Science 10: Average Speed and Average Velocity

22.1m 11.7m 0m 4m 9.2m

[W] A D B C [E]

1. Write the position vectors for A, B, C and D.
2. What is the displacement from B to D?
3. What is the displacement from B to C?
4. A hamster, named Cornelius, walks from A to B in 2 minutes, then immediately back to D in an additional minute.
5. What is the distance for the entire trip?
6. What is the displacement for the entire trip?
7. What is the time for the entire trip?
8. What is the average speed for the entire trip?
9. What is the average velocity for the entire trip?
10. What is the average speed for A to B?
11. What is the average velocity for A to B?
12. What is the average speed for B to D?
13. What is the average velocity for B to D?
14. Sketch a vs. t graph for Cornelius.
15. A salamander, named Sally Mander, walks from C to D in 40 seconds, then immediately back to C in an additional minute.
16. What is the distance for the entire trip?
17. What is the displacement for the entire trip?
18. What is the time for the entire trip?
19. What is the average speed for the entire trip?
20. What is the average velocity for the entire trip?
21. What is the average speed for C to D?
22. What is the average velocity for C to D?
23. What is the average speed for D to C?
24. What is the average velocity for D to C?
25. Sketch a vs. t graph for Sally Mander.
26. What is the slope of the line at 20s?
27. What is the slope of the line at 60s?
28. A penguin waddles 6.0m to the left in 4.0s.

A. What is the average speed?

B. What is the average velocity?

1. A snake slithers 12m south in 3.0s.

A. What is the average speed?

B. What is the average velocity?

1. A fish swims 240m north in 30s.

A. What is the average speed?

B. What is the average velocity?

1. A bull charges 24m right in 4.0s.

A. What is the average speed?

B. What is the average velocity?

1. A jogger jogs 2.0km west in 12 minutes.

A. What is the average speed (in meters per second)?

B. What is the average velocity (in meters per second)?

1. A bird flies 28km east in 2.0h.

A. What is the average speed in km/h?

B. What is the average speed in m/s?

C. What is the average velocity in km/h?

D. What is the average velocity in m/s.

E. At one point the bird was flying at 34km/h east. Explain how this is possible, considering the answer to 11C.

1. How much time does it take a crab to scuttle 14m left with an average velocity of 3.5m/s left?
2. A cowboy moseys along 120m east, before a-changin’ his mind and moseyin’ on back 30m west. All this moseyin’ takes the cowboy 5.0 minutes.

A. Find the average speed in m/s.

B. Find the average velocity in m/s.

1. A cowboy rides his horse 30km east in 1 hour and 15 minutes. The cowboy then reckons he done plumb forgot to bring his banana and ham (Banhama) muffin. The cowboy turns around and hurries along back, 30km west, to the ol’ homestead in 45 minutes.

A. What is the total distance travelled?

B. What is the total displacement?

C. What is the total time taken?

D. What is the average speed for the trip?

E. What is the average velocity for the trip?