

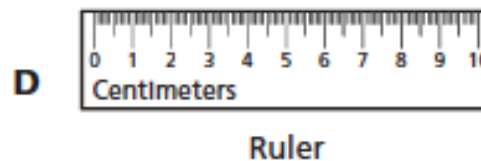
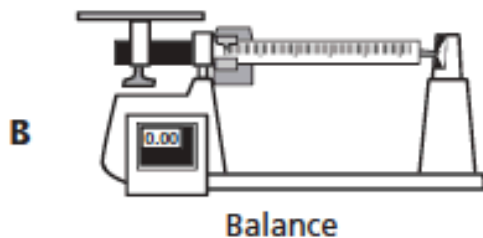
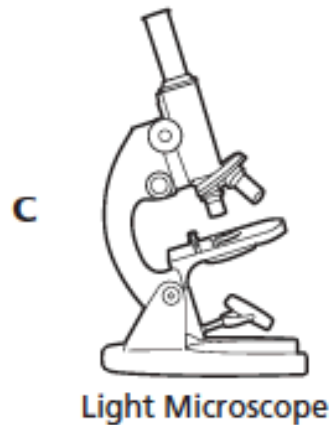
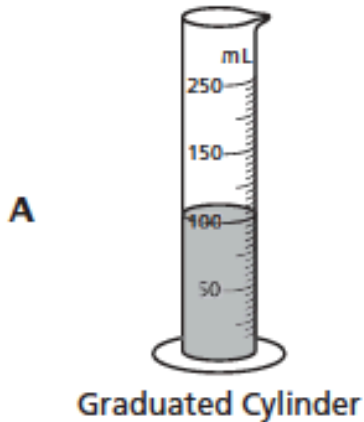
August 11, 2014

1

Students were investigating some properties of rocks. They wanted to compare the volumes of the rocks.



Which tool should the students use to accurately measure the volume of each rock?



You must explain why your answer is correct.

Please write the page number in your book that supports your explanation.

Use the index of your book to help you.

Lab Safety Quiz

Turn into your period's tray.

Sit quietly when you are done. Read an AR book.

Chapter 13

Lesson 1

Day 1

Distinguish between speed and velocity.

Identify and explain how Newton's laws of motion relate to the movement of objects.

What You Will Learn Today

- Explain what motion is.
- Contrast distance and displacement.
- Explain what relative motion is.

What Mastery Looks Like

- You will be able to answer the following questions:
 - A bus goes 500km east from town A to town B in the morning and comes back halfway in the evening travelling west. What is the distance and displacement of the bus?

A high-speed train traveled at a rate of 120 kilometers per hour for 10 hours

$$\text{Distance}(d) = \text{Rate}(r) \times \text{Time}(t)$$

What distance did the train travel?

- A** 12 kilometers
- B** 20 kilometers
- C** 110 kilometers
- D** 1,200 kilometers

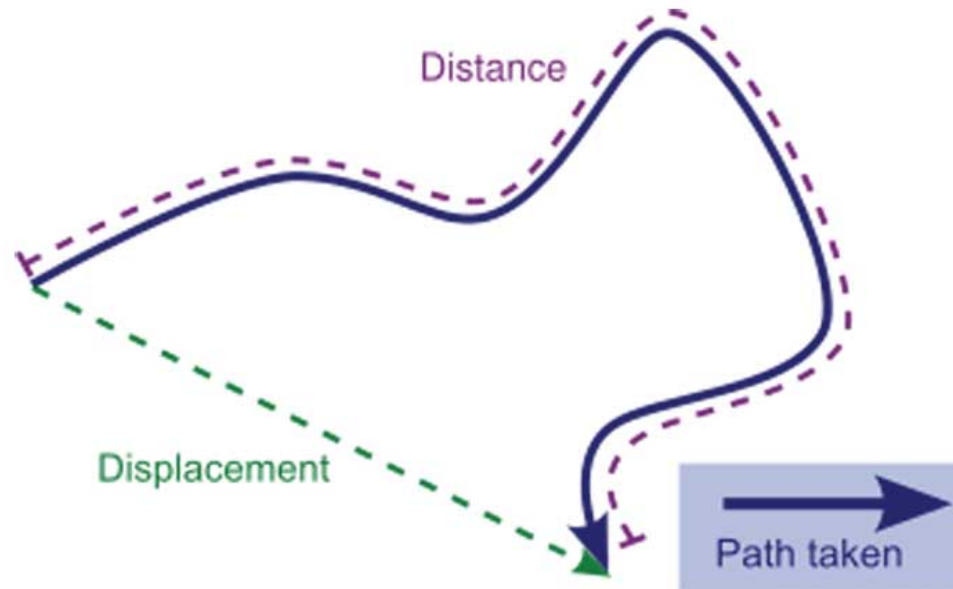
What is motion?

