

Warm-up!!

1. What is the value of $(\sqrt{32} - \sqrt{2})^2$?

A 2

B 16

C 18

D 30

2. What is the value of $9\sqrt{5x} - 3\sqrt{5x}$?

A 3

B 6

C $3\sqrt{5x}$

D $6\sqrt{5x}$

3. What is the simplified form of $\sqrt{121x^5y^2z^3}$?

A $11x^2yz$

B $11\sqrt{x^5y^2z^3}$

C $11x^2yz\sqrt{xz}$

D $11x^4y^2z^2\sqrt{xz}$

Warm-up!!

1. What is the value of $(\sqrt{32} - \sqrt{2})^2$?

A 2

B 16

C 18

D 30

A

B

C

D

?

?

?

?

?

1/5

1/5

1/5

1/5

1/5



59% < 69% < 79% < 89%

Warm-up!!

$$B \quad 9y - 3y = 6y$$

2. What is the value of $9\sqrt{5x} - 3\sqrt{5x}$?

A 3

B 6

C $3\sqrt{5x}$

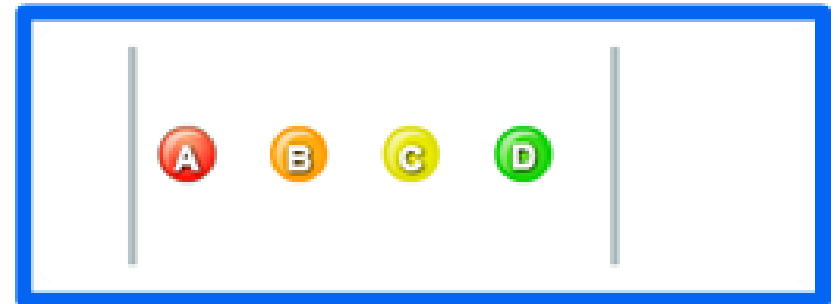
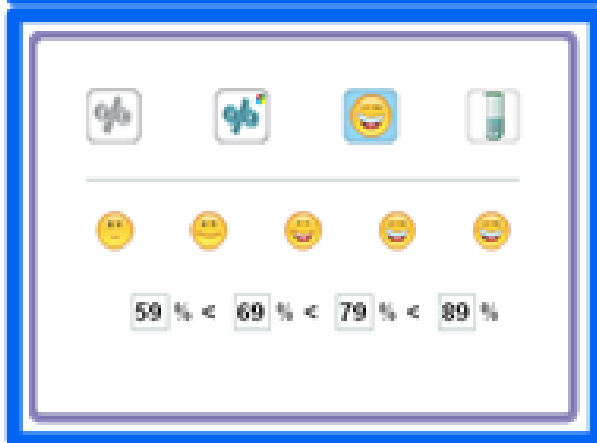
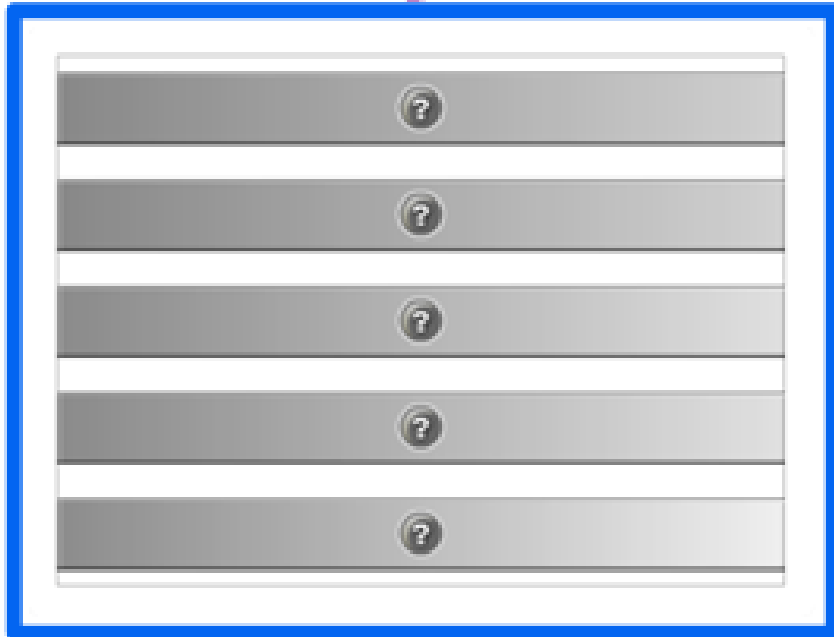
D $6\sqrt{5x}$

A vertical stack of five question cards. Each card has a question mark icon in the center and a progress indicator on the right side showing 1/5. The cards are arranged in a column, with the top card being the most prominent.

