Temperature Connection

In this activity, you will use a vertical number line to analyze temperatures.

HABITS OF MIND

- Reason abstractly and quantitatively.
- Construct viable arguments and critique the reasoning of others.

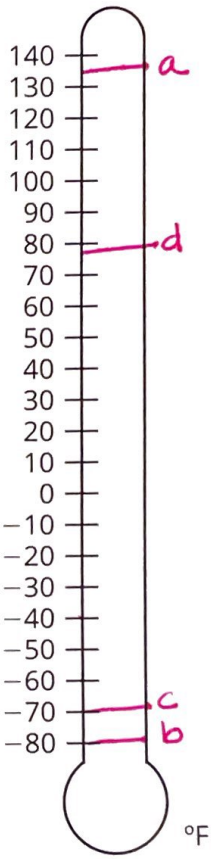
1 Record each temperature on the thermometer shown.

(a) The highest temperature on record in the United States is 134°F. It occurred in 1913 in Death Valley, California.

(b) The lowest temperature on record is −80°F. It occurred at Prospect Creek Camp, Alaska.

(c) The lowest temperature recorded in the contiguous 48 states is −70°F. It occurred in Rogers Pass, Montana.

(d) The highest winter average temperature in the United States is 78°F, which occurs in Honolulu, Hawaii.



2 Which is colder, the lowest temperature recorded in Alaska or the lowest temperature recorded in Montana? **How do you know?**

Alaska has the lowest recorded

-80 is below -70 on the number line

3 Yadi and Eric were comparing 25 degrees to −27 degrees.

- Yadi wrote $25 < -27$ and justified her comparison by stating that the further a number is from zero, the greater the number.
- Eric wrote $25 > -27$ and justified his comparison by stating that the greater temperature is above the lower temperature on a thermometer.

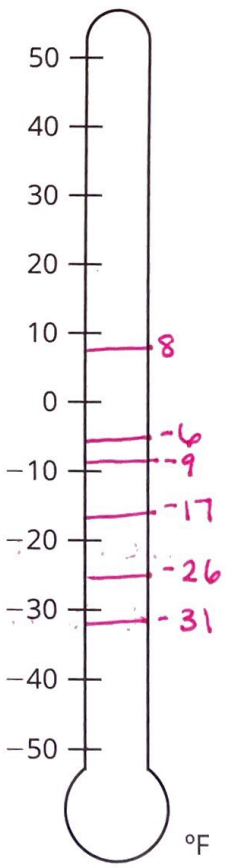
Who is correct? **Explain your choice.**

4 Plot each set of temperatures on the thermometer. Then insert a > or < symbol to make each number sentence true.

(a) −26°F ___>___ −31°F

(b) −6°F ___>___ −17°F

(c) −9°F ___<___ 8°F



5 Order the temperatures from least to greatest.

25°F −33°F 0°F 105°F −40°F −5°F 67°F

−40°F, −33°F, −5°F, 0°F, 25°F, 67°F, 105°F

Comparing and Ordering Rational Numbers

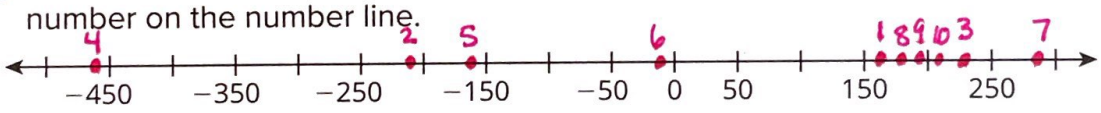
HABITS OF MIND
- Reason abstractly and quantitatively.
- Construct viable arguments and critique the reasoning of others.

Helen and Grace started a company called Top Notch. The table shown represents their first 10 weeks of operation. A number in parentheses represents a loss for the week. Amounts that are not in parentheses represent a profit for the week.

Week	1	2	3	4	5	6	7	8	9	10
Profit/ Loss	$159	($201)	$231	($456)	($156)	($12)	$281	$175	$192	$213
+/− Number	159	-201	231	-456	-156	-12	281	175	192	213

1 Use the table and number line to answer each question.

(a) Write each profit or loss as a positive or negative number and then plot the number on the number line.



(b) What does 0 represent in this situation?

No profit or loss (break even)

(c) In which week did the company have:

- The greatest profit? Week 7
- The greatest loss? Week 4

2 For each pair of weeks, write an inequality statement to compare the positive and negative numbers. **Interpret the statement in context.**

(a) Week 1 and Week 5

159 > -156

They had a profit at the end of week 1 but a loss at the end of week 5

(b) Week 4 and Week 6

-456 < -12

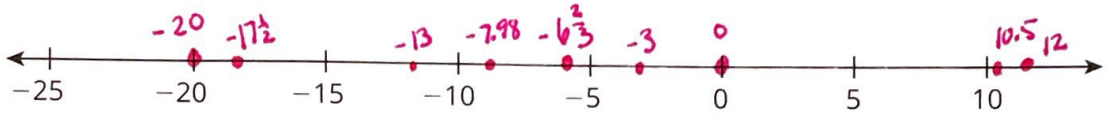
Each week had a loss but week 4 was a greater loss than week 6

You can compare different types of numbers by plotting the numbers on a number line.

3 Use the number line to answer each question.

(a) Plot each value on the number line.

$-6\frac{2}{3}$ -20 0 10.5 $-17\frac{1}{2}$ -7.98 12 -3 -13



(b) Which of the numbers has the least value? **How do you know?**

-20

It is the farthest left on the number line

(c) Which of the numbers has the greatest value? **How do you know?**

12

It is the farthest right on the number line

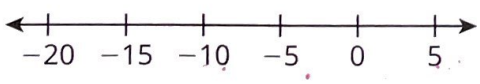
ASK YOURSELF...
How do you know which rational number is greater by looking at the number line?

(d) Order the numbers from least to greatest.

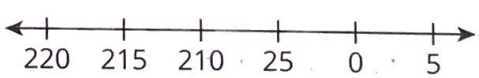
$-20, -17\frac{1}{2}, -13, -7.98, -6\frac{2}{3}, -3, 0, 10.5, 12$

4 Plot each rational number on the number line. Then insert a >, <, or = symbol to make each number sentence true.

(a) -10.25 _____ $-15\frac{2}{3}$



(b) -17 _____ -17



(c) $5\frac{2}{3}$ _____ -8.28