Algebra 1 2.5

Evaluate absolute value expressions
Solve absolute value equations

distance
absolute value

activ: floor graphs

1 Absolute Value Expressions Expressions with absolute values define an upper and lower range in which a value must lie. Expressions involving absolute value can be evaluated using the given value for the variable.

Example 1 Expressions with Absolute Value

Evaluate $|m + 6| - 14$ if $m = 4$.

$|(4 + 6)| - 14$

$|10|$

$10 - 14 = -4$

GuidedPractice

1. Evaluate $23 - |3 - 4x|$ if $x = 2$.

$23 - |(3 - 4 \cdot 2)|$

$3 - 8$

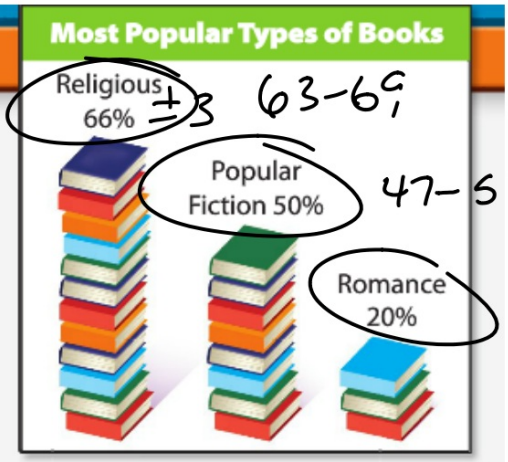
$23 - |-5|$

$23 - 5 = 18$

Why?

In 2007, a telephone poll was conducted to determine the reading habits of people in the U.S. People in this survey were allowed to select more than one type of book.

The survey had a margin of error of ±3%. This means that the results could be three points higher or lower. So, the percent of people who read religious material could be as high as 69% or as low as 63%.

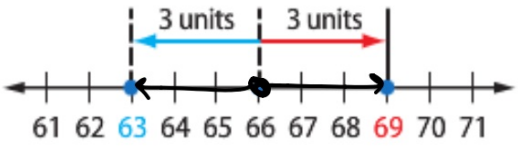


Source: CNN

63-69

47-53

17-23

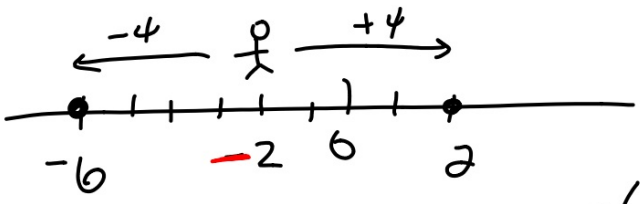


Harris	44%	39–49
Trump	42%	37–47

±5%

GuidedPractice

2A. $|y + 2| = 4$

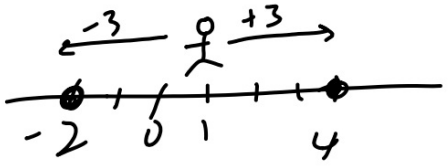


$\frac{-6+2}{2} = \frac{-4}{2}$

$y + 2 = -4$
$-2 \quad -2$
$y = -6$

$y + 2 = 4$
$-2 \quad -2$
$y = 2$

b. $|b-1| = +3$



$b - 1 = -3$

$+1 \quad +1$

$b = -2$

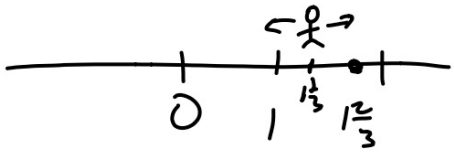
$b - 1 = 3$

$+1 \quad +1$

$b = 4$

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

2B. $|3n - 4| = +1$



$3n - 4 = 1$
$+4 \quad +4$

$\frac{3n}{3} = \frac{3}{3}$

$n = 1$

$3n - 4 = 1$
$+4 \quad +4$

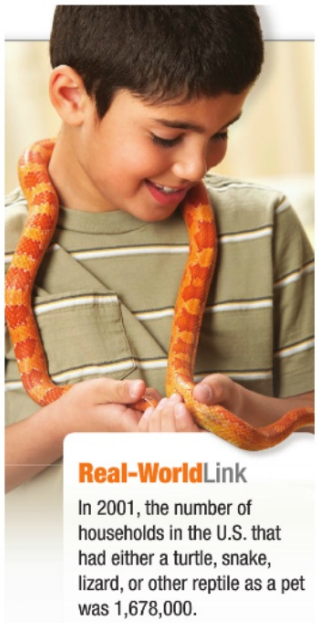
$\frac{3n}{3} = \frac{5}{3}$

$n = \frac{5}{3}$

Absolute value equations occur in real-world situations that describe a range within which a value must lie.

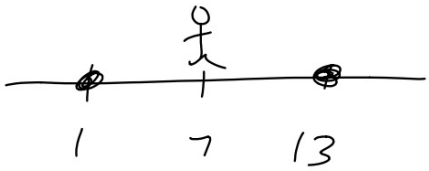
Real-World Example 3 Solve an Absolute Value Equation

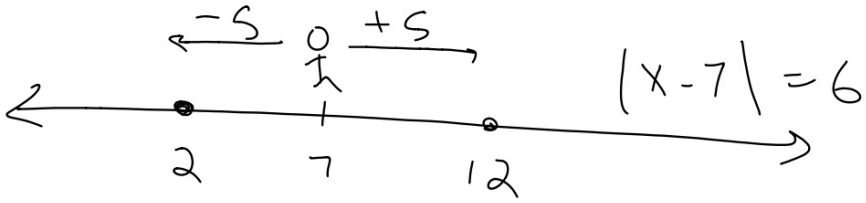
SNAKES **The temperature of an enclosure for a pet snake should be about 80°F, give or take 5°. Find the maximum and minimum temperatures.**



Real-World Link

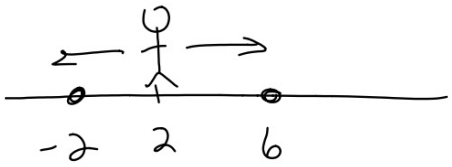
In 2001, the number of households in the U.S. that had either a turtle, snake, lizard, or other reptile as a pet was 1,678,000.

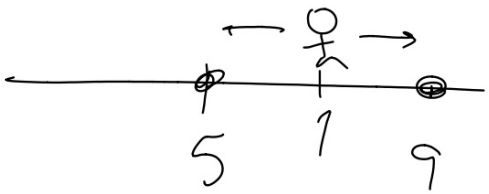




$|x-7|=6$

$|x-7|=5$





$|x-2| = 4$

$|x-7| = 2$

WB 2.5 prac.

p 26
1-12 all