Compound Inequalities

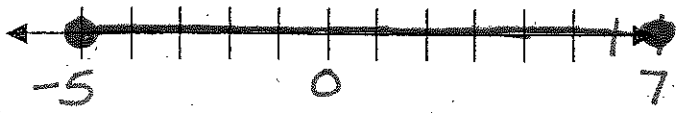
3.5

Name:

AND Notes:

↳ where BOTH graphs exist.

1. $x \geq -5$ and $x \leq 7$

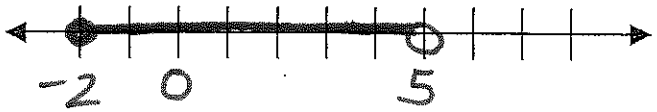


can be written as: $-5 \leq x \leq 7$

2. $-6 \leq 3x < 15$

$\frac{-6}{3} \leq \frac{3x}{3} < \frac{15}{3}$

$-2 \leq x < 5$



3. $-4 < r - 5 \leq -1$

$+5 \quad +5 \quad +5$

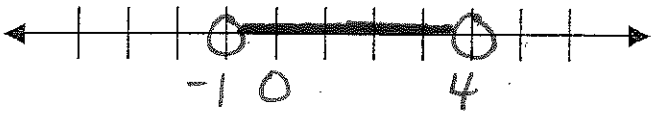
$1 < r \leq 4$

4. $-3 < 2x - 1 < 7$

$+1 \quad +1 \quad +1$

$\frac{-2}{2} < \frac{2x}{2} < \frac{8}{2}$

$-1 < x < 4$



5. $7 < -3n + 1 \leq 13$

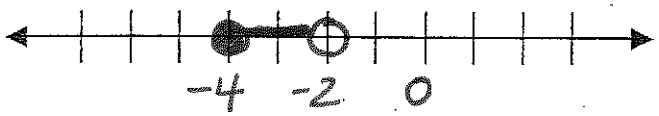
$-1 \quad -1 \quad -1$

$\frac{6}{-3} < \frac{-3n}{-3} \leq \frac{12}{-3}$

FLIP

$-2 > n \geq -4$

$-4 \leq n < -2$



6. The acidity of the water in a swimming pool is considered normal if the average of 3 pH readings between 7.2 and 7.8, inclusive. The first2 readings for a swimming pool are 7.4 and 7.9. What possible values for the third p will make the average pH normal?

$(3)\ 7.2 \leq \frac{7.4 + 7.9 + x}{3} \leq 7.8\ (3)$

$21.6 \leq 15.3 + x \leq 23.4$

$-15.3 \quad -15.3 \quad -15.3$

$6.3 \leq x \leq 8.1$

7. Today's temperature will be above 32 degrees but not as high as 40 degrees.

$>$ $<$

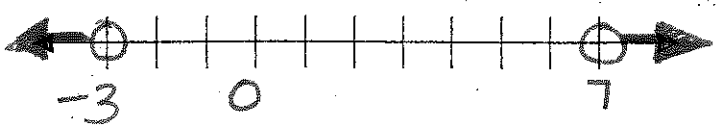
$32 < t < 40$

3.5

OR Notes:

↳ where any part of both graphs touch.

1. $x < -3$ or $x > 7$



2. $-2x + 7 > 3$ or $3x - 4 \geq 5$

$-7 \quad -7 \qquad +4 \quad +4$

$\frac{-2x}{-2} > \frac{-4}{-2} \qquad \frac{3x}{3} \geq \frac{9}{3}$

(FLIP)

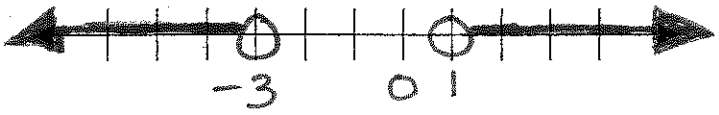
$x < 2$ OR $x \geq 3$

3. $3x + 2 < -7$ or $-4x + 5 < 1$

$-2 \quad -2 \qquad -5 \quad -5$

$\frac{3x}{3} < \frac{-9}{3} \qquad \frac{-4x}{-4} < \frac{-4}{-4}$ (FLIP)

$x < -3$ OR $x > 1$



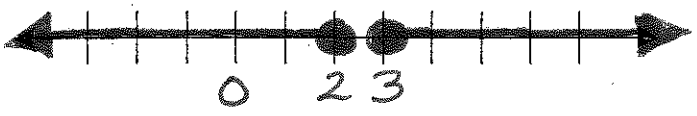
4. $7 - 3c \geq 1$ or $5c + 2 \geq 17$

$-7 \quad -7 \qquad -2 \quad -2$

$\frac{-3c}{-3} \geq \frac{-6}{-3} \qquad \frac{5c}{5} \geq \frac{15}{5}$

(FLIP)

$c \leq 2$ OR $c \geq 3$

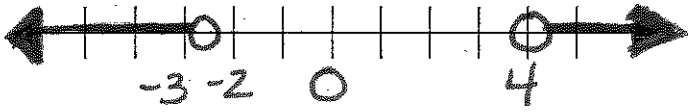


5. $3q - 2 > 10$ or $3q - 2 < -10$

$+2 \quad +2 \qquad +2 \quad +2$

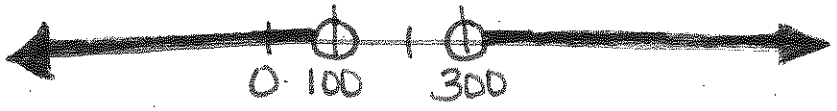
$\frac{3q}{3} > \frac{12}{3} \qquad \frac{3q}{3} < \frac{-8}{3}$

$q > 4$ OR $q < -2\frac{2}{3}$



6. Write an inequality that represents all real numbers b less than 100 or greater than 300. Graph your solution.

$B < 100$ OR $B > 300$



7. Write an inequality that represents all real numbers that are at most -5 or at least 3. Graph your solution.

$x \leq -5$ — $x \geq 3$

8. $3x + 8 < 7$ or $2x - 9 > 1$

$-8 \quad -8 \qquad +9 \quad +9$

$\frac{3x}{3} < \frac{-15}{3} \qquad \frac{2x}{2} > \frac{10}{2}$

$x < 5$ OR $x > 5$