

**TEST NAME: Forces & Motion Formal Test Study Guide**  
**TEST ID: 2909295**  
**GRADE: 07 - Seventh Grade**  
**SUBJECT: Life and Physical Sciences**  
**TEST CATEGORY: School Assessment**

Student: \_\_\_\_\_

Class: \_\_\_\_\_

Date: \_\_\_\_\_

1. A car is traveling south on the highway at 55 mph. It passes several road signs and a bus that is heading north on the same highway. Which reference point is **best** used for describing the motion of the car?
  - A a tire on the bus
  - B the driver of the car
  - C the driver of the bus
  - D a road sign beside the highway
  
2. Which **best** describes average speed multiplied by total time?
  - A velocity
  - B acceleration
  - C displacement
  - D total distance
  
3. David is new to Holly Middle School and was given a map to find his classes. He starts from the school office and walks south 50 meters to his science class. Which **best** represents David's reference point?
  - A map
  - B 50 meters
  - C school office
  - D science class

4. A student drives 50 miles north from the starting line of a race, then drives 60 miles going south. Which **best** describes the student's displacement from the starting line?
- A. 10 miles south
  - B. 10 miles north
  - C. 110 miles south
  - D. 110 miles north
5. Which **best** describes an object in motion?
- A. an object whose mass has changed
  - B. an object whose color has changed
  - C. an object that has absorbed light energy
  - D. an object that has changed position over time
6. **Which is MOST likely needed when describing the change in position of an object?**
- A. initial speed
  - B. direction change
  - C. reference point
  - D. constant rate
7. A man was pedaling a bicycle at an average speed of 5 miles per hour. After 3 hours, how far had the man traveled? (speed = distance  $\div$  time)
- A. 2 miles
  - B. 5 miles
  - C. 8 miles
  - D. 15 miles

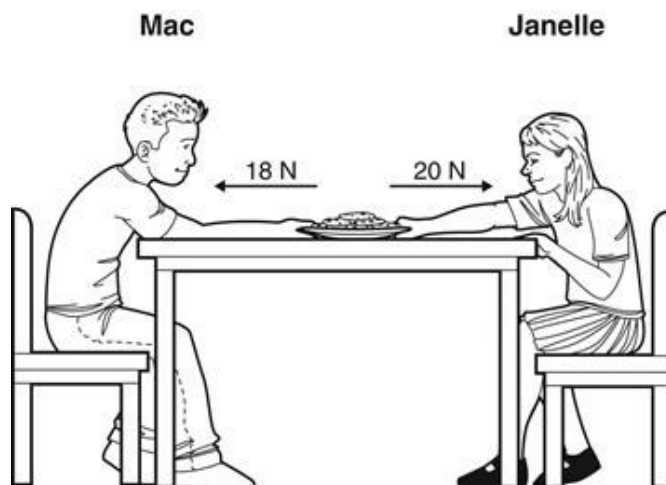
8. Jerry saw a car parked in front of his house early in the day. Later that day, he saw the same car parked in front of a neighbor's house that is two houses away from his house. How does Jerry know the car has moved?
- A. Jerry assumed since it was later in the day, the car had moved.
  - B. Jerry compared the car's present location with its past location.
  - C. Jerry guessed the neighbor ran errands and parked the car in a different location upon returning.
  - D. Jerry was told earlier in the day that the car would be moved, and he accepted this story as evidence.
9. **The picture shows a cross-country skier.**



**What causes the skier to move forward?**

- A. The skier's arms move backward.
- B. The skier pushes the poles against the snow.
- C. The skier's legs move forward over the snow.
- D. The skier leans his body forward.

10. **Mac and Janelle found a plate of cookies waiting on the center of the square kitchen table when they got home. Each of them reached for the plate from opposite side of the table. Both of them grabbed the plate at the same time.**

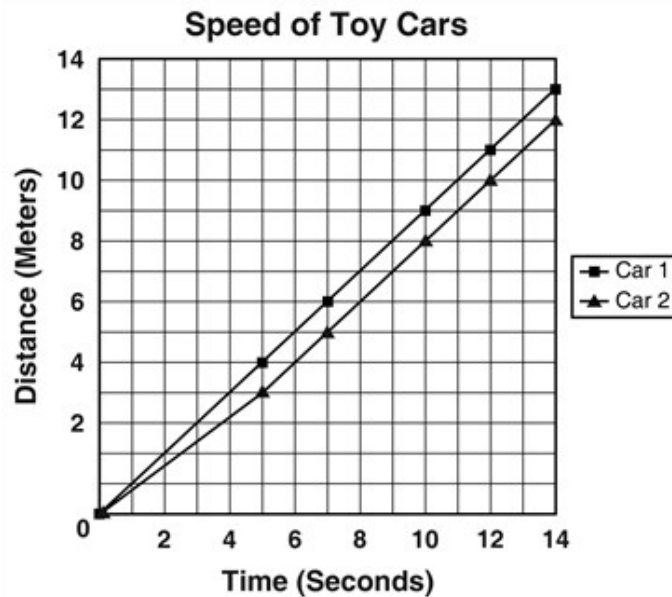


**If Mac pulled with a force of 18 newtons (N) and Janelle pulled with a force of 20 newtons (N), which correctly describes the forces applied to the plate of cookies?**

