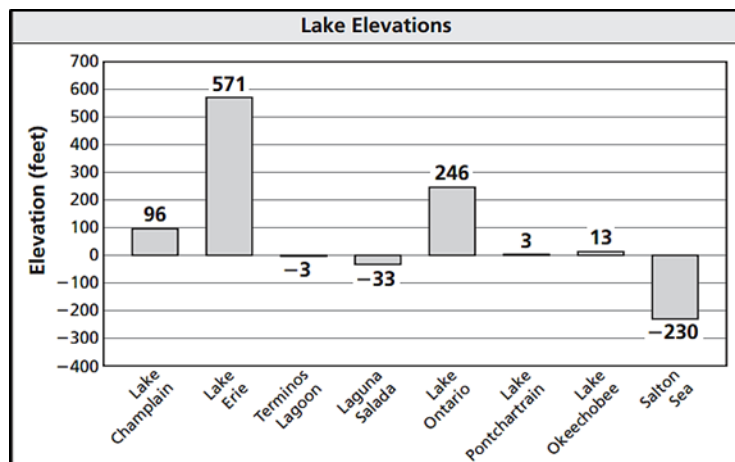


Math in the Summertime
Students Entering Grade 7 in September

6. NS.5 Apply and extend previous understandings of numbers to the system of rational numbers.

Problem #1- Lakes in North America



The bar graph shows the elevation (in feet) of several lakes in North America.

1. Which lake has the highest elevation?
2. Which lake has the lowest elevation?
3. A lake has an elevation of 0 feet. What does this mean?
4. Which lake has the closest elevation to a lake with an elevation of 0 feet?
5. Which lake has a positive elevation closest to sea level?
6. Which lake has a negative elevation closest to sea level?
7. What do you notice about the elevations of the two lakes in question 5 and 6?
8. Which lake has an elevation closest to 20 feet?

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6. NS.6 Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.

Problem #2 - Temperature

The table shows daily high and low temperatures in two cities for a given week.

Bangor, Maine							
Day	M	Tu	W	Th	F	Sa	Su
High temperature (°F)	14	3	1	8	15	0	-2
Low temperature (°F)	-3	-9	-10	-10	-2	-4	-12

Vienna, Austria							
Day	M	Tu	W	Th	F	Sa	Su
High temperature (°C)	8	9	4.5	9	8.5	1	5
Low temperature (°C)	0	-4.5	-12	4.5	-6	-10	-14

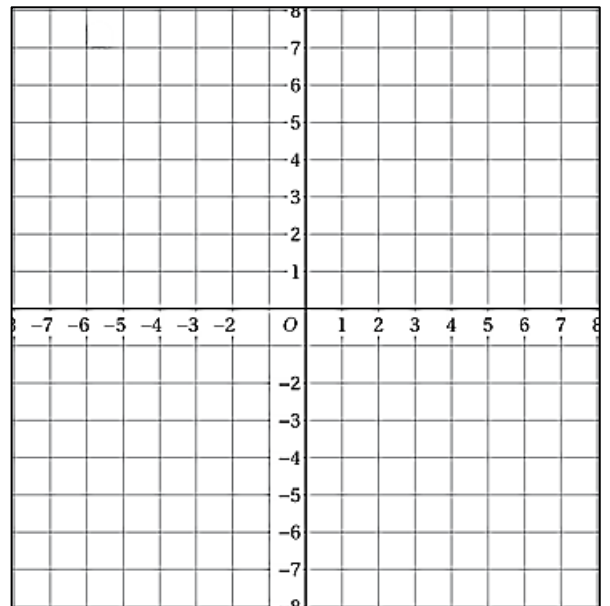
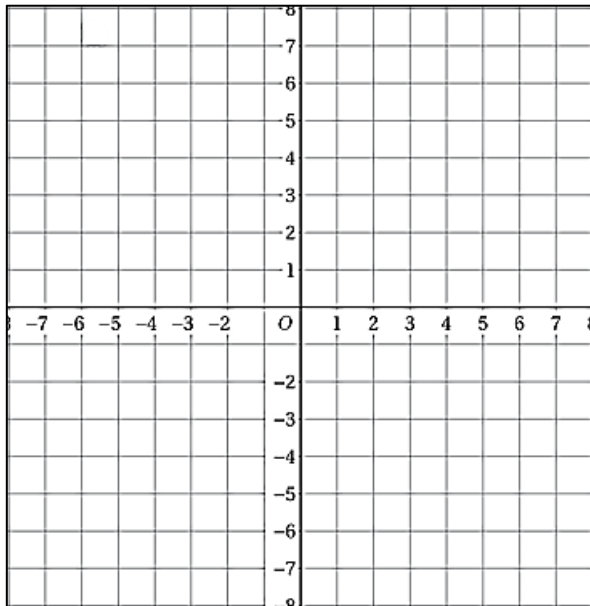
1. Graph the high and low temperatures in Bangor, Maine on a vertical number line.
2. Graph the high and low temperatures in Vienna, Austria on a horizontal number line.