- On your white board, write your definition of ***motion***.
- Share with a neighbor your answer.
- **Actual Definition: Motion is the act or process of moving or being moved.**
 - **Examples:**
- https://www.youtube.com/watch?v=xKmhS4qLj_s

Distance vs. Displacement

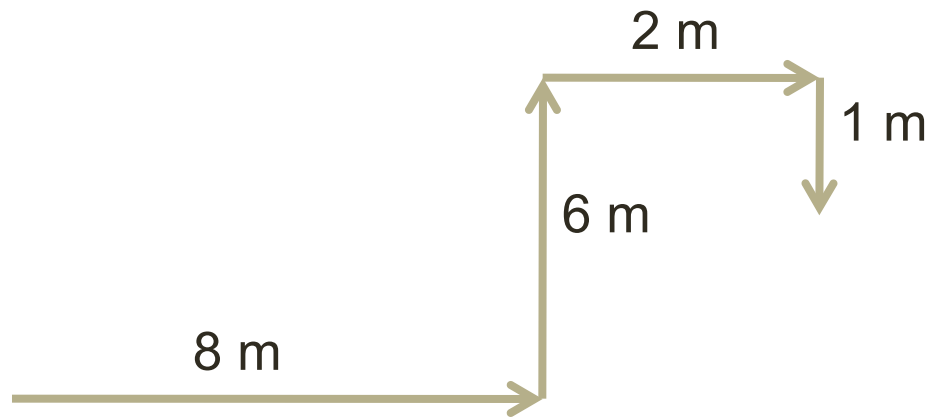
- There are 2 ways to describe how something changes position.
 - Describe the entire path the object travels.
 - Give only the starting and stopping points.
- Distance is the total amount traveled.
- Displacement is the distance and direction between starting and ending points.

Distance vs. Displacement



<https://www.youtube.com/watch?v=V8hJhTE3bUk>

What is the distance traveled?

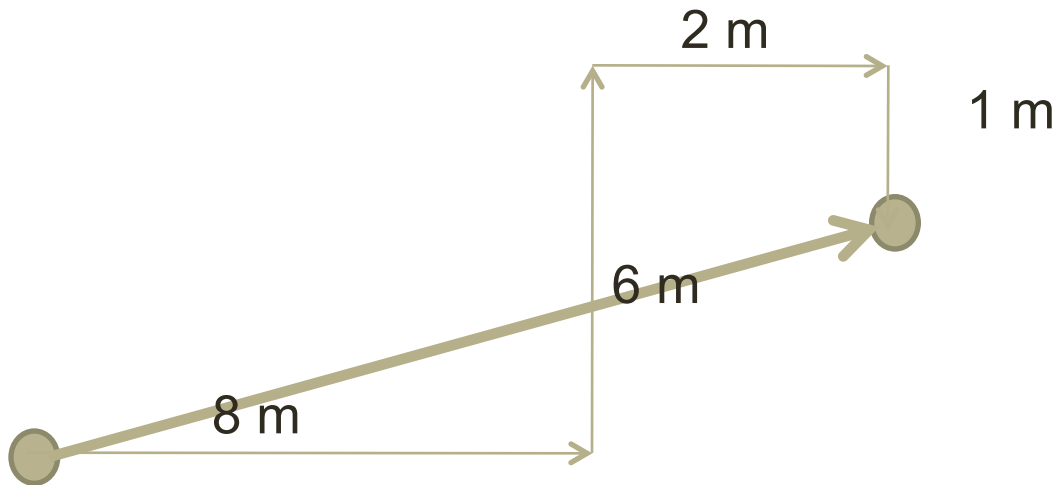


$$d = 8 \text{ m} + 6 \text{ m} + 2 \text{ m} + 1 \text{ m}$$

$$d = 17 \text{ m}$$

What is displacement?

