Unit 7 Lesson 1: Positive and Negative Numbers

1 Notice and Wonder: Memphis and Bangor (Warm up)

Student Task Statement

Memphis, TN
Saturday 5:00 PM
Light Rain Showers

37°F

3°C

Bangor, ME
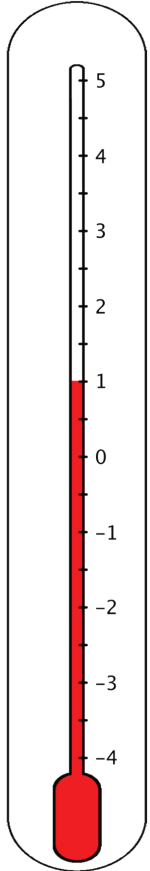Saturday 6:00 PM
Partly Cloudy

1°F

-17°C

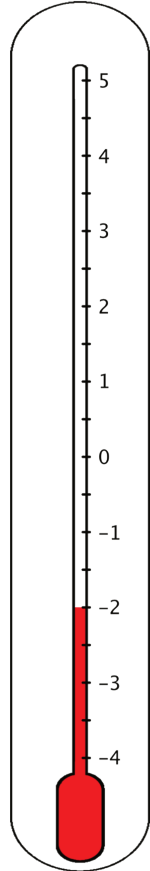What do you notice? What do you wonder?

2 What's the Temperature?

Student Task Statement

1. Here are five thermometers. The first four thermometers show temperatures in Celsius. Write the temperatures in the blanks.
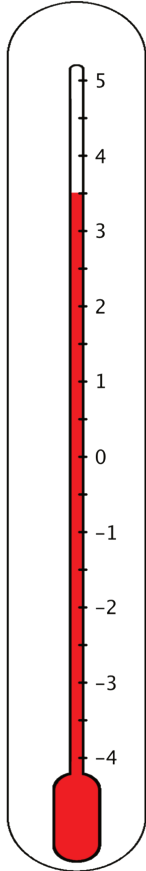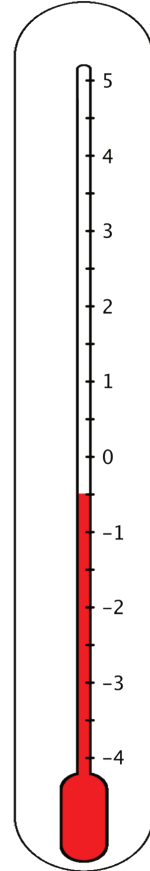
a. _____ b. _____ c. _____ d. _____ e.
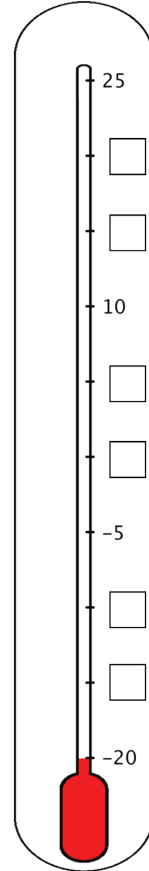
The last thermometer is missing some numbers. Write them in the boxes.

2. Elena says that the thermometer shown here reads -2.5°C because the line of the liquid is above -2°C. Jada says that it is -1.5°C. Do you agree with either one of them? Explain your reasoning.
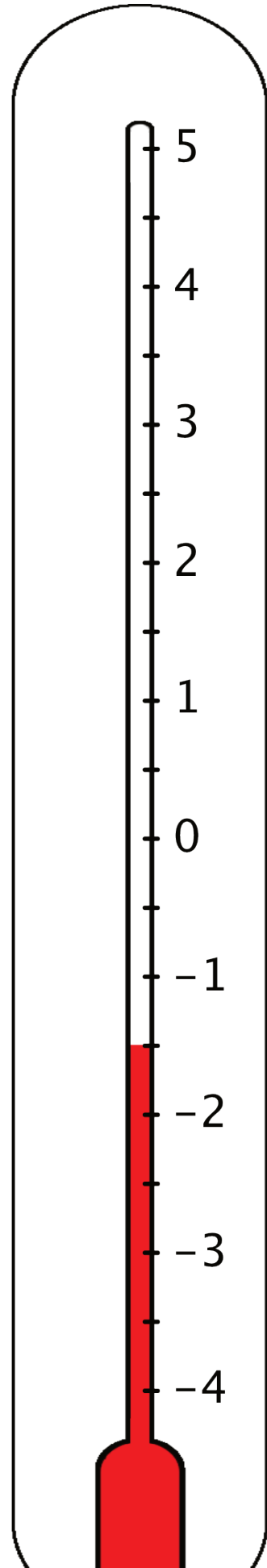
3. One morning, the temperature in Phoenix, Arizona, was $8°C$ and the temperature in Portland, Maine, was $12°C$ cooler. What was the temperature in Portland?

