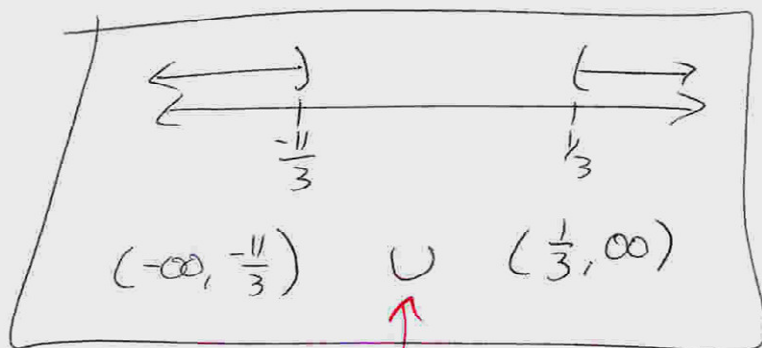
$$\boxed{(-\infty, \infty)}$$

$$23. \quad |3k+5| - 2 > 4 \Rightarrow |3k+5| > 6 \quad \text{7 Great "OR"}$$

$$3k+5 > 6 \quad \underline{\text{OR}} \quad 3k+5 < -6$$

$$\frac{3k}{3} > \frac{1}{3} \quad \frac{3k}{3} < \frac{-11}{3}$$

$$k > \frac{1}{3} \quad \text{or} \quad k < -\frac{11}{3}$$



on one line or
the other or both?

OR