

Algebra 1 2.5

Evaluate absolute value expressions
Solve absolute value equations

distance
absolute value

whiteboards

$$|x - 3| = -6$$

NS

Evaluate each expression if $f = 3$, $g = -4$, and $h = 5$.

1. $|3 - 5| + 13$

$$\begin{array}{c} \downarrow \\ |-2| + 13 \end{array}$$

$$\begin{array}{c} \downarrow \\ 2 + 13 \end{array}$$

$$15$$

2. $16 - |8 + 9|$

$$16 - |5|$$

$$\begin{array}{c} \downarrow \\ 16 - 5 \end{array}$$

$$11$$

Solve each equation. Then graph the solution set.

4. $|n + 7| = 5$

$$n + 7 = 5$$

$$\quad -7 \quad -7$$

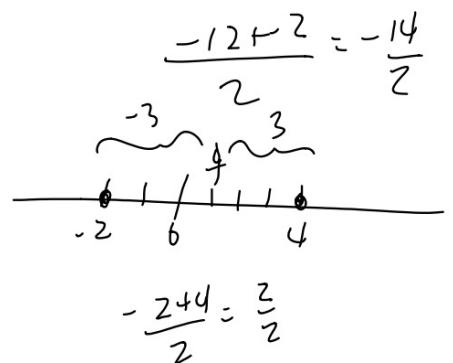
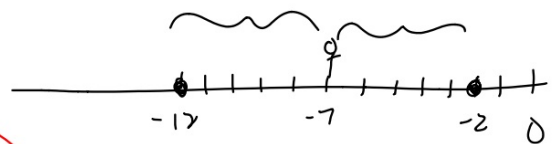
$$\begin{array}{r} n + 7 = -5 \\ -7 \quad -7 \\ \hline n = -12 \end{array}$$

$$\begin{array}{r} 3z - 3 = -9 \\ +3 \quad +3 \\ \hline 3z = -6 \\ \frac{3z}{3} = \frac{-6}{3} \\ z = -2 \end{array}$$

5. $|3z - 3| = 9$

$$\begin{array}{r} n + 7 = 5 \\ -7 \quad -7 \\ \hline n = -2 \end{array}$$

$$\begin{array}{r} 3z - 3 = 9 \\ +3 \quad +3 \\ \hline 3z = 12 \\ \frac{3z}{3} = \frac{12}{3} \quad z = 4 \end{array}$$



10. **FINANCIAL LITERACY** For a company to invest in a product, they must believe they will receive a 12% return on investment (ROI) plus or minus 3%. Write an equation to find the least and the greatest ROI they believe they will receive.

$$12\% \pm 3\%$$
$$9\% \quad 15\%$$

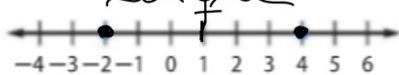
$$* \quad | x - 12 | = 3$$

$$\begin{array}{r} x - 12 = -3 \\ +12 \quad +12 \\ \hline x = 9 \end{array}$$

$$\begin{array}{r} x - 12 = 3 \\ +12 \quad +12 \\ \hline x = 15 \end{array}$$

Write an equation involving absolute value for each graph.

11.

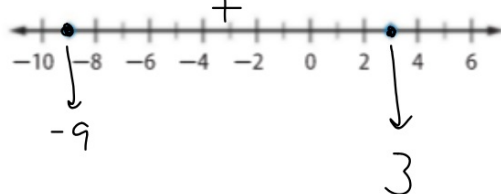


$$\frac{-2 + 4}{2} = \frac{2}{2} = 1$$

$$|x - 1| = 3$$

$$|k - 1| = 3$$

12.



$$\frac{-9 + 3}{2} = \frac{-6}{2} = -3$$

$$|x + 3| = 6$$

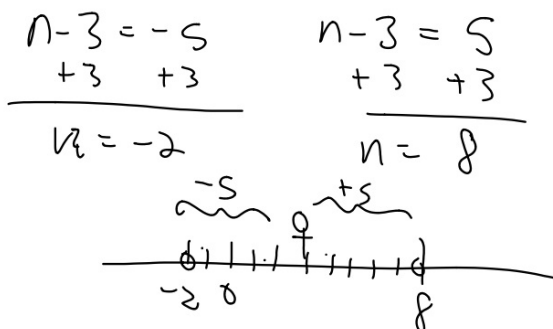
Solve each equation. Then graph the solution set.

22. $|n - 3| = 5$

23. $|f + 10| = 1$

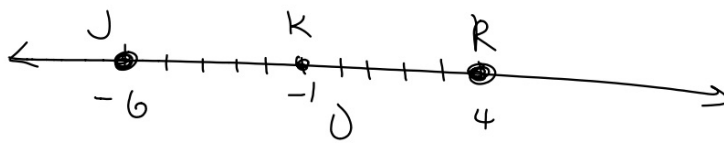
25. $|4t - 8| = \frac{20}{4}$

26. $|8w + 5| = 21$



$$\begin{array}{r} 4t - 8 = -20 \\ +8 \quad +8 \\ \hline 4t = -12 \\ \div 4 \quad \div 4 \\ \hline t = -3 \end{array}$$

$$\begin{array}{r} 4t - 8 = 20 \\ +8 \quad +8 \\ \hline 4t = 28 \\ \div 4 \quad \div 4 \\ \hline t = 7 \end{array}$$

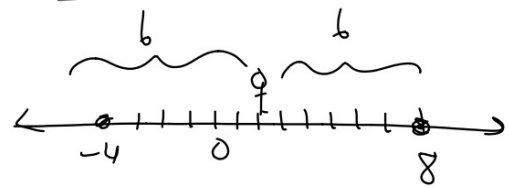


$$|k+1| = 5$$

$$|y| = 3$$

$$y = -3$$

$$y = 3$$



$$|k-2| = 6$$

$$\frac{-4+8}{2} = \frac{4}{2} = 2$$