when two simple inequalities are combined into one statement by the AND or OR

Linear Inequalities LI4 / (has 2 restrictions)

Graphing Compound Inequalities

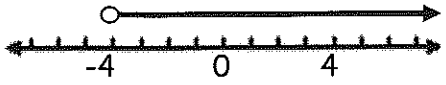
Explore

Name KEY

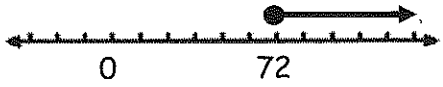
Date _____ Period _____

Johnny graphed the following situations for his algebra class.

A. Mr. Roe asked a student to choose a number greater than negative four.



B. Everyone scored at least 72% on the last exam in Ms. Adam's Health class.



1. Is Johnny's graph for situation A reasonable? Why do you say that?

Yes, he could pick any number greater than -4

2. Is Johnny's graph for situation B reasonable? Why do you say that?

No, not reasonable there is no test score over 100%

3. If the graph for situation A or B is not reasonable, how could the graph be changed to better represent the situation? Describe in words or graph to explain.

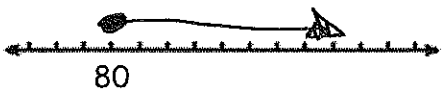
he could score greater than or equal to 72 OR less than or equal to 100

4. Caden is trying out for the wrestling team in a weight class that requires him to weigh greater than or equal to 80 lbs and less than 86 lbs.

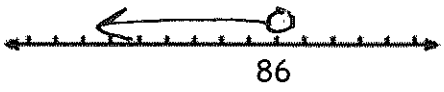
a. Complete the simple inequalities that describe Caden's possible weights and graph.

one restriction (1 arrow)

$w \geq 80$



$w < 86$



b. Create a graph on a single number line to represent Caden's weights and write a compound inequality that combines the two simple inequalities.

$80 \leq w < 86$

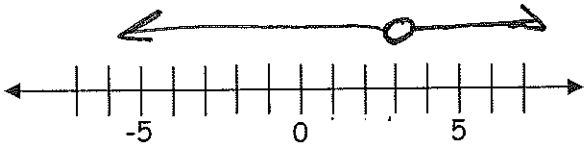
2 restrictions (no arrow)

A statement that includes a combination of two inequalities is called a compound inequality.

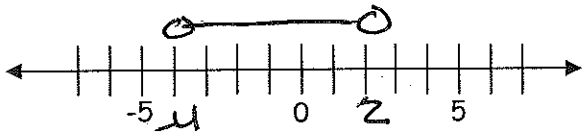
5. The temperature in Yakutsk, a town in Siberia, in the winter is between -40°C and 5°C. Write and graph a compound inequality to represent this situation.

$-40 < t < 5$

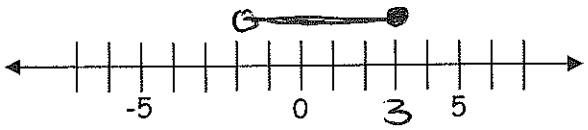
6. a. $n \neq 3$



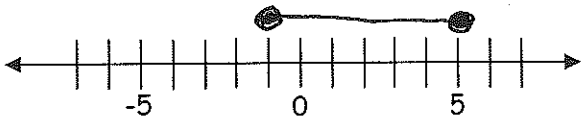
b. $-4 < n < 2$ minimum - maximum



c. $-2 < n \leq 3$

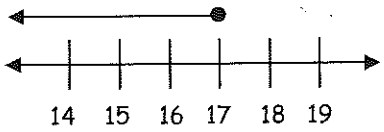


d. $-1 \leq n \leq 5$



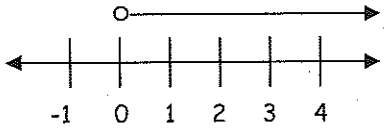
7. Write the inequality represented by the graph.

a.



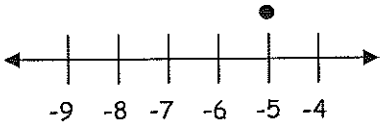
$n \leq 17$

b.



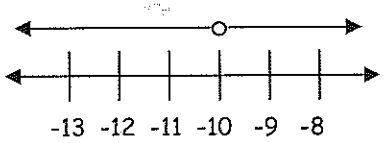
$x > 0$

c.



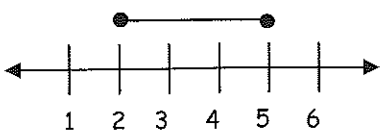
$x = -5$

d.



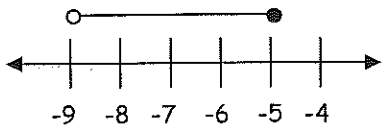
$n \neq -10$

e.



