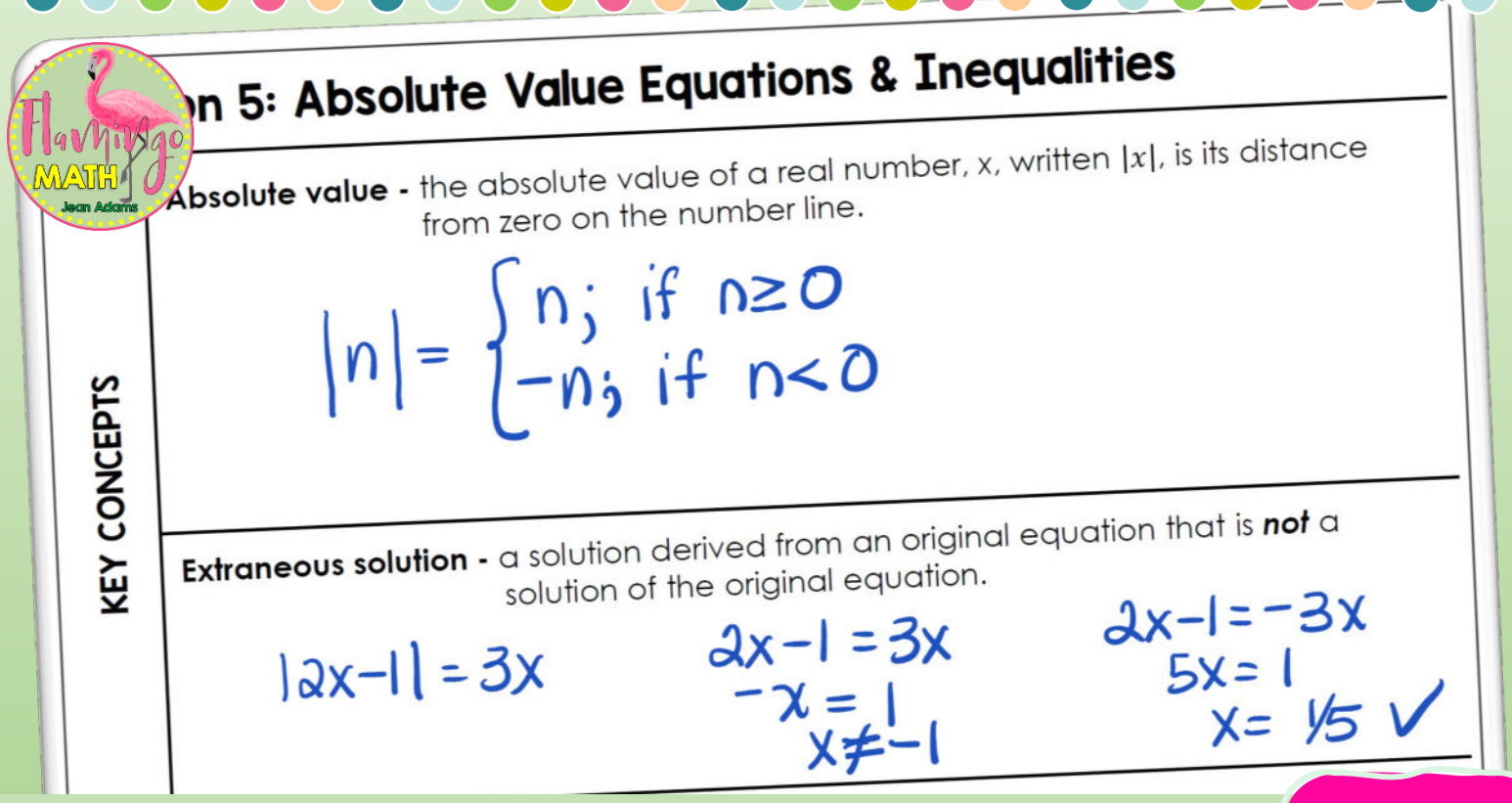
Algebra 2 Honors

Absolute Value

Equations & Inequalities



Completely Editable

1.5

Lesson 5: Absolute Value Equations & Inequalities

KEY CONCEPTS

Absolute value - the absolute value of a real number, x, written $|x|$, is its distance from zero on the number line.

