Name_____ Date _____

2.2 Solving Inequalities Using Addition or Subtraction

For use with Exploration 2.2

Essential Question How can you use addition or subtraction to solve an inequality?

1 EXPLORATION: Quarterback Passing Efficiency

Work with a partner. The National Collegiate Athletic Association (NCAA) uses the following formula to rank the passing efficiencies P of quarterbacks.

$$P = \frac{8.4Y + 100C + 330T - 200N}{A}$$

Y = total length of all completed passes (in **Y**ards)

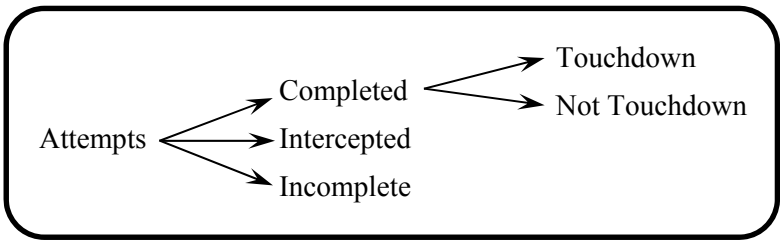
C = **C**ompleted passes

T = passes resulting in a **T**ouchdown

N = i**N**tercepted passes

A = **A**ttempted passes

M = inco**M**plete passes



Determine whether each inequality must be true. Explain your reasoning.

a. $T < C$

b. $C + N \leq A$

c. $N < A$

d. $A - C \geq M$

2 EXPLORATION: Finding Solutions of Inequalities

Work with a partner. Use the passing efficiency formula to create a passing record that makes each inequality true. Record your results in the table. Then describe the values of P that make each inequality true.

	Attempts	Completions	Yards	Touchdowns	Interceptions
a.					
b.					
c.					

a. $P < 0$

b. $P + 100 \geq 250$

c. $P - 250 > -80$

Communicate Your Answer

3. How can you use addition or subtraction to solve an inequality?

4. Solve each inequality.

a. $x + 3 < 4$

b. $x - 3 \geq 5$

c. $4 > x - 2$

d. $-2 \leq x + 1$

Name_____ Date _____

2.2 Notetaking with Vocabulary

For use after Lesson 2.2

In your own words, write the meaning of each vocabulary term.

equivalent inequalities

Notes:

Core Concepts

Addition Property of Inequality

Words Adding the same number to each side of an inequality produces an equivalent inequality.

Numbers

$$\begin{array}{rcr} -3 & < & 2 \\ \underline{+\,4} & & \underline{+\,4} \\ 1 & < & 6 \end{array} \qquad \begin{array}{rcr} -3 & \geq & -10 \\ \underline{+\,3} & & \underline{+\,3} \\ 0 & \geq & -7 \end{array}$$

Algebra If $a > b$, then $a + c > b + c$. If $a \geq b$, then $a + c \geq b + c$.

If $a < b$, then $a + c < b + c$. If $a \leq b$, then $a + c \leq b + c$.

Notes:

Name _____ Date _____

2.2 Notetaking with Vocabulary (continued)

Subtraction Property of Inequality

Words Subtracting the same number from each side of an inequality produces an equivalent inequality.

Numbers

$$\begin{array}{rr} -3 \leq & 1 \\ \underline{-5} & \underline{-5} \\ -8 \leq & -4 \end{array} \qquad \begin{array}{rr} 7 > & -20 \\ \underline{-7} & \underline{-7} \\ 0 > & -27 \end{array}$$

Algebra If $a > b$, then $a - c > b - c$. If $a \geq b$, then $a - c \geq b - c$.

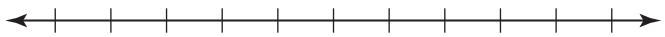
If $a < b$, then $a - c < b - c$. If $a \leq b$, then $a - c \leq b - c$.

Notes:

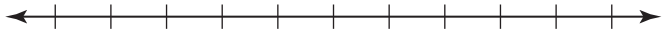
Extra Practice

In Exercises 1–6, solve the inequality. Graph the solution.

1. $x - 3 < -4$



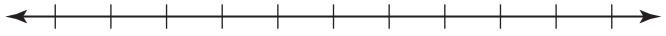
2. $-3 > -3 + h$



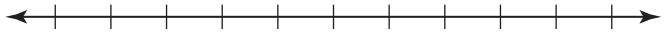
2.2 Notetaking with Vocabulary (continued)

3. $s - (-1) \geq 2$

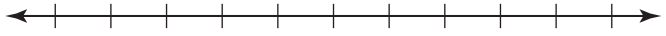
4. $6 - 9 + u < -2$



5. $12 \leq 4c - 3c + 10$



6. $15 - 7p + 8p > 15 - 2$



7. You have \$15 to spend on groceries. You have \$12.25 worth of groceries already in your cart.

a. Write an inequality that represents how much more money m you can spend on groceries.

b. Solve the inequality.