

Distance vs Displacement

Distance:

Displacement:

Math Example #1: Distance & Displacement

A lion spots a baby zebra and sprints to the right. After the lion ran 45 meters, he gets sad about eating a zebra and decides to head back moving 20 meters to the left.

- A. What distance did the lion travel?

- B. What displacement did the lion travel?



Conceptual Example #5: Distance & Displacement

The Odometer in your car, does it track the distance your car has traveled or does it track the displacement of your car? Explain.



Math Example #2: Distance & Displacement

Jim travels 60 meters East to go to Cindy's house. However, Cindy is not home so he decides to head 40 meters West to hang out with Harry.

- A. What distance did Jim travel?
- B. What is Jim's displacement?



Math Example #3: Distance & Displacement

Cindy notices Jim coming to her house and decides to run out the door 150 meters to the East. Afterward, Cindy goes to Harry's house which is 40 meters to the west of Cindy's house.

- A. What distance did Cindy travel?
- B. What is Cindy's displacement?



Math Example #4: Distance & Displacement

Jim's mom tells Jim to go buy some eggs at the grocery. On his way Jim sees and walks up to a RED PENGUIN 50 meters to the right of the grocery store. He's so excited he forgets about the eggs and runs to Cindy's house to tell her about this. Then Jim gets a call from his mom asking about the eggs. He rushes to the grocery store before it closes, but as soon as he gets there he passes out.

- A. What is Jim's displacement?
- B. What is x ?
- C. What is the total distance Jim traveled?
- D. How far does Cindy live from Jim?



Conceptual Example #6: Distance and Displacement

- A. Can you drive your car in such a way that the distance it covers is greater than the magnitude of its displacement?
- B. Can you drive your car in such a way that the distance it covers is equal to the magnitude of its displacement?
- C. Can you drive your car in such a way that the distance it covers is less than the magnitude of its displacement?

If your answer is yes, give an example for each case. If your answer is no, explain why for each case.

What is Time?
