

Algebra CC
Assignment #21
Compound Inequalities
*** Optional**

1. Determine if each of the following statements is true or false. Justify your answer.
 - (a) Albany is the capital of New York and New York City is the capital of New York. _____
 - (b) Albany is the capital of New York or New York City is the capital of New York. _____
 - (c) Poughkeepsie is the capital of New York or New York City is the capital of New York. _____

2. Determine the truth value of each of the following compound inequalities by first determining the truth value of each of the individual inequalities.
 - (a) $5 \leq 10$ and $3 < -4$
 - (b) $2 < 7$ or $-20 > -18$
 - *(c) $-6 < -7$ or $-2 \leq -2$
 - *(d) $-5 > -8$ and $5 < 8$

3. Which of the following compound inequalities is true? Explain your reasoning by showing the truth values of each of the individual inequalities.
 - (1) $5 > 2$ and $4 < 1$
 - (2) $5 \leq 5$ and $-6^3 - 5$
 - (3) $-2 > 0$ or $-6^3 6$
 - (4) $-2^3 - 4$ and $3 > 0$

- *4. When at a carnival there are height restrictions to go on each ride. Determine which rides each member of this family can go on by filling out the table below:

	The Swings: $h > 24$ and $h < 70$	The Twister: $h > 48$ or $h \leq 60$	Wooden Rollercoaster: $h > 42$ and $h < 72$	Tea cups: $h \leq 35$ or $h \geq 60$
Tracey: $h = 47$ inches				
Mark: $h = 70$ inches				
Marissa: $h = 28$ inches				

Which ride can every member go on?

5. Determine if each of the following values of x is in the solution set to the compound inequalities given below? Justify each of your choices by showing your calculations.

(a) $x = 0$ for:

$$3x + 2 \leq 12 \text{ or } 3(x + 1) < -4(3x + 1)$$

*(b) $x = 2$ for:

$$\frac{2(x + 1)}{3} \leq 6 \text{ and } -2(3 - 2x) < 2$$

(c) $x = -1$ for:

$$3x + 7 < -11 \text{ or } 4 - 2x \leq 18$$

*(d) $x = 5$ for:

$$\frac{2x - 4}{2} \geq 3 \text{ and } \frac{x - 3}{4} = 2$$

*R1. In 2 weeks, a family drinks 3 gallons of milk. How many gallons will this family drink in 9 weeks?

R2. Solve for p : $\frac{6}{p} = \frac{36}{24}$

R3. On each floor of a building, the ratio of offices to windows to doors is 25 : 55 : 33. What is the ratio of doors to windows, in simplest form?

R4. Solve the formula $V = lwh$ for h .

R5. Solve for a : $(a - 1) - (a + 2) - (a - 3) = a$

*R6. John, who is 42 years old, has a nephew who is 9. In how many years will the age of his nephew be one-fourth John's age? Write an equation and solve algebraically.

1. (a) False
(b) True
(c) False

(d) False

R1. 13.5 gallons

2. (a) False
(b) True
(c) True
(d) True

R2. $p = 4$

R3. 3:5 or $\frac{3}{5}$

3. (4)

R4. $h = \frac{V}{lw}$

4. The Twister

R5. $a = 0$

5. (a) True
(b) False
(c) True

R6. Let x = Number of Years

$$4(9 + x) = 42 + x$$

$$x = 2$$