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Assignment: 1.6 Equations and
Inequalities w/ Abs Value

1. Complete the following sentence.

Assume $a > 0$. The solution set of the equation $|x| = a$ is _____.

Choose the correct answer below.

- ☒ **A.** $\{-a, a\}$
☐ **B.** $(-\infty, \infty)$
☐ **C.** $(-a, a)$
☐ **D.** $(-\infty, -a] \cup [a, \infty)$

2. Complete the following sentence.

Assume $a > 0$. The solution set of the equation $|x| \geq a$ is _____.

Choose the correct answer below.

- ☐ **A.** $(-a, a)$
☐ **B.** $\{-a, a\}$
☐ **C.** $(-\infty, \infty)$
☒ **D.** $(-\infty, -a] \cup [a, \infty)$

3. Determine whether the following statement is true or false.

Assume $a > 0$. The solution set of $|3x - 2| < a$ is the same as the solution set of $|2 - 3x| < a$.

Is the statement true or false?

- ☒ **True**
☐ **False**

4. Solve.

$$|3x| = 9$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- ☒ **A.** The solution set is $\{ \text{ } - 3, 3 \text{ } \}$.
(Type an integer or a simplified fraction.
Use a comma to separate answers as
needed.)
☐ **B.** The solution set is the empty set.

5. Watch the video and then solve the problem given below.

[Click here to watch the video.](#)¹

Solve $|2x - 7| + 6 = 23$.

The solution set is $\{ \quad -5, 12 \quad \}$.

(Use a comma to separate answers as needed.)

1: http://mediaplayer.pearsoncmg.com/assets/DI2KEW_5dFf2kr_nGKKBIYktIPupL41Z

6. Find the real solutions of the equation.

$$|-5x| = |10|$$

The solution set is $\{ \quad -2, 2 \quad \}$.

(Simplify your answer. Use a comma to separate answers as needed.)

7. Find the solution set for the equation.

$$|x - 6| = 5$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- ☒ **A.** The solution set is $\{ \quad 1, 11 \quad \}$.
(Simplify your answer. Use a comma to separate answers as needed.)
- ☐ **B.** There is no solution.

8. Solve the following equation.

$$|2x + 7| - 3 = 0$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- ☐ **A.** The solution set is the empty set.
- ☒ **B.** The solution set is $\{ \quad -2, -5 \quad \}$.
(Type an integer or a simplified fraction. Use a comma to separate answers as needed.)

9. Solve the equation.

$$2|1 - 2x| - 5 = 33$$

Select the correct answer below and, if necessary, fill in the answer box to complete your choice.

- ☒ **A.** The solution set is $\{ \quad -9, 10 \quad \}$.
(Simplify your answer. Type an integer or a fraction. Use a comma to separate answers as needed.)
- ☐ **B.** The solution is the empty set.

10. Solve.
- $$|9x - 41| = -31$$
- Choose the correct solution.
- ☐ A. $x = 8$
- ☒ B. No solution
- ☐ C. $x = \frac{8}{9}$
- ☐ D. $x = \frac{10}{9}$

11. Find the real solutions of the equation.

$$|x^2 - 100| = 0$$

The solution set is $\{ \text{10, -10} \}$.

(Simplify your answer. Use a comma to separate answers as needed.)

12. Solve.

$$|x + 19| = |x - 2|$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- ☒ A. The solution set is $\left\{ -\frac{17}{2} \right\}$.
(Type an integer or a simplified fraction. Use a comma to separate answers as needed.)
- ☐ B. The solution is all real numbers.

13. Solve the inequality.

$$|7x| < 42$$

What is the solution set?

$(-6, 6)$

(Type your answer in interval notation. Simplify your answer.)

14. Watch the video and then solve the problem given below.

[Click here to watch the video.](#)²

Solve $|3x + 5| < 9$.

The solution set is $\left(-\frac{14}{3}, \frac{4}{3} \right)$.

(Simplify your answer. Type your answer in interval notation.)

2: <http://mediaplayer.pearsoncmg.com/assets/PT2Qkdn8xxjPJldERH5pChAhoivrWsr>

15. Solve the inequality.

$$|2x| > 16$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- ☒ **A.** The solution set is $(-\infty, -8) \cup (8, \infty)$.
(Type your answer in interval notation. Simplify your answer. Use integers or fractions for any numbers in the expression.)
- ☐ **B.** The solution is the empty set.

16. Watch the video and then solve the problem given below.

[Click here to watch the video.](#)³

Solve $|5x - 11| \geq 4$.

The solution set is $\left(-\infty, \frac{7}{5}\right] \cup [3, \infty)$.

(Simplify your answer. Type your answer in interval notation.)

3: <http://mediaplayer.pearsoncmg.com/assets/DR27rpguYAgaEPBhcuDu6CQ4E8TWQotk>

17. Solve the inequality.

$$|2x - 1| < 6$$

The solution in interval notation is $\left(-\frac{5}{2}, \frac{7}{2}\right)$.

(Type your answer in interval notation. Simplify your answer. Use integers or fractions for any numbers in the expression.)

18. Solve the inequality.

$$|4 - 5x| > 3$$

What is the solution set?

$\left(-\infty, \frac{1}{5}\right) \cup \left(\frac{7}{5}, \infty\right)$

(Type your answer in interval notation. Type integers or simplified fractions.)

19. Solve the following inequality.

$$|8x - 5| \leq 12$$

Choose the correct answer given below.

- ☐ A. $x = \left(-\frac{1}{8}, \frac{17}{8} \right)$
- ☐ B. $x = \left[-\frac{1}{8}, \frac{9}{8} \right)$
- ☐ C. $x = \left[-\frac{7}{8}, \frac{9}{8} \right]$
- ☒ D. $x = \left[-\frac{7}{8}, \frac{17}{8} \right]$
- ☐ E. There is no solution.

20. A company budgets \$600 for office supplies. The actual expense for budget supplies must be within ± 60 of this figure. Let x = actual expense for the office supplies. Write an absolute value inequality in x whose solution is the range of possible amounts for the expense of the office supplies.

The absolute value inequality $|x - 600| \leq 60$ describes this situation.

21. Solve the inequality.

$$|x + 7| < 4$$

Select the correct choice below and, if necessary, fill in the answer box to complete your choice.

- ☒ A. The solution is $(-11, -3)$.
(Type your answer in interval notation. Simplify your answer. Use integers or fractions for any numbers in the expression.)
- ☐ B. There is no solution.