A horizontal row of four colored circles labeled A, B, C, and D. The circles are colored red, orange, yellow, and green respectively. They are arranged in a row, with the A circle being the most prominent.

A horizontal row of five emoji icons and a progress indicator. The emoji icons are yellow, orange, red, blue, and green. The progress indicator shows a range from 50% to 89%.

Warm-up!!



3. What is the simplified form of

~~$x^2 x^2 x$~~ $\sqrt{121x^5y^2z^3}$ $\sqrt{121}$

A $11x^2yz$

$11x^2yz\sqrt{xz}$

~~B $11\sqrt{x^5y^2z^3}$~~

C $11x^2yz\sqrt{xz}$

D $11x^4y^2z^2\sqrt{xz}$

$\sqrt{9}$ $\sqrt{3}$
3 3

Absolute Value Equations

Lesson 2-5



Absolute Value

Definition: The distance a number is from zero

Any term that comes out of an absolute value is always positive.

$$|x|$$

Think about it:

Could the term inside the absolute value be positive?

Could the term inside the absolute value be negative?

$$|a| = 5$$

$$a = 5$$

$$a = -5$$

Evaluate the expression if:

$$x = -1, y = 3, \text{ and } z = -4$$

$$16 - |2z + 1|$$

$$16 - |2(-4) + 1|$$

$$16 - |-8 + 1|$$

$$16 - |-7|$$

$$16 - 7$$

$$\textcircled{9}$$

$$|-3y + z| - x$$

$$|-3(3) + (-4)| + 1$$

$$|-9 + (-4)| + 1$$

$$|-13| + 1$$

$$13 + 1$$

$$14$$

Evaluate the expression if:

$$x = -1, y = 3, \text{ and } z = -4$$

$$|x - y| + 4 \qquad 3 |z - x| + |2 - y|$$

Solving Examples

$$|y| = 3$$

$$y = \{-3, 3\}$$

$$|y| = -3$$

\emptyset

$$|x - 4| = 4$$

$$x - 4 = 4$$

+4 +4

$$x - 4 = -4$$

+4 +4

$$x = 8$$

$$x = 0$$

$\{0, 8\}$

Examples

$$|w - 2| = 2$$

$$\begin{cases} |4 - 2| = \\ |2 - 2| = 2 \checkmark \end{cases}$$

$$\begin{cases} |0 - 2| = \\ |-2 - 2| = 2 \checkmark \end{cases}$$

$$w - 2 = 2$$
$$+2 \quad +2$$

$$w - 2 = -2$$
$$+2 \quad +2$$

$$w = 4 \quad \{4, 0\} \quad w = 0$$

$$|y + 3| = 2$$

$$y + 3 = 2$$
$$-3 \quad -3$$
$$y = -1$$

$$y + 3 = -2$$
$$-3 \quad -3$$
$$y = -5$$

$$\{-1, -5\}$$

Examples

$$|2x| = 8$$

$$\frac{2x}{2} = \frac{8}{2} \quad \frac{2x}{2} = \frac{-8}{2}$$
$$x = \{4, -4\}$$

$$|2x| = -8$$



$$|5y - 2| = 7$$

$$5y - 2 = 7$$

$$5y - 2 = -7$$

Examples

$$8. \frac{|m|}{5} = 3.5$$

$$|m| = 15$$

$$m = -15, 15$$

$$|m| + 2 = 11$$

$$|m| = 9$$

$$m = \{-9, 9\}$$

Examples

$$\frac{-10 |v + 2|}{-10} = \frac{-70}{-10}$$

$$|v + 2| = 7$$

Examples

$$\left| \frac{x}{7} \right| - 8 = -7$$

Solve for x .

$$|x - 3| = 5$$

A $x = -8$ or $x = 2$

B $x = -2$ or $x = 8$ ✓

C $x = -2$ or $x = 2$

D $x = -8$ or $x = 8$

$$x - 3 = 5$$

$$+3 \quad +3$$

$$x = 8$$

$$x - 3 = -5$$

$$+3 \quad +3$$

$$x = -2$$

$$|a| < 5$$

$$-\frac{14}{5} < x < 2$$

$$|5x+2| < 12$$

$$5x+2 < 12$$
$$\quad \quad \quad -2 \quad -2$$

$$\frac{5x}{5} < \frac{10}{5}$$

$$x < 2$$

$$5x+2 > -12$$
$$\quad \quad \quad -2 \quad -2$$

$$\frac{5x}{5} > \frac{-14}{5}$$

$$x > -\frac{14}{5}$$

Remember:
less th AND

and

$$|a| > 5$$

$$|5x+2| > 12$$

$$5x+2 > 12 \quad 5x+2 < -12$$

$$x > 2 \text{ or } x < -\frac{14}{5}$$

great OR than

1.