Extraneous solution - a solution derived from an original equation that is ***not*** a solution of the original equation.

Solutions of Absolute Value Statements
Concept Summary

Symbols	Definition	Graph

Solving an Absolute Value Equation

EX #1: Solve each equation. Graph the solution.

A. $|x - 6| = 2$

B. $|-5x| = 20$

C. $|3x + 2| = 4$

Extraneous Solutions

EX #2: Solve, check for extraneous solutions.

A. $3|x - 8| = x - 9$

B. $2|x + 7| = 12$

C. $|5x - 2| = 7x + 14$

B. $|7 - x| \leq 3$

C. $\frac{1}{4}|x - 3| + 2 < 1$

EX #4: Solve. $|5x + 10| > 15$, graph the solution.

Writing Absolute Value Statements

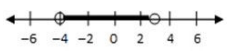
EX #5: Write each compound inequality as an absolute value inequality.

A. $1.6 \leq x \leq 2.1$

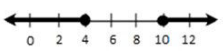
B. $140 \leq p \leq 230$

EX #6: Write an absolute value equation or inequality to describe each graph.

A.



B.



Real-World Inequalities

EX #7: The meteorologist predicted the Fourth of July temperature would be within 4° of 92°F. Let d represent the degrees for the day.

EX #8: Carpenters take their morning break no earlier than 10:00 am and no later than 11:30 am. Let b represent the time the workers take their break.

NOTES

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Absolute Value Equations & Inequalities Practice

1.5

Problems 1 – 6, solve each equation. Check your answers.

1. $|2x - 3| = 9$

2. $2|3w - 2| = 16$

3. $|x + 5| + 3 = 14$

4. $3|5 - w| - 8 = 4$

5. $|2x + 3| + 9 = 4$

6. $|2x - 1| = 7$

Problems 7 – 10, solve each equation. Check for extraneous solutions.

7. $|x + 6| = 3x - 8$

8.

9. $|2x + 5| = 3x + 4$

10.

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Problems 11 – 16, solve each inequality. Graph the solution.

11. $|x - 5| \geq 9$

12. $4|2x - 1| > 28$

13. $5|y + 3| \leq 20$

14. $\frac{1}{2}|2b - 1| - 4 > 0$

15. $2|4w + 3| - 5 \leq 1$

16. $|3x - 4| > -2$

Problems 17 – 22, write each specification as an absolute value inequality.

17. $37 \leq k \leq 63$

18. $18.25 < P < 18.75$

19. $-0.3 \leq w \leq 2.4$

20. $32.4 \leq F \leq 54.8$

21. A plumber is cutting a piece of PVC pipe that is to be 38 inches. The pipe must be within a

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Practice Sets

Lesson Warm-Ups

1.5 Absolute Value Equations and Inequalities **Form A**

Name _____

Date _____ Period _____

1. Solve $|3x + 2| = 5$

2. Solve $|3 - 2x| + 7 < 9$, graph the solution.

3. Solve $|4x - 20| \leq 8$, graph the solution set.

4. Write $1.8 \leq w \leq 2.6$ as an absolute value inequality.

Grade:

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1.5 Absolute Value Equations and Inequalities **Form B**

Name _____

Date _____ Period _____

1. Solve $|3x - 1| = 7$

2. Solve $|3 - 4x| + 5 > 10$, graph the solution.

3. Solve $|3x - 6| \leq 18$, graph the solution set.

4. Write $2.3 \leq h \leq 3.7$ as an absolute value inequality.

Grade:

Name _____ Date _____ Period _____

Lesson 1.5: Absolute Value Equations & Inequalities **Warm-Up #1**

1. Solve $|-3x| = 21$

2. Solve, check for extraneous solutions.
$|x + 5| - 2 = 8$

3. Solve the inequality and graph.
$|2x - 3| \leq 5$

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Name _____ Date _____ Period _____

Lesson 1.5: Absolute Value Equations & Inequalities **Warm-Up #2**

1. Solve $|-3x| = 24$

2. Solve, check for extraneous solutions.
$|x - 4| + 3 = 9$

3. Solve the inequality and graph.
$|3x - 2| \geq 7$

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Daily Lesson Quiz