Review for Equations and Inequalities Test

Solve the equation.

1. $-5y - 9 = -(y - 1)$

$-5y - 9 = -y + 1$

$+y \qquad +y$

$-4y - 9 = 1$

$\quad +9 \ +9$

$-4y = 10$

$\dfrac{-4}{-4} \quad \dfrac{10}{-4}$

$y = \dfrac{10}{-4} = -2.5$

or

$\dfrac{5}{-2}$

Use an algebraic equation to solve the problem.

2. A rectangle is 3 times as long as it is wide. The perimeter is 60 cm. Find the dimensions of the rectangle. Round to the nearest tenth if necessary.

Length: $3w = 22.5$ cm

Width: $w = 7.5$ cm

$P = 2L + 2w$

$60 = 2(3w) + 2(w)$

$60 = 8w$

$\dfrac{60}{8} = \dfrac{8w}{8}$

$w = 7.5$

$L = 3(7.5)$

$L = 22.5$

What inequality represents the sentence?

3. The product of a number and 5 is no more than 8.

$$5n \leq 8$$

Is the inequality *sometimes*, *always*, or *never* true?

4. $2(10x - 5) - 9x \leq 11x + 13$

$$20x - 10 - 9x \leq 11x + 13$$

$$11x - 10 \leq 11x + 13$$
$$-11x \qquad -11x$$

$$-10 \leq 13 \qquad \text{yes, always}$$

5. A doctor's office schedules 15-minute appointments and half-hour appointments for weekdays. The doctor limits these appointments to, at most, 30 hours per week. Write an inequality to represent the number of 15-minute appointments x and the number of half-hour appointments y the doctor may have in a week.
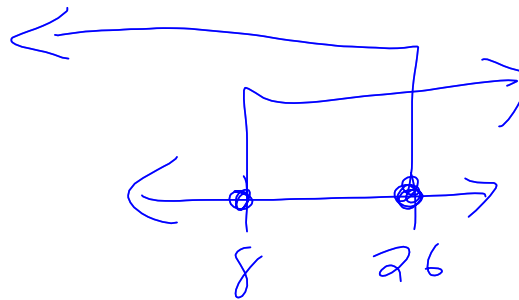
Min　　$15x + 30y \leq 1800$　　　　　　　$30(60)$

HRS　　$\frac{1}{4}x + \frac{1}{2}y \leq 30$　　　　　　　$= 1800$

Solve the inequality. Graph the solution set.

6. $26 + 6b \geq 2(3b + 4)$

$26 + 6b \geq 6b + 8$
$\underline{-6b \quad -6b}$
$26 \geq 8 \quad yes$

$8 \qquad 26$

Solve the compound inequality. Graph the solution.

7. $9x - 5 < -41$ or $3x + 13 > 7$

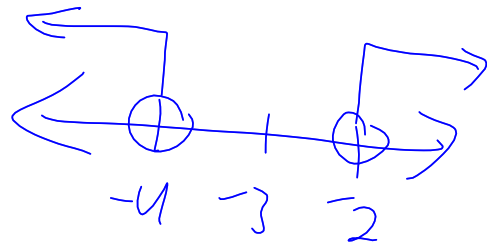$+5 \ +5 \qquad\quad -13 \ -13$

$\dfrac{9x}{9} < \dfrac{-36}{9} \qquad\qquad \dfrac{3x}{3} > \dfrac{-6}{3}$

$x < -4$ or $\qquad x > -2$

What is the graph of the absolute value equation?