3 Seagulls Soar, Sharks Swim

Student Task Statement

Here is a picture of some sea animals. The number line on the left shows the vertical position of each animal above or below sea level, in meters.
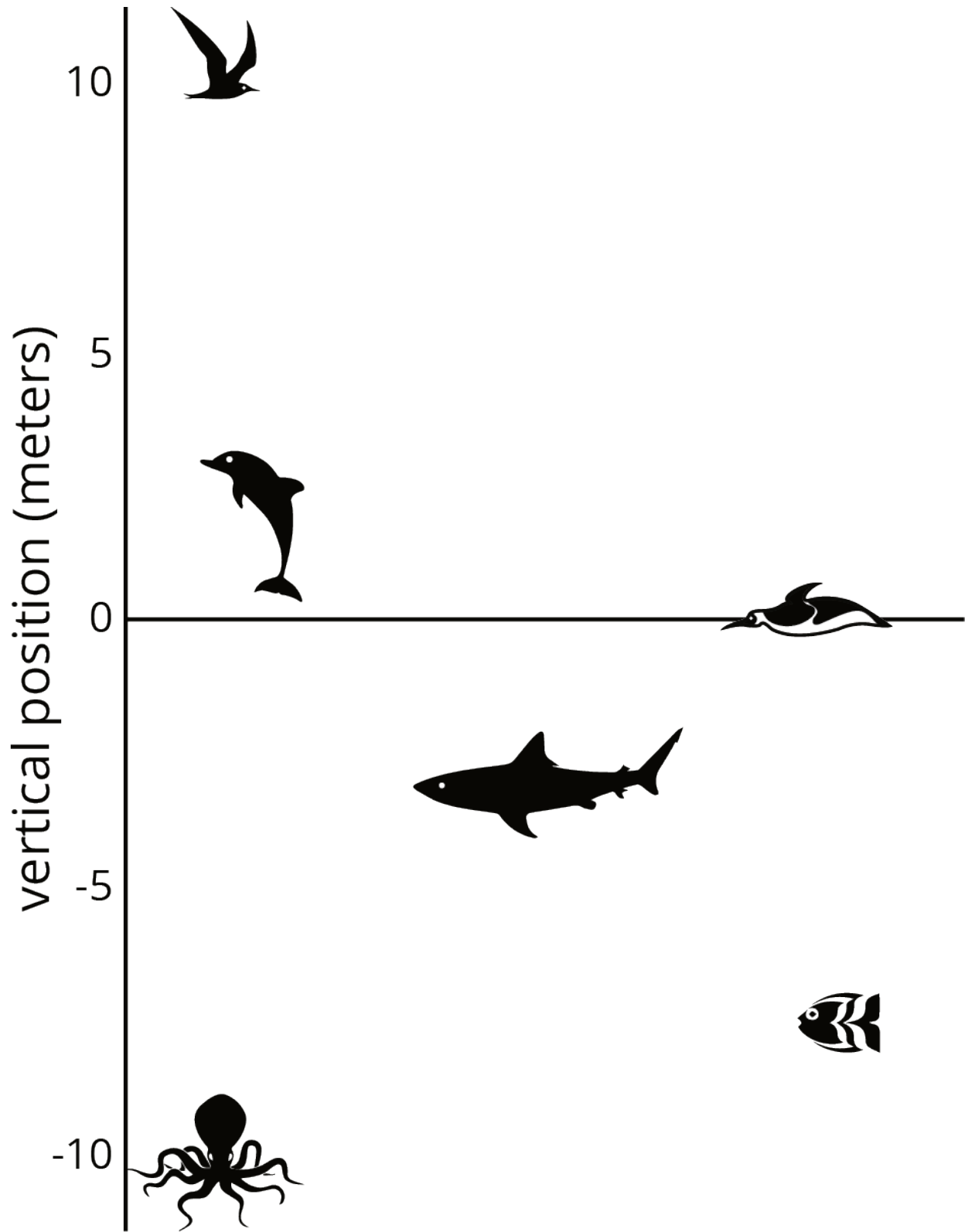
1. How far above or below sea level is each animal? Measure to their eye level.

2. A mobula ray is 3 meters above the surface of the ocean. How does its vertical position
   compare to the height or depth of:

   The jumping dolphin?   The flying seagull?   The octopus?

3. An albatross is 5 meters above the surface of the ocean. How does its vertical position
   compare to the height or depth of:

   The jumping dolphin?   The flying seagull?   The octopus?

4. A clownfish is 2 meters below the surface of the ocean. How does its vertical position compare
   to the height or depth of:

   The jumping dolphin?   The flying seagull?   The octopus?

5. The vertical distance of a new dolphin from the dolphin in the picture is 3 meters. What is its
   distance from the surface of the ocean?

4 High Places, Low Places

Student Task Statement

1. Here is a table that shows elevations of various cities.

city	elevation (feet)
Harrisburg, PA	320
Bethell, IN	1,211
Denver, CO	5,280
Coachella, CA	-22
Death Valley, CA	-282
New York City, NY	33
Miami, FL	0

a. On the list of cities, which city has the second highest elevation?

b. How would you describe the elevation of Coachella, CA in relation to sea level?

c. How would you describe the elevation of Death Valley, CA in relation to sea level?

d. If you are standing on a beach right next to the ocean, what is your elevation?

e. How would you describe the elevation of Miami, FL?

f. A city has a higher elevation than Coachella, CA. Select all numbers that could represent the city's elevation. Be prepared to explain your reasoning.

   ◼ -11 feet

   ◼ -35 feet

   ◼ 4 feet

   ◼ -8 feet

   ◼ 0 feet

2. Here are two tables that show the elevations of highest points on land and lowest points in the ocean. Distances are measured from sea level.

mountain	continent	elevation (meters)
Everest	Asia	8,848
Kilimanjaro	Africa	5,895
Denali	North America	6,168
Pikchu Pikchu	South America	5,664

trench	ocean	elevation (meters)
Mariana Trench	Pacific	-11,033
Puerto Rico Trench	Atlantic	-8,600
Tonga Trench	Pacific	-10,882
Sunda Trench	Indian	-7,725

a. Which point in the ocean is the lowest in the world? What is its elevation?

b. Which mountain is the highest in the world? What is its elevation?

c. If you plot the elevations of the mountains and trenches on a vertical number line, what would 0 represent? What would points above 0 represent? What about points below 0?

d. Which is farther from sea level: the deepest point in the ocean, or the top of the highest mountain in the world? Explain.

Images for Activity Synthesis

-50 -40 -30 -20 -10 0 10 20 30 40 50