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- In Bangor, were more of the high and low temperatures above or below 0°F ?
- In Vienna, were more of the high and low temperatures above or below 0°C ?
- Use the number lines in Questions 1 and 2 to identify any days in which the temperatures were *opposites* in each city.
- For **each** city, plot the data in a coordinate plane. Let x be the daily high temperature and let y be the daily low temperature.

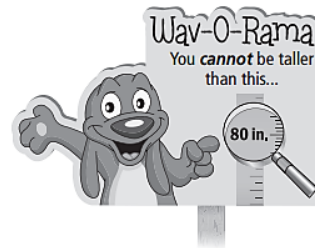
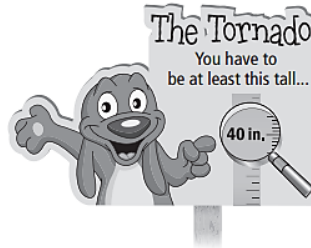
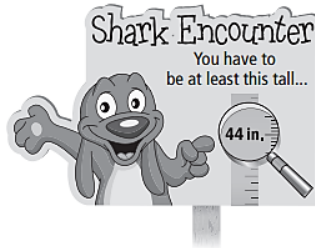
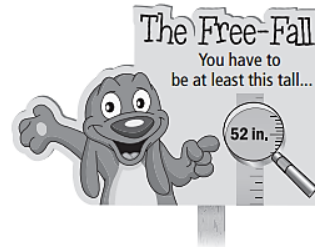
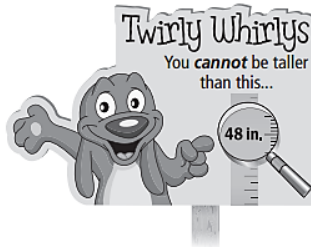
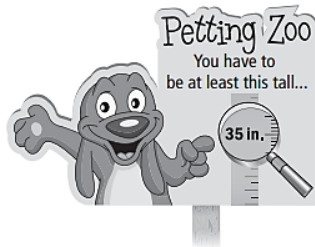


- Find the two ordered pairs for Vienna whose coordinates differ only by signs. What did you notice about the locations of the points in relation to the axes?
- In which quadrant are there no points plotted for either city? **Explain why this occurs.**

6.EE.8 Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities on number line diagrams.

Problem #3 - County Fair

You and your cousins are going to a county fair. The signs below show the height restriction for several attractions.



1. Write an inequality that represents the height restriction for **each** attraction.
2. Graph **each** inequality from question 1 on a number line.
3. How many solutions are in the solution set for each inequality in question 1?
4. Your cousin is 3.5 feet tall. Is your cousin tall enough for all the attractions?
5. Is there a height that is appropriate for **all** attractions? Explain your reasoning.

