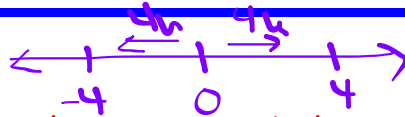


# Algebra 1: 1.4 Absolute Value Equations Part 2

## Warm-up:



Review of 1.4 day 1: Solve the equations below .....

1.  $|x - 2| + 5 = 9$

$$\begin{aligned} |x - 2| + 5 &= 9 \\ |x - 2| &= 4 \end{aligned}$$

$x - 2 = 4 \Rightarrow x = 6$   
 $x - 2 = -4 \Rightarrow x = -2$

2.  $3|x - 4| = |2x + 5|$

$$\begin{aligned} 3(x - 4) &= 2x + 5 \\ 3x - 12 &= 2x + 5 \\ -2x &= -7 \\ x &= \frac{7}{2} \end{aligned}$$

$$\begin{aligned} 3(x - 4) &= -2x - 5 \\ 3x - 12 &= -2x - 5 \\ +2x &= -5 \\ 5x - 12 &= -5 \\ 5x &= 7 \\ x &= \frac{7}{5} \end{aligned}$$

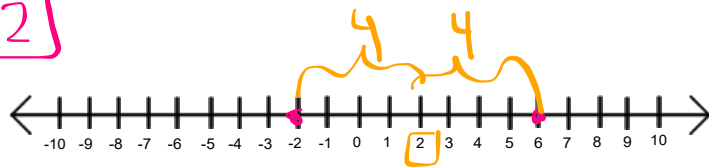
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$|x - 2| = 4$

$x - 2 = 4 \Rightarrow x = 6$   
 $x - 2 = -4 \Rightarrow x = -2$

$|x - \text{mid}| = \pm d$

Graph the solutions.



What number is halfway between the two solutions? 2

How far away from the middle are each of the solutions? 4

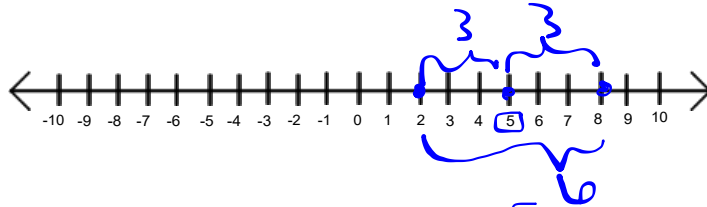
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## 1.4 Absolute Value Equations DAY TWO with work

$$|x - 5| = 3$$

$$\begin{array}{r} x - 5 = 3 \\ + 5 \quad + 5 \\ \hline x = 8 \end{array} \qquad \begin{array}{r} x - 5 = -3 \\ + 5 \quad + 5 \\ \hline x = 2 \end{array}$$

Graph the solutions.



What number is halfway between the two solutions? 5

How far away from the middle are each of the solutions? 3

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Hhmm ... do you notice anything about those last two problems?

What about this?  $|x + 2| = 6$

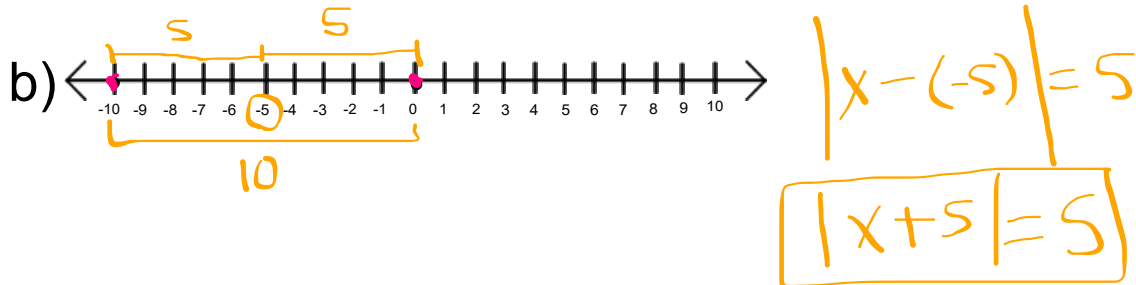
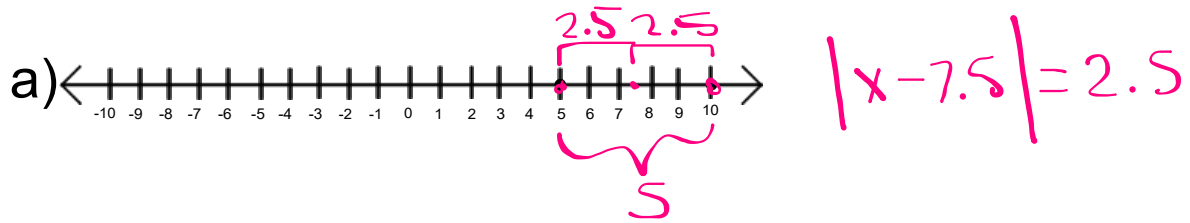
Middle number?

Distance from middle to endpoints?

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## 1.4 Absolute Value Equations DAY TWO with work

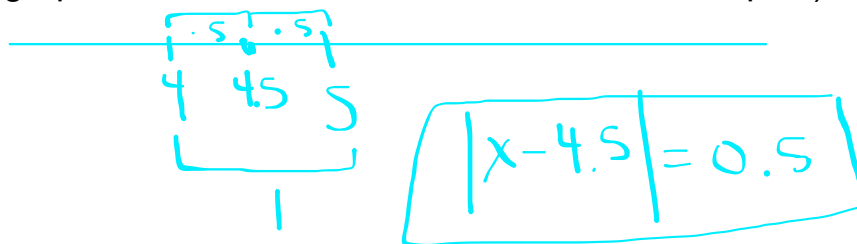
Write an absolute value equation with these solutions.



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### Example 3:

In a cheerleading competition, the minimum length of a routine is 4 minutes. The maximum length of a routine is 5 minutes. Write an absolute value equation that represents the minimum and maximum lengths. (Hint: graph the two solutions and see last two examples)



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## 1.4 Absolute Value Equations DAY TWO with work

### Practice 3:

For a poetry contest, the minimum length of a poem is 16 lines.

The maximum length is 32 lines. Write an absolute value equation that represents the minimum and maximum lengths.

The diagram shows a horizontal line representing a number line. The number 16 is written at the left end, and 32 is written at the right end. A bracket above the line spans from 16 to 32, with a '16' written below it. A vertical tick mark is drawn at the midpoint, labeled with '24' in a circle. Two smaller brackets above the line, one from 16 to 24 and one from 24 to 32, are both labeled with '8'.

$$\frac{16}{2} = 8$$
$$|x - 24| = 8$$

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HW: pg. 32

A: 17 - 25 (o), 31 - 39 (o), 46, 47 - 49, 62 - 67

B: 1, 2, 9 - 35 (o), 49, 52, 62 - 67

C: an email was sent to you