Unit II – First Degree Relations with One Placeholder
Part D – Systems of Equations and Inequalities
Lesson 3 – Absolute Value Equal to a Positive Number (or)

Find the solution set for each of the following absolute value relations and show the solution set on a number line and in set notation.

1. $^-4\left|\,4y+5\,\right|={}^-68$

2. $\left|\,2.5\;x-8\,\right|=10$

3. $13+\left|\,4-7x\,\right|=5$

4. $2\left|\,x+(x+2)\,\right|=23$

5. $2\left|\,2\;x-7\,\right|+11=25$

6. $\left|\,\dfrac{4-5x}{2}\,\right|=7$

7. $\left|\,7x-2\,\right|=x+4$

8*. $\left|\,5p+7\,\right|=\left|\,4p+3\,\right|$

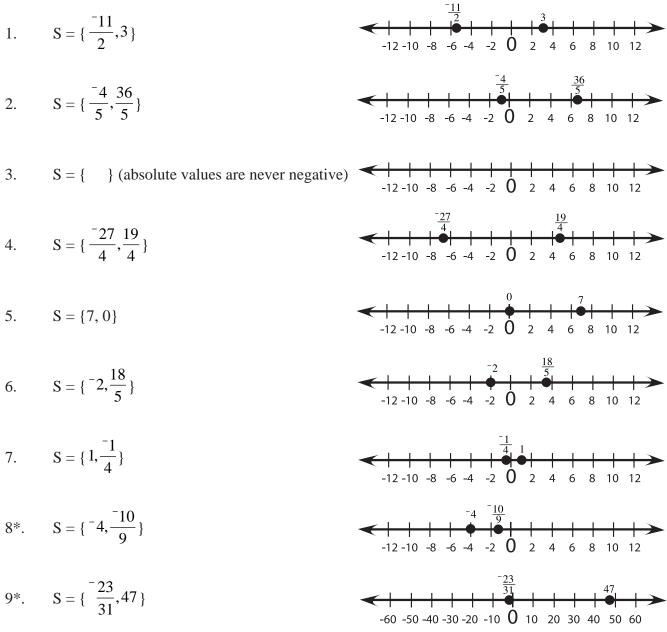9*. $\left|\,\dfrac{6-8x}{5}\,\right|=\left|\,\dfrac{7+3x}{2}\,\right|$

* Note: Sometimes equations have two absolute value expressions. For example, if $|a|=|b|$, then a and b are the same distance from zero. And, if a and b are the same distance from zero, then they are either the same number or they are opposites of each other. (i.e., a = b or a = ⁻b)

EXTRA PRACTICE — Answer Key

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Find the solution set for each of the following absolute value relations and show the solution set on a number line and in set notation.

1. $S = \{\dfrac{^-11}{2}, 3\}$

2. $S = \{\dfrac{^-4}{5}, \dfrac{36}{5}\}$

3. $S = \{\quad\}$ (absolute values are never negative)

4. $S = \{\dfrac{^-27}{4}, \dfrac{19}{4}\}$

5. $S = \{7, 0\}$

6. $S = \{^-2, \dfrac{18}{5}\}$

7. $S = \{1, \dfrac{^-1}{4}\}$

8*. $S = \{^-4, \dfrac{^-10}{9}\}$

9*. $S = \{\dfrac{^-23}{31}, 47\}$

* Note: Sometimes equations have two absolute value expressions. For example, if $|a| = |b|$, then a and b are the same distance from zero. And, if a and b are the same distance from zero, then they are either the same number or they are opposites of each other. (i.e., a = b or a = $^-$b)