What is the solution set of $|x + 2| > \frac{1}{2}$?

~~A $\left\{x : \frac{5}{2} < x < \frac{3}{2}\right\}$~~

B $\left\{x : x < -\frac{3}{2} \text{ or } x > \frac{5}{2}\right\}$

C $\left\{x : x < -\frac{5}{2} \text{ or } x > -\frac{3}{2}\right\}$

~~D $\left\{x : \frac{3}{2} < x < \frac{5}{2}\right\}$~~

or
 $x+2 > \frac{1}{2}$
 $-2 \quad -2$

$x > -1.5$

$x+2 < -\frac{1}{2}$
 $-2 \quad -2$

$x < -2.5$

$4-y > -11$
 $-4 \quad -4$

$y < -15$
 $-15 \quad -15$

$-4-y < 11$
 $-4 \quad -4$

$y > -7$
 $-7 \quad -7$

2. What is the solution set of

$|4 - y| - 3 < 8$ *easy*
 $+3 \quad +3$

F $\{y : y < 15\}$

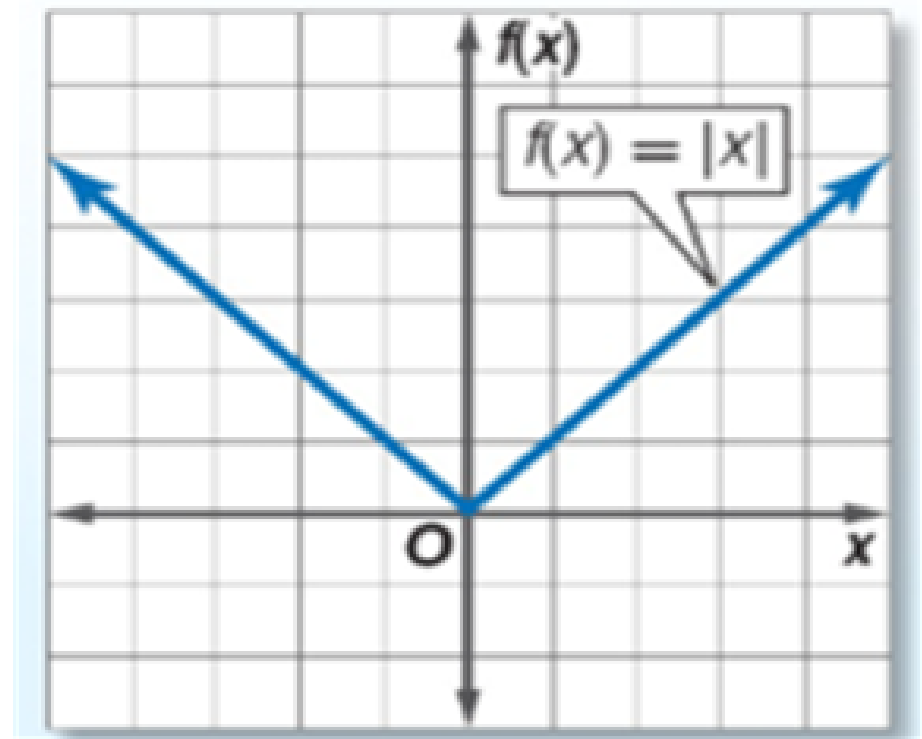
~~G~~ $\{y : -7 > y > 15\}$

H $\{y : y > -7\}$

J $\{y : -7 < y < 15\}$

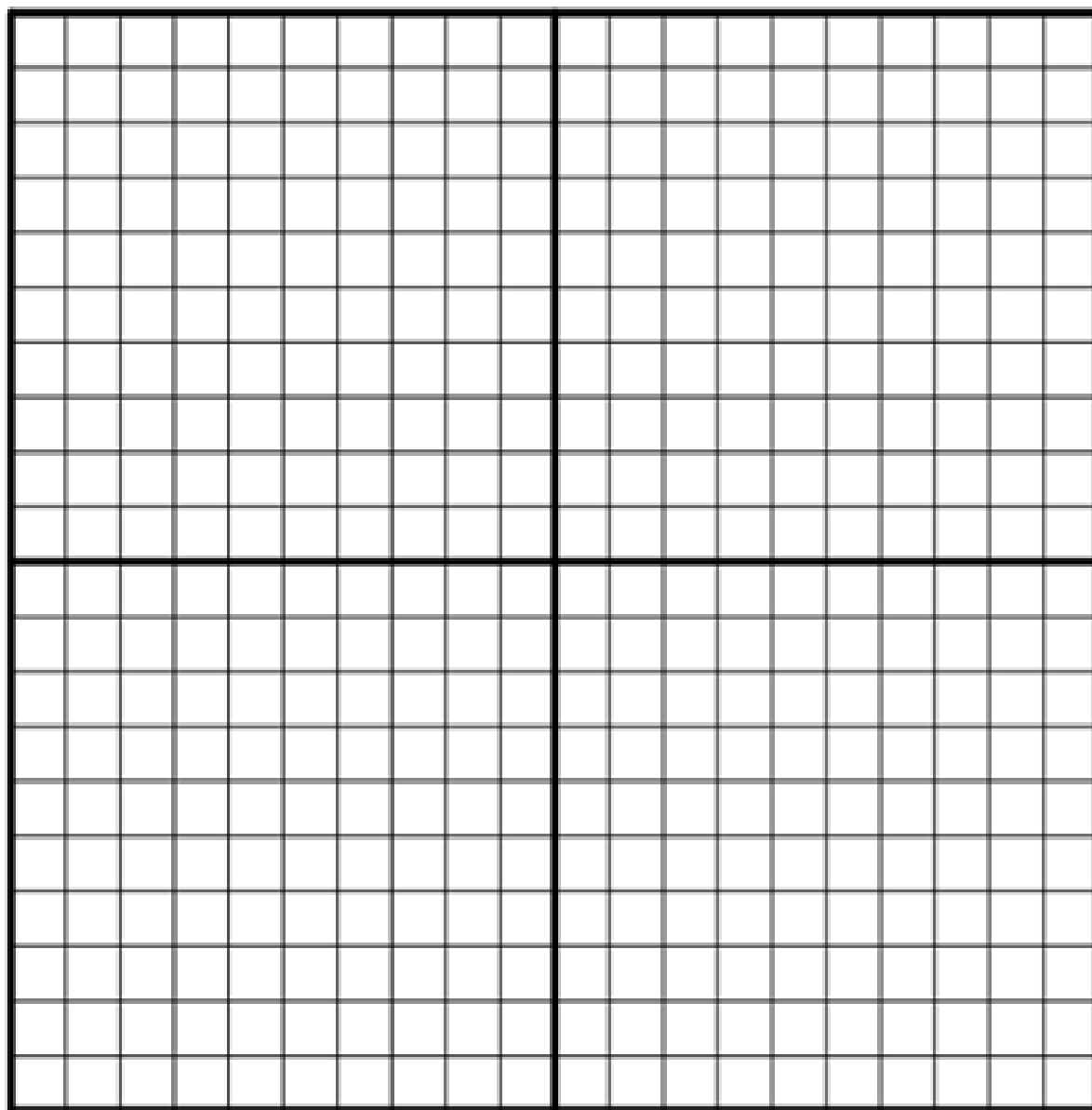
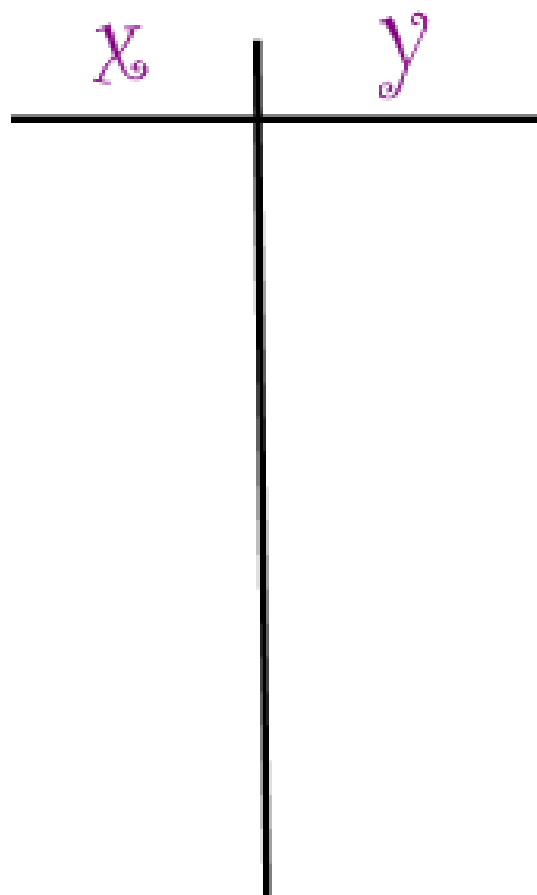
Absolute Value Function

$$f(x) = |x|$$



Type of Graph: V - Shaped

$$f(x) = |x + 3|$$



Classwork



Book

pg. 106 #15-29 odd (equations)

pg. 312 #9-15 odd (inequalities)

pg. 264 #5, 6, 17, 18 (graphing)