

Name Key

Solve the equations.

1)  $3y - 14 = y + 11$   
 $2y - 14 = 11$   
 $2y = 25$   
 $y = \frac{25}{2}$   
 or 12.5

2)  $5(4x - 8) = 9 + 10(2x - 1)$   
 $20x - 40 = 9 + 20x - 10$   
 $20x - 40 = 20x - 1$   
 $-40 = -1$   
 (false)  
 $\emptyset$

3)  $\frac{1}{3} - \frac{5x}{6} = \frac{3}{2}$   
 $\frac{2}{6} - \frac{5x}{6} = \frac{9}{6}$   
 $2 - 5x = 9$   
 $-5x = 7$   
 $x = -\frac{7}{5}$   
 or -1.4

4)  $(b + 2) - (4b + 1) = -20$   
 $b + 2 - 4b - 1 = -20$   
 $-3b + 1 = -20$   
 $-3b = -21$   
 $b = 7$

5) Benny spent \$1837 in expenses to operate his car last year. Some of these expenses included insurance (\$972), registration (\$114) and maintenance (\$105). His only other expense was for gas. If Benny drove 7600 miles last year, what was the average cost of gas per mile?

$$972 + 114 + 105 + 7600x = 1837$$

$$1191 + 7600x = 1837$$

$$7600x = 646$$

$$x = .085$$

8 1/2 cents

Solve each inequality. Then graph the solution set on a number line.

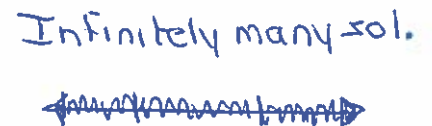
5)  $11 - 5y < -44$   
 $-5y < -55$   
 $y > 11$



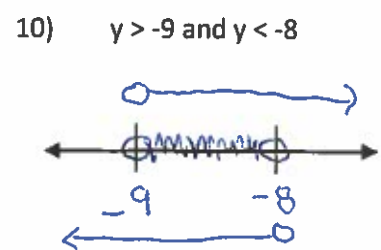
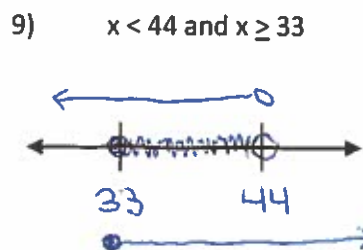
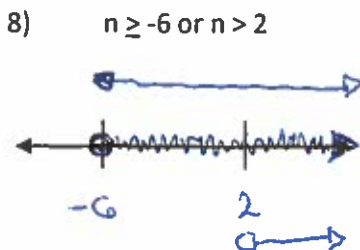
6)  $2w \geq \frac{w+15}{3}$   
 $6w \geq w + 15$   
 $5w \geq 15$   
 $w \geq 3$



7)  $3v - 1 \leq 4 - (2 - 3v)$   
 $3v - 1 \leq 4 - 2 + 3v$   
 $3v - 1 \leq 2 + 3v$   
 $-1 \leq 2$   
 (true)



Graph each pair of inequalities on the number line provided using the "above & below" method.



Solve each compound inequality. Then graph the solution set on a number line. Lastly, write a solution set that represents the shaded area.

11)  $-1 \leq \frac{1}{3}x + 5 \leq 4$   
 $-1 \leq \frac{1}{3}x + 5$  and  $\frac{1}{3}x + 5 \leq 4$   
 $-6 \leq \frac{1}{3}x$        $\frac{1}{3}x \leq -1$   
 $-18 \leq x$            $x \leq -3$   
 $x \geq -18$

Solution set:  $-18 \leq x \leq -3$

12)  $3y + 5 > 20$  or  $y - 7 > 5y + 13$   
 $3y > 15$        $-4y - 7 > 13$   
 $y > 5$            $-4y > 20$   
                           $y < -5$

Solution set:  $y < -5$  or  $y > 5$

14)  $-3 < 8 - 2m < 18$   
 $-3 < 8 - 2m$  and  $8 - 2m < 18$   
 $-11 < -2m$        $-2m < 10$   
 $5.5 > m$            $m > -5$   
 $m < 5.5$

Solution set:  $-5 < m < 5.5$

15)  $\frac{3}{4}x \leq -9$  or  $3(2x - 7) \leq 41$   
 $3x \leq -36$        $6x - 21 \leq 41$   
 $x \leq -12$            $6x \leq 62$   
                           $x \leq \frac{62}{6}$   
                           $x \leq \frac{31}{3}$

Solution set:  $x \leq \frac{31}{3}$

16)  $5|n - 4| > 105$        $|n - 4| > 21$   
 $n - 4 > 21$       or       $n - 4 < -21$   
 $n > 25$                $n < -17$

Solution set:  $n < -17$  or  $n > 25$

Solution set:  $n < -17$  or  $n > 25$

17)  $|5n + 11| \leq 9$   
 $5n + 11 \leq 9$  and  $5n + 11 \geq -9$   
 $5n \leq -2$            $5n \geq -20$   
 $n \leq -2/5$            $n \geq -4$

Solution set:  $-4 \leq n \leq -2/5$

18)  $|\frac{5}{3}a - 13| < -1$   
 absolute values cannot be less than a negative

Solution set:  $\emptyset$

19)  $22 \leq |\frac{1}{2}x + 3|$   
 $\frac{1}{2}x + 3 \geq 22$  or  $\frac{1}{2}x + 3 \leq -22$   
 $\frac{1}{2}x \geq 19$            $\frac{1}{2}x \leq -25$   
 $x \geq 38$                $x \leq -50$

Solution set:  $x \leq -50$  or  $x \geq 38$