- A. The forces are equal and opposite in direction.
  - B. The forces applied to the plate of cookies are balanced.
  - C. The net force applied to the plate of cookies is 2 newtons (N).
  - D. The net force applied to the plate of cookies is 38 newtons (N).
11. **Mrs. Knight drops her briefcase. When the briefcase lands on the floor, what is the reaction force to the action force of the briefcase on the floor?**
- A. the force of the floor on the briefcase
  - B. the attraction of Earth for the briefcase
  - C. the force of air on the sides of the briefcase
  - D. the force of friction between the briefcase and the floor
12. **A bowling ball sitting motionless on a table exerts a downward force on the table. The force exerted by the table must be**
- A. equal to the force of the ball.
  - B. continually changing with the ball.
  - C. greater than the force of the ball.
  - D. less than the force of the ball.

13. When astronauts walked on the Moon, they used weighted boots to help them walk due to the lower gravitational pull. What difference between Earth and the Moon accounts for the difference in gravity?
- A. density
  - B. diameter
  - C. mass
  - D. volume

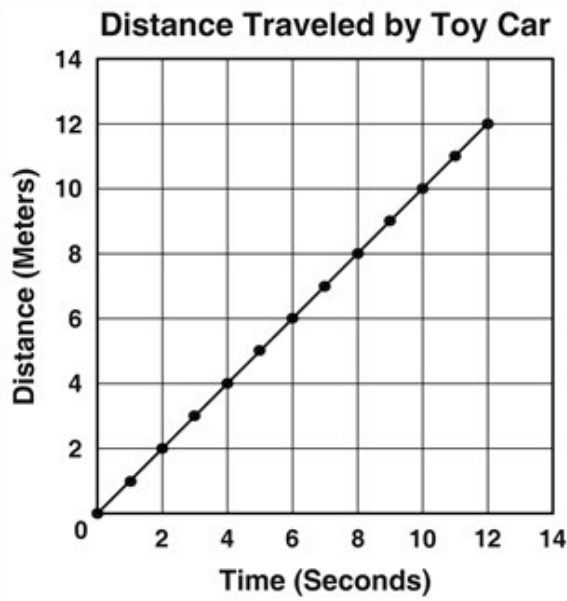
14. Two toy cars are traveling on a track.



Thirteen minutes after they start, how do the speeds of the cars compare?

- A. Both cars are traveling at the same speed.
- B. Both cars have stopped moving on the track.
- C. Car 1 is moving faster.
- D. Car 2 is moving faster.

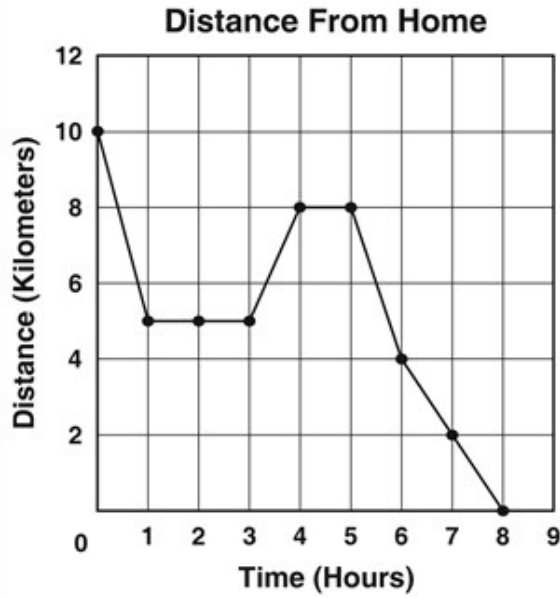
15. This graph shows the distance traveled by a remote control toy car over time.



If the car continues moving at the same rate, how far will it travel in 2 minutes?

- A. 10 m
- B. 60 m
- C. 120 m
- D. 200 m

16. Alesia is taking an all-day ride on her bicycle. The graph shows how far she is from home at different times during her ride.