$2 \leq x \leq 5$

f.



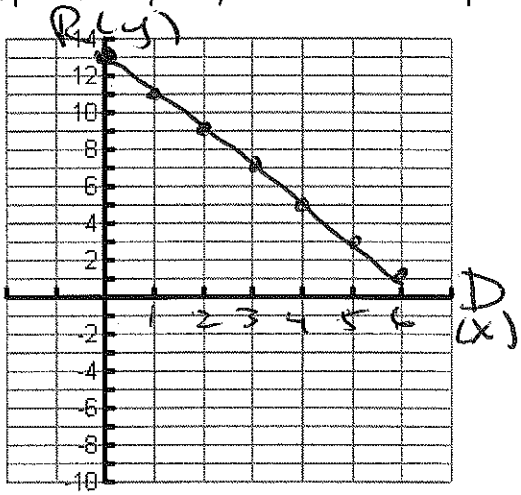
$-9 < n \leq -5$

8. At noon, the temperature was 13°F. For the next six hours, the temperature fell by an average of 2°F an hour.

a. Is this situation discrete or continuous? Explain.

Continuous. There is temperatures in between the whole # temperatures

b. Make a graph showing the change in temperature for six hours. Then write the domain and range using a compound inequality and answer the questions.



Domain: $0 \leq x \leq 6$

What does the domain represent?

Time (hours)

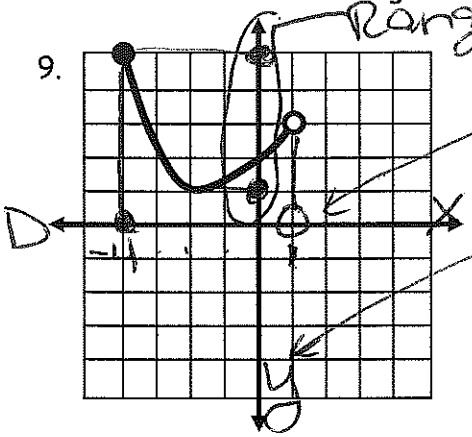
Range: $1 \leq y \leq 13$

What does the range represent?

Temperature

Write the domain and range using a compound inequality.

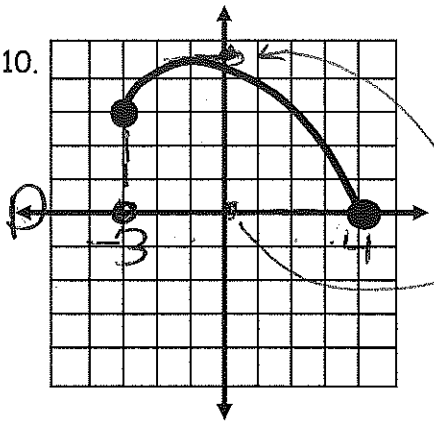
9.



Domain: $-4 \leq x < 1$

Range: $1 \leq y \leq 5$

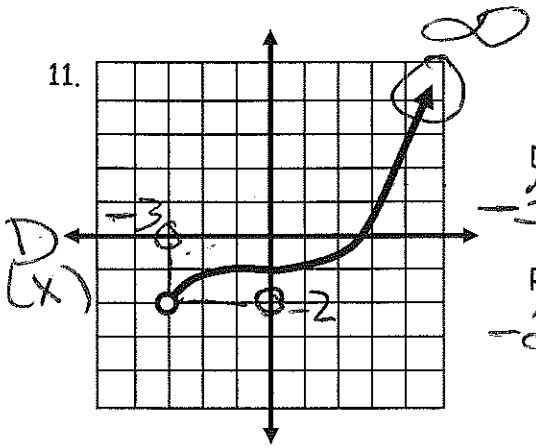
10.



Domain: $-3 \leq x \leq 4$

Range: $0 \leq y \leq 4.5$

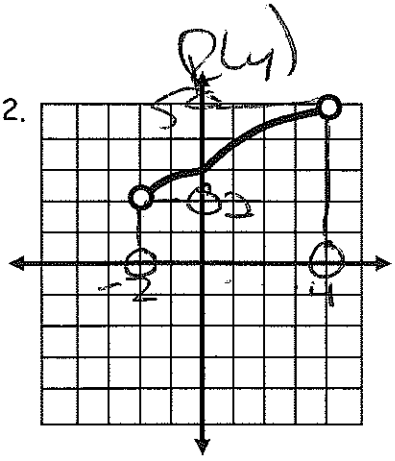
11.



Domain: $-3 < x < \infty$

Range: $-2 < y < \infty$

12.



Domain: $-2 < x < 4$

Range: $2 < y \leq 5$