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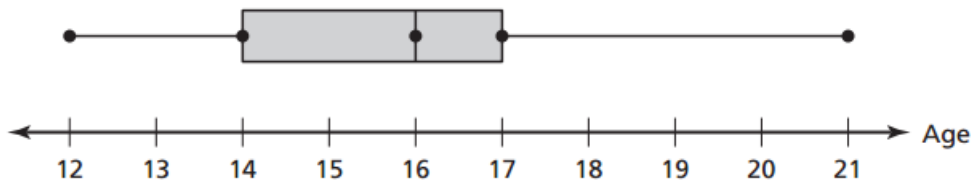
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6. SP.4 Summarize and describe distributions. Display numerical data in plots on a number line, including dot plots, histograms, and box plots. MA.4.a. Read and interpret circle graphs.

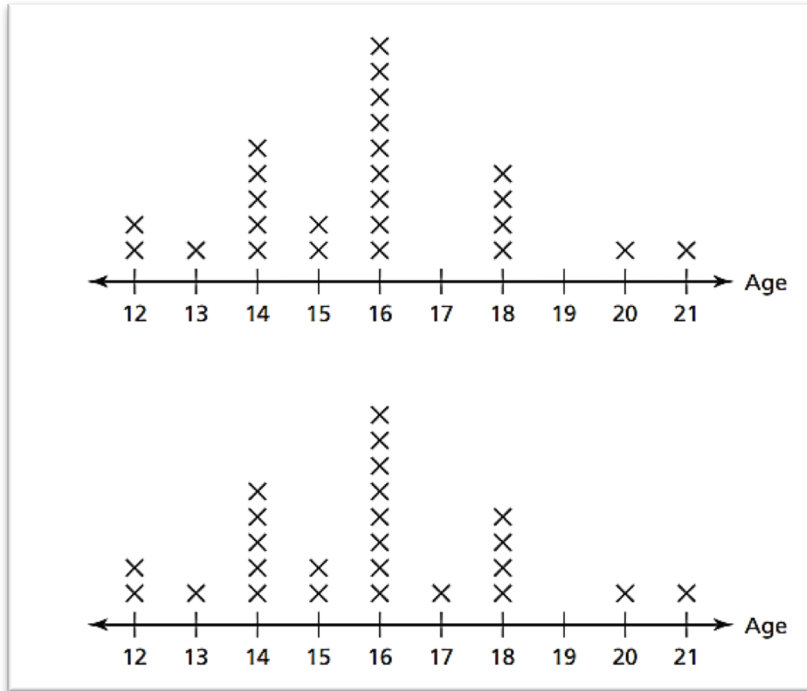
Problem #4 - Game Show

Twenty-five people are surveyed for a game show and asked the question, "At what age did you get your first job?" The responses are shown in the box-and-whisker plot.



1. What portion of the responses represents an age of at least 17 years old?
2. Can you determine the range of the data? If so, find it.
3. Can you determine which response is more frequent? If so, find it.

4. One of the line plots below represents the same set of data as the box-and-whisker plot.



- a. Which line plot represents the data?
- b. What is the mean, median mode of the data you chose from question a.

Mean:	Median:	Mode:
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c. Contestants answer the question and receive a point for each person in the survey game that gave the same answer. What answer is worth the most points? **Explain your reasoning.**

6.EE.5 Reason about and solve one-variable equations and inequalities. Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.

Problem #5 - Bees

There are about 9783 worker bees in a beehive. To estimate the number of bees x you will see leaving the beehive in one minute, you can use the equation

$$217.4x = 9783.$$

1. Complete the table.



Value of x	$217.4x = 9783$	Are both sides equal?
10	$217.4(10) \stackrel{?}{=} 9783$ $2174 \neq 9783$	No
20		
30		
40		
50		



2. Using the results from your table, do you think the solution of the equation is greater than or less than 50? **Why?**

3. Which x -value do you think is the solution to the equation?

4. How did you determine your answer? Substitute your value into the equation. Is it the solution?

5. What is the solution to the equation $217.4x = 9783$?