-

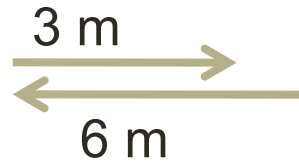


Distance vs. Displacement Examples



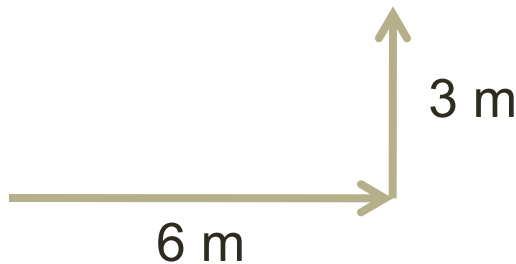
Distance= 9 m

Displacement = 9 m right



Distance= 9 m

Displacement = 3 m left



Distance= 9 m Displacement = ?

$$a^2 + b^2 = c^2$$

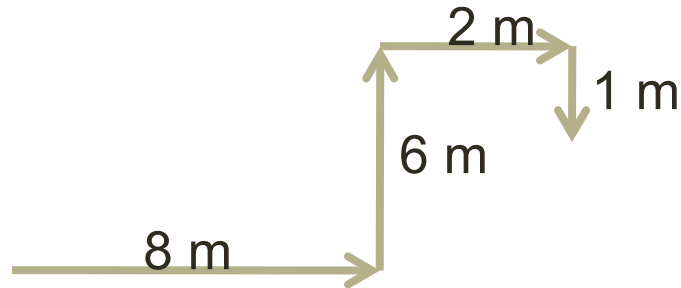
$$(6m)^2 + (3m)^2 = c^2$$

$$c = 6.71m$$

northeast

Distance vs. Displacement

- To determine displacement draw a diagram of the path taken
 - Example: 8 m east, then 6m north, then 2 m east, then 1 m south



- Simplify the diagram to a right triangle



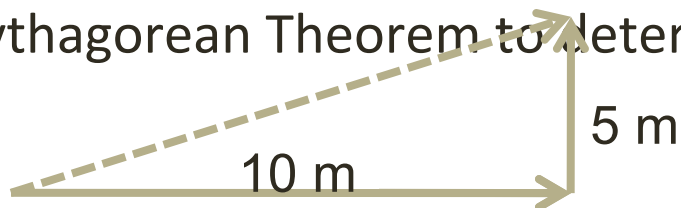
$$a^2 + b^2 = c^2$$

$$(10m)^2 + (5m)^2 = c^2$$

$$c = 11.2m$$

northeast

- Use Pythagorean Theorem to determine the displacement



Relative Motion

- Something that is in motion changes its position. The position of an object is described relative to another object which is not moving.
- https://www.youtube.com/watch?v=DXkmc2p_Zio
- What did the ball appear to do?
- If the vehicle had not been moving, what would have happened?
- Why did the ball's action occur?

Now, you try!

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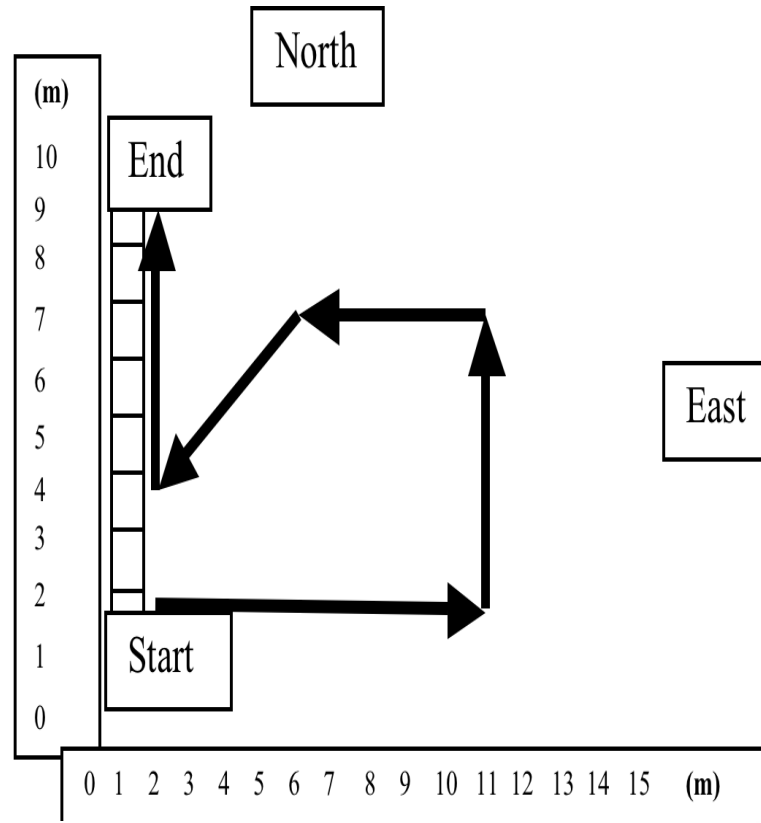
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Exit Slip

Write the distance traveled and displacement.



*Don't forget! Vocabulary cards are due Wednesday. Quiz is Friday!