

Chapter 4B

Physical Science

Read pages 90 – 98. (blue book)

Answer on a separate sheet please. ☺

Read pages 80 – 86 (white book)

1. What is the difference between a scalar value and a vector value?
2. Indicate whether each value is scalar or vector:
 - a. 13 meters
 - b. 4 meters forward
 - c. 10 miles per hour east
 - d. 60 meters per second
3. Explain the difference between distance and displacement.
4. A puppy is playing with its chew toy. It picks up the toy and carries it 5 feet forward, then drops it. It picks it up again and carries it 4 feet forward and drops it. Then it picks it up a third time and carries it 3 feet backward and drops it.
 - a. What is the distance the chew toy traveled?
 - b. What is the chew toy's displacement?
5. Write the formula for calculating speed.
6. Is speed a scalar quantity or vector quantity?
7. Write the formula for calculating velocity.
8. Is velocity scalar or vector?
9. A bike rider travels four miles north, then turns around and travels 2 miles south. He starts his ride at 9:15 am and stops riding at 10:15 am.
 - a. What is the distance he traveled?
 - b. What is his displacement?
 - c. What is his speed?
 - d. What is his velocity?
10. A coyote was chasing a roadrunner. In 10 seconds, the coyote ran 60 feet. In the same time, the roadrunner ran 72 feet. Calculate the speed of the coyote and the speed of the roadrunner in feet per second.
11. You blew up a balloon and let it go. The balloon flew 6 feet backward and then turned and went 12 feet forward. It took 3 seconds for the balloon to fly around.
 - a. What distance did the balloon travel?
 - b. What is the balloon's displacement?
 - c. What was the speed of the balloon as it traveled?
 - d. What was the balloon velocity?
12. A quarterback ran forward 2 yards with the football, then backed up 6 yards. It took him 30 seconds to do this.
 - a. What is his speed in yards per second?
 - b. What is his velocity in yards per second?
13. A car is traveling 50 miles per hour. How far will the car go in 40 minutes?
14. Write the definition of acceleration.
15. Write the formula for acceleration.
16. A race car goes from 0 to 30 meters per second in 6 seconds. What is the car's acceleration?
17. If acceleration is negative, does that mean the object is slowing down?