How Far Apart?

GL01-V1 · storyboard · GL01 Distance and midpoint on the number line. Read each picture with its sentences.

Picture 1

How far apart are -3 and 9? What number is midway between them?

$$9 - (-3) = 9 + 3 = 12$$ bigger minus smaller

$$-3 + 6 = 3$$ half the gap, from the smaller

$$\boxed{\frac{-3 + 9}{2} = 3}$$ the average

1. How far apart are negative 3 and 9?
2. And what number is midway between them?
3. Bigger minus smaller: 9 minus negative 3 is 9 plus 3, which is 12.
4. To find the middle, go half the gap, 6, from the smaller number: negative 3 plus 6 is 3.
5. That is the average of the two numbers: the same answer, 3.

Picture 2

Trap midway between -3 and 9

$$\times \; 12 \div 2 = 6$$

$$\checkmark \quad -3 + 6 = 3$$

6. Watch for the trap: 6 is half the gap, not the middle.
7. You still have to add it to the smaller number.

Picture 3

Work out $|1 - |2 - |3 - 5|||$.

$$|3 - 5| = 2 \quad \text{inside first}$$

$$|2 - 2| = 0$$

$$\boxed{|1 - 0| = 1}$$

8. Bars inside bars.
9. Work out the absolute value of 1 minus the absolute value of 2 minus the absolute value of 3 minus 5.
10. Work from the inside first.
11. The absolute value of 3 minus 5 is 2: a distance, never negative.
12. Then 2 minus 2 is 0.
13. And 1 minus 0 is 1.