2.4 Solving Absolute Value Inequalities
PreAP explore /Classnotes

Nick lives at 15 Memory Lane. Jamie lives more than 8 houses away. (Assume the addresses change by a unit of 1.) Where could Jamie’s house be located?

Translate the absolute value inequality into words, represent visually, then identify the solution
1. \(|x - 3| > 4\)  Translate into words:

Represent visually on a number line:

Solution: \(_x < \_\) or \(x > \_

2. \(|x - 8| < 4\)  Translate into words:

Represent visually on a number line:

Solution: \(_x < x < _\)

3. \(|5 - x| \leq 6\)  Translate into words:

Represent visually on a number line:

Solution:

4. \(|x + 3| \geq 9\)  Translate into words:

Represent visually on a number line:

Solution:

Explain why the possible x-values are in one continuous region, or two separate regions:
Solve Absolute Value Inequalities

| | = ___ means that the distance between ___ and ___ is ___ on a number line.

The | | < ___ means that the distance between ___ and ___ is ________________.

The | | > ___ means that the distance between ___ and ___ is ________________.

Graph of | | < ___

And:
|ax + b| < c

- c < ax + b < c

Graph of | | > ___

|ax + b| > c

ax + b < −c or ax + b > c

Solve an Absolute Value Inequality

Example One:
Solve: |2x − 10| ≥ 14

Rewrite as a __________ inequality. (or)

Solve both inequalities using __________ operations.

both inequalities.

Example Two:
Solve: 9 − |x − 5| > 3

Undo ________________

Undo ________________

Rewrite as a __________ inequality. (and)

Solve using __________ operations.

both inequalities.