

1-7 Compound Inequalities

TEKS FOCUS

TEKS (5)(B) Solve linear inequalities in one variable, including those for which the application of the distributive property is necessary and for which variables are included on both sides.

TEKS (1)(A) **Apply** mathematics to problems arising in everyday life, society, and the workplace.

Additional TEKS (1)(D)

VOCABULARY

- **Compound inequality** – A compound inequality consists of two distinct inequalities joined by the word *and* or the word *or*.
- **Apply** – use knowledge or information for a specific purpose, such as solving a problem

ESSENTIAL UNDERSTANDING

You find the solutions of a compound inequality either by identifying where the solution sets of the distinct inequalities overlap or by combining the solution sets to form a larger solution set.

Writing a Compound Inequality

What compound inequality represents the phrase? Graph the solutions.

A all real numbers that are greater than -2 and less than 6

B all real numbers that are less than 0 or greater than or equal to 5



Solving a Compound Inequality Involving *And*

What are the solutions of $-3 \leq m - 4 < -1$? Graph the solutions.



Solving a Compound Inequality Involving *Or*

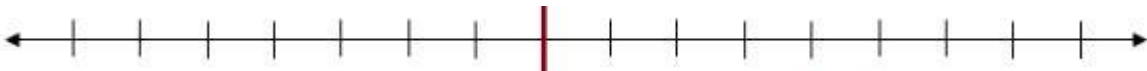
What are the solutions of $3t + 2 < -7$ or $-4t + 5 < 1$? Graph the solutions.



Writing and Solving a Compound Inequality

Test Average To earn a B in your algebra course, you must achieve an unrounded test average between 84 and 86, inclusive. What possible scores can you earn on the fourth and final test to earn a B in the course?

File Edit Tool View Chart Class Help						
Math Test Scores			Math Homework			
Class	Student	Test 1	Test 2	Test 3	Test 4	Test Average
001	17	86	85	80		



PRACTICE and APPLICATION EXERCISES

Write a compound inequality that represents each phrase. Graph the solutions.

1. all real numbers that are between -5 and 7



2. The circumference of a women's basketball must be between 28.5 in. and 29 in., inclusive.



Solve each compound inequality. Graph your solutions.

3. $-4 < k + 3 < 8$

4. $5 \leq y + 2 \leq 11$



5. $15 \leq \frac{20 + 11 + k}{3} \leq 19$

6. $\frac{1}{4} < \frac{2x - 7}{2} < 5$



7. **Apply Mathematics (1)(A)** The acidity of the water in a swimming pool is considered normal if the average of three pH readings is between 7.2 and 7.8, inclusive. The first two readings for a swimming pool are 7.4 and 7.9. What possible values for the third reading p will make the average pH normal?



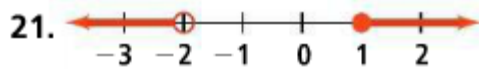
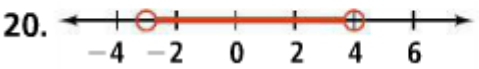
Solve each compound inequality. Graph your solutions.

10. $6b - 1 < -7$ or $2b + 1 > 5$

11. $5 + m > 4$ or $7m < -35$



Write a compound inequality that each graph could represent.

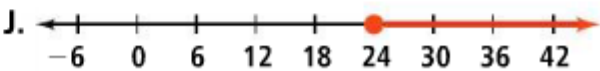


30. A student must earn at least 24 credits in high school in order to graduate. Which inequality or graph does NOT describe this situation?

F. $c \leq 24$

H. $24 \leq c$

G. $c \geq 24$



Name: _____ Date: _____ Period : _____

Compound Inequalities

Homework

1. $-2 \leq d + \frac{1}{2} < 4\frac{1}{2}$

2. $0 < -8b \leq 12$

3. $2t \leq -4$ or $7t \geq 49$

4. $5m < -10$ or $3m > 9$

5. $-1 \leq a - 3 \leq 2$

6. $9.1 > 1.4p \geq -6.3$

7. **Apply Mathematics (1)(A)** A town's high temperature for a given month is 88°F and the low temperature is 65°F . Write a compound inequality to represent the range of temperatures for the given month.