Name_____ Date _____

2.4 Solving Multi-Step Inequalities

For use with Exploration 2.4

Essential Question How can you solve a multi-step inequality?

1 EXPLORATION: Solving a Multi-Step Inequality

Go to *BigIdeasMath.com* for an interactive tool to investigate this exploration.

Work with a partner.

- Use what you already know about solving equations and inequalities to solve each multi-step inequality. Justify each step.

a. $2x + 3 \leq x + 5$

b. $-2x + 3 > x + 9$

c. $27 \geq 5x + 4x$

d. $-8x + 2x - 16 < -5x + 7x$

e. $3(x - 3) - 5x > -3x - 6$

f. $-5x - 6x \leq 8 - 8x - x$

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2.4 Solving Multi-Step Inequalities (continued)

1 EXPLORATION: Solving a Multi-Step Inequality (continued)

- Match each inequality with its graph. Use a graphing calculator to check your answer.

a. $2x + 3 \leq x + 5$

b. $-2x + 3 > x + 9$

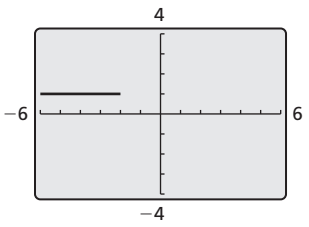
c. $27 \geq 5x + 4x$

d. $-8x + 2x - 16 < -5x + 7x$

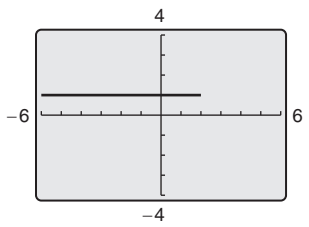
e. $3(x - 3) - 5x > -3x - 6$

f. $-5x - 6x \leq 8 - 8x - x$

A.



B.



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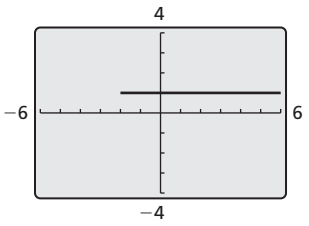
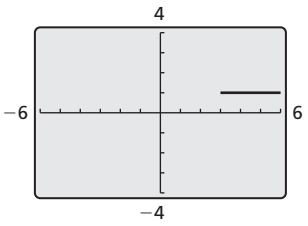
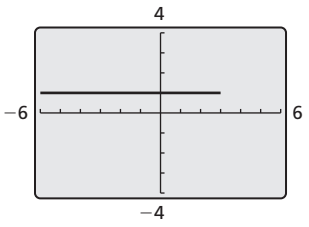


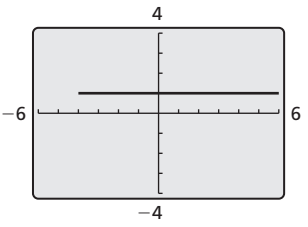
D.



E.



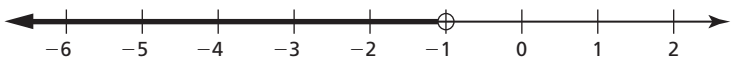
F.



Communicate Your Answer

2. How can you solve a multi-step inequality?

3. Write two different multi-step inequalities whose solutions are represented by the graph.



Name_____ Date _____

2.4 Notetaking with Vocabulary

For use after Lesson 2.4

Notes:

Name _____ Date _____

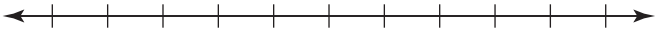
2.4 Notetaking with Vocabulary (continued)

Extra Practice

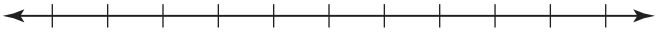
In Exercises 1–5, solve the inequality. Graph the solution.

1. $3x - 2 < 10$

2. $4a + 8 \geq 0$



3. $2 + \frac{b}{-3} \leq 3$



4. $-\frac{c}{2} - 6 > -8$

5. $8 \leq -4(d + 1)$

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2.4 Notetaking with Vocabulary (continued)

In Exercises 6–10, solve the inequality.

6. $5 - 2n > 8 - 4n$

7. $6h - 18 < 6h + 1$

8. $3p + 4 \geq -4p + 25$

9. $7j - 4j + 6 < -2 + 3j$

10. $12\left(\frac{1}{4}w + 3\right) \leq 3(w - 4)$

11. Find the value of k for which the solution of the inequality $k(4r - 5) \geq -12r - 9$ is all real numbers.

12. Find the value of k that makes the inequality $2kx - 3k < 2x + 4 + 3kx$ have no solution.