

Shundria was doing her math homework. The homework contained problems about sea level but Shundria was having trouble understanding the concept. She was there with Tangy Mae. Tangy Mae told Shundria to look at the pictures they took while they were at the aquarium. Tangy Mae labeled the pictures to represent sea level.

This was what Shundria saw:

**A Dolphin Below
Sea Level**



**Dolphins At Sea
Level**



**Dolphins Above
Sea Level**



With a partner discuss what you see. Explain the relationship of the dolphins to sea level.

1. Looking at the picture, if you were to draw a vertical number line to model sea level, which picture do you think represents zero? Justify your answer.
2. If I were to draw a vertical number line, which picture would represent above zero? Justify your answer.
3. On the same vertical number line, which picture do you think would be below zero?

4. What does zero represent in this situation?
5. In this example, which numbers correspond to above sea level?
6. In this example, which numbers correspond to below sea level?
7. On a number line, what does it mean to be at sea level?

8. Use the following information to answer the questions.
 - The diver is 30 feet below sea level.
 - The sailor is at sea level.
 - The hiker is 22 miles (10, 560 feet) above sea level.

Write an integer to represent each situation.

9. Use an appropriate scale to graph each of the following situations on the number line to the left. Also, write an integer to represent both situations.

a. A hiker is 15 feet above sea level.

b. A diver is 20 feet below sea level



Teacher Notes

Answers will vary.

1. Looking at the picture, if you were to draw a vertical number line to model elevation, which person's elevation do you think would be at zero? Justify your answer.

Sea level should represent an elevation of zero. So, the dolphins on the water would be at zero because they are on the surface of the water, which is neither above nor below the surface. On a number line, zero is the point or number separating positive and negative numbers.

2. If I were to draw a vertical number line, which person's elevation would be represented above zero?

The picture of the dolphins jumping in the air would be above zero because they are above the water. On a vertical number line, this is represented by a positive value above zero because she is above the surface.

3. On the same vertical number line, which person's elevation do you think would be below zero?

The dolphin swimming below the water would be below zero because they are swimming below the surface of the water. On a vertical number line, this is represented by a negative value below zero because he is below the surface.

4. What does zero represent in this situation?

Zero represents the top of the water (the water's surface).

5. In this example, which numbers correspond to elevations above sea level?

Above sea level means to be above zero, which are positive numbers.

6. In this example, which numbers correspond to elevations below sea level?

Below sea level means to be below zero, which are negative numbers.

7. On a number line, what does it mean to be at sea level?

To be at zero.

8. Use the following information to answer the questions.

- The diver is 30 feet below sea level.
- The sailor is at sea level.
- The hiker is 22 miles (10,560 feet) above sea level.

Write an integer to represent each situation.

Diver : -30 feet

Sailor: 0 feet

Hiker: 22 miles or $10,560$ feet

9. Use an appropriate scale to graph each of the following situations on the number line to the left. Also, write an integer to represent both situations.

a. A hiker is 15 feet above sea level. 15

b. A diver is 20 feet below sea level -20