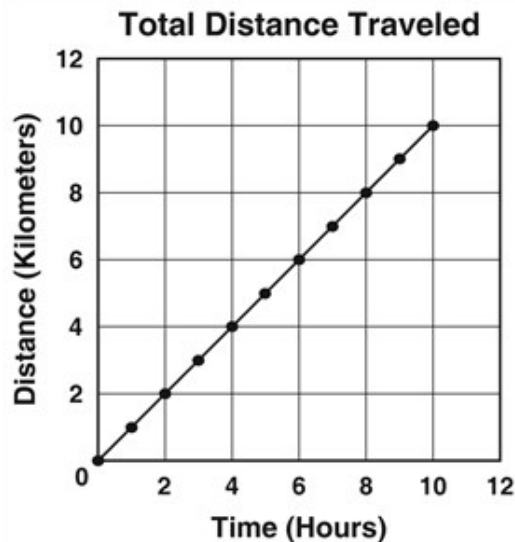


**During which time period is Alesia moving fastest?**

- A. 0–1 hours
- B. 3–4 hours
- C. 4–5 hours
- D. 6–7 hours



17. This is a graph of the motion of a small boat traveling at a constant speed.

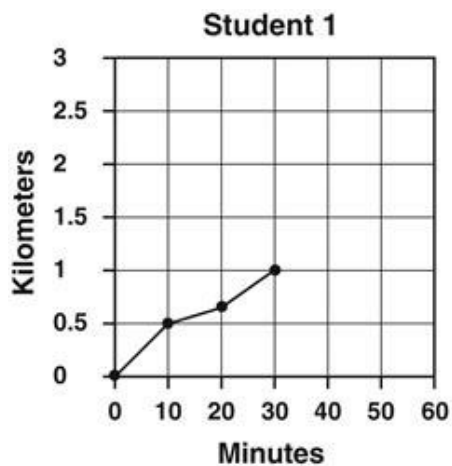


How far will the boat travel in 15 hours?

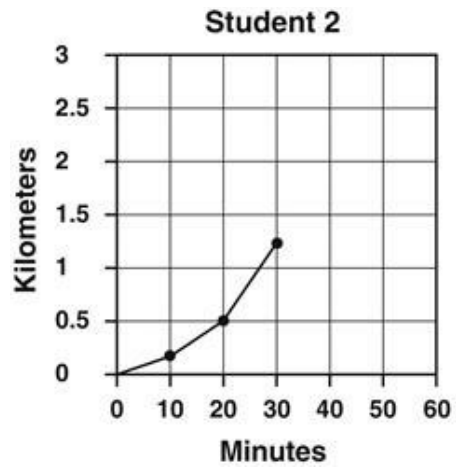
- A. 10 km
- B. 15 km
- C. 25 km
- D. 30 km

18. Four students went on a 3-kilometer hike. Each student was hiking a different speed. The distance the students hiked during the first 30 minutes is shown in each graph. If each student continued at the same speed, which graph shows the hiker that finished the 3-kilometer hike first?

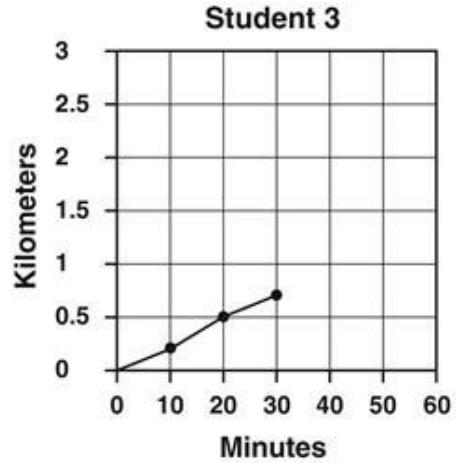
A.



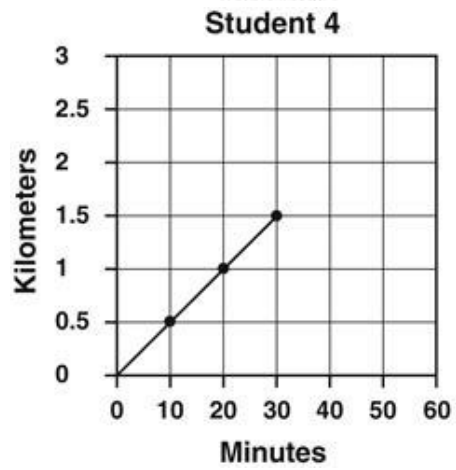
B.



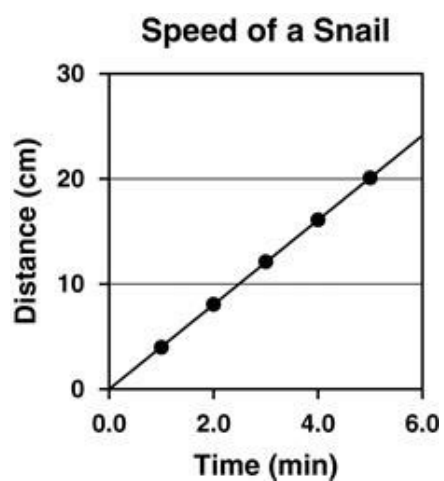
C.



D.



19. Students measure how far a snail can travel per minute. The graph shows their data.



**What is the speed of the snail?**

- A. 0.25 min/cm
- B. 0.50 min/cm
- C. 1.00 cm/min
- D. 4.00 cm/min