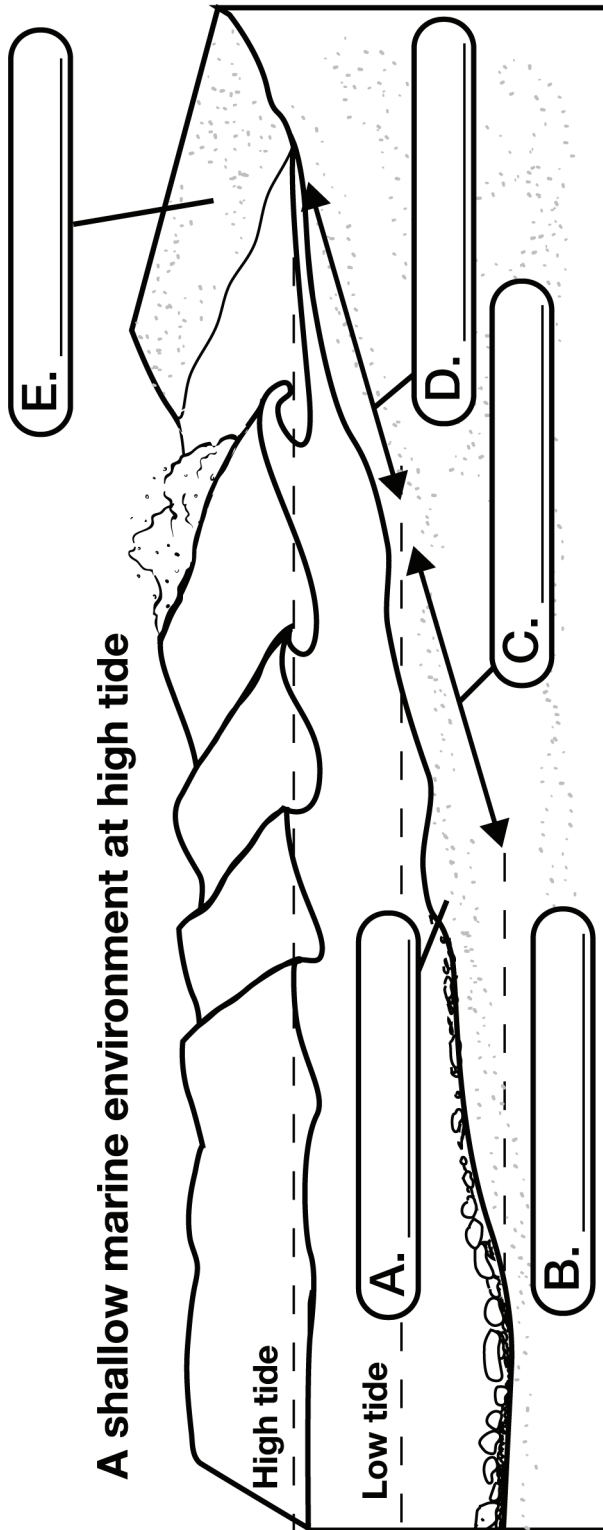


Name: _____

Date: _____

The Shallow Marine Environment



Speed

READ


If you're riding your bike with your father for an hour, and the two of you cover 8 miles total, it might be obvious to you that you had been riding at a speed of 8 miles per hour (mph).

In this situation it's pretty easy to determine your speed (in miles per hour). In other situations, the solution may not be quite as obvious (even though the method is really the same). In those situations, you may find it useful to use this formula:

$$\text{speed} = \frac{\text{distance}}{\text{time}} \quad \text{OR} \quad s = \frac{d}{t}$$

To calculate speed, you need to divide the distance traveled by the time it took to cover that distance. Typically, we will be working with distances measured in SI units. Common SI units for speed include *kilometers per second (km/s)*, *meters per second (m/s)*, *centimeters per second (cm/s)*, and *kilometers per hour (km/hr)*.

EXAMPLE 

It took Beverly 3 seconds to walk 70 centimeters. How fast was she walking?

Using the formula: $\text{speed} = \frac{\text{distance}}{\text{time}}$, divide the distance (70 cm) by the time (3 s).

Doing this arithmetic tells us that Beverly's speed is $23.\bar{3}$ cm/s (or $23.\bar{3}$ centimeters per second). In other words, Beverly was walking extremely slowly.

PRACTICE 

1. A small ball is rolling on a flat table that is 30 centimeters wide. It takes the ball 12 seconds to complete its trip across the width of the table. How fast is the ball rolling?
2. Paul throws a paper wad to Alex who is sitting exactly 3.2 meters away. The paper wad was only in the air for 1.2 seconds. How fast was it traveling?
3. The distance from home plate to the pitcher's mound in professional baseball is about 18.44 meters. If it takes a pitched ball about 0.4 seconds to travel from the mound to home plate, how fast was the ball traveling?
4. Serina is a ballet dancer. During her dance, she dances in a "Z" pattern on the stage. It takes her about 30 seconds to complete the "Z." The top and bottom of the "Z" are equal distances of about 3 meters each. The middle part of the "Z" is about 5 meters long. How quickly (in meters per second) is she traveling during this part of the dance?
5. It takes an unmanned drone 9.5 years to travel 4,340,000,000 kilometers to Pluto. How fast is the drone traveling?



6. Jessie walks about two and one half kilometers to get to her friend Emma's house. It takes her about $\frac{1}{3}$ hour (20 minutes) to get there. She loses track of time and has to run in order to make it back by the time her Dad asked her to be home. She makes it home in just $\frac{1}{6}$ hour (10 minutes). Answer each in kilometers per hour:
 - a. How fast was Jessie traveling on her way to Emma's house?
 - b. How fast was she running on her way home?
 - c. What was her average speed for the entire trip?
7. Heather ran steadily at 2.5 meters/second for about 10 minutes (600 seconds). How far did she run?
8. Nate threw a football to his friend Tom who was 15 meters away. The ball was traveling slowly at just 5 meters per second. How long did it take the ball to get to Tom?