



SCIENCE REASONING TEST

35 Minutes—40 Questions

DIRECTIONS: This test includes seven passages, each followed by several questions. Read the passage and choose the best answer to each question. After you have selected your answer, fill in the corresponding bubble on your answer sheet. You should refer to the passages as often as necessary when answering the questions. You may NOT use a calculator on this test.

PASSAGE I

Some students performed three studies to measure the average speed on a flat surface of a remote-controlled car with different types of wheels. Each study was conducted indoors in a temperature-controlled room. A straight track was constructed and measured to be 75 feet long. The car's travel time was measured from start to finish with a stopwatch. The temperature in the room was kept constant at 20° F and the surface was returned to its original condition after each trial. No modifications were made to the car aside from changing the wheels, and the car's batteries were fully charged before each trial.

Study 1

The students fitted the car with hard rubber wheels, which had deep treads, and placed it on the surface. One student started the car as another student simultaneously started the stopwatch. The student stopped the stopwatch as the car crossed the 75-foot mark. The students calculated the results of three separate trials and averaged the results (see Table 1).

Trial	Time (s)	Speed (ft/s)
1	22.8	3.28
2	23.2	3.23
3	22.5	3.33
Average:	22.8	3.28

Study 2

The students repeated the procedure used in Study 1, except they fitted the car with soft rubber wheels, which were smooth and lacked treads. The results are shown in Table 2.

Trial	Time (s)	Speed (ft/s)
1	57	1.31
2	56.4	1.33
3	56.7	1.32
Average:	56.7	1.32

Study 3

The students repeated the procedure used in Study 1, except they fitted the car with hard rubber wheels, which had studs imbedded into them instead of treads. The results are shown in Table 3.

Trial	Time (s)	Speed (ft/s)
1	11.3	6.64
2	11.6	6.47
3	12.1	6.20
Average:	11.7	6.44

1. The fastest times resulted from using which wheels?
 - A. The speeds remained constant.
 - B. Hard rubber wheels with studs imbedded in them.
 - C. Soft rubber wheels with no treads.
 - D. Hard rubber wheels with deep treads.

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2. According to Study 1, the average speed for all three trials was:
- F. greater than the speed measured in Trial 3.
 - G. less than the speed measured in Trial 1.
 - H. greater than the speed measured in Trial 2.
 - J. equal to the speed measured in Trial 2.
3. Which of the following statements is best supported by the results of all three studies?
- A. The average speed of a car with deeply treaded hard rubber wheels is approximately $\frac{1}{2}$ the average speed of car with soft rubber wheels.
 - B. The average speed of a car with studded, hard rubber wheels is approximately $\frac{1}{2}$ the average speed of car with deeply treaded hard rubber wheels.
 - C. The average speed of a car with soft rubber wheels lacking treads is approximately twice the average speed of car with deeply treaded hard rubber wheels.
 - D. The average speed of a car with studded, hard rubber wheels is approximately twice the average speed of car with deeply treaded hard rubber wheels.
4. Based on the passage, the higher average speeds were probably the result of:
- F. greater friction.
 - G. temperature variations.
 - H. too much sunlight.
 - J. statistical error.
5. During which of the following was the travel time of the car the slowest?
- A. Study 2, Trial 1
 - B. Study 2, Trial 2
 - C. Study 3, Trial 1
 - D. Study 1, Trial 2

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