8. Which of the following describes the translation of $y = |x|$ to $y = |x + 7| - 2$?

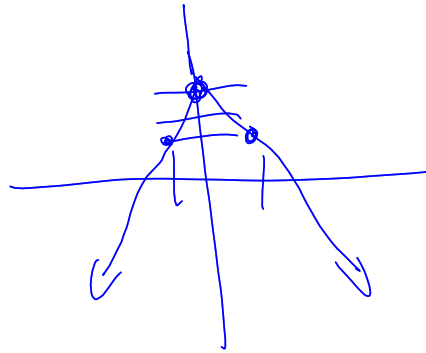$x + 7 = 0$

$-7 \ -7$

$x = -7$

L or R

Left 7

Down 2

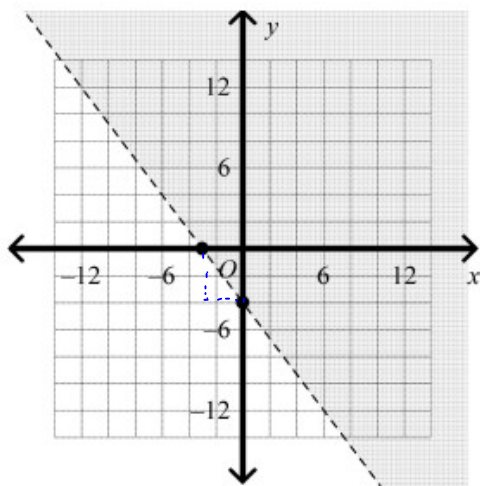**What is the graph of the absolute value function?**

9. $y = -2|x| + 3$

vertex $(0, 3)$

$slope = \frac{-2}{1}$
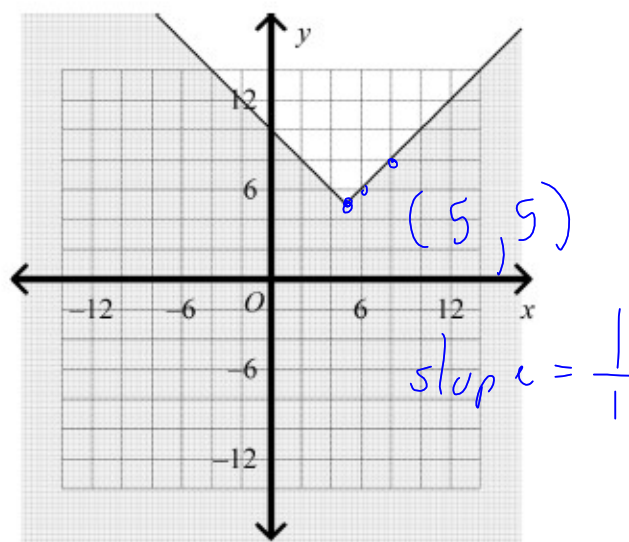
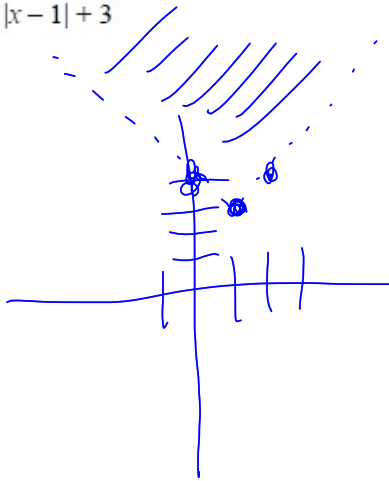Write an inequality for the graph.

10.

11.

$$y > \frac{-4}{3}x - 4$$

$(5,5)$

$slope = \frac{1}{1}$

$$y \leq |x-5| + 5$$

What is the graph of each absolute value inequality?

12. $y > |x - 1| + 3$

$\text{vertex } (1, 3)$

$\text{slope} = \dfrac{1}{1} \qquad \text{dashed}$

above

What is the graph of each inequality?

13. $4x + 2y \leq 6$

$-4x \qquad -4x$

$$\dfrac{2y}{2} \leq \dfrac{-4x}{2} + \dfrac{6}{2}$$

$$y \leq -2x + 3$$

$\text{slope} = \dfrac{-2}{1} \qquad y\text{-int} = 3$

$\text{solid} \qquad \text{below}$