Name _____ Date _____

Pick a Word

Use the word or words in the box below to complete each statement.

active restraint device	energy of motion	passive restraint device
banked curve	force of impact	restraint device
blowout	friction	traction
center of gravity	gravity	tread

_____ **1.** _____ is the force that pulls vehicles toward the earth.

_____ **2.** The gripping action that keeps tires from slipping is _____.

_____ **3.** A restraint device, such as an air bag, that works automatically and the occupant does not need to fasten is a(n) _____.

_____ **4.** _____ is the friction which allows tires to grip the roadway.

_____ **5.** The grooved surface of a tire, called _____, grips the roadway.

_____ **6.** A safety belt that a vehicle's occupant must adjust is a(n) _____.

_____ **7.** A curve that is higher on the outside is a(n) _____.

_____ **8.** The _____ is the force with which one moving object hits another object.

_____ **9.** A bald tire might result in a(n) _____, which is a sudden loss of air pressure in the tire.

_____ **10.** When an object moves, it uses kinetic energy, which is called _____.

_____ **11.** The _____ is a point around which an object's weight is evenly distributed.

_____ **12.** Any part of a vehicle that holds an occupant in a collision is a(n) _____.

Complete the Statements on Natural Laws and Vehicle Control

Write the word or words listed in the box that complete(s) the statement on natural laws and vehicle control.

braking distance	reaction distance
perception distance	reaction time
perception time	total stopping distance

_____ **13.** The distance your vehicle travels while stopping is _____.

_____ **14.** Your _____ is the length of time it takes you to identify, predict, and decide to slow for a hazard.

_____ **15.** The distance traveled while you identify a situation is your _____.

_____ **16.** Your _____ is the length of time you take to execute your action in response to a hazard after you identify it.

_____ **17.** The distance your vehicle travels from the time you apply the brakes until your vehicle stops is called _____.

_____ **18.** Your _____ is the distance your vehicle travels while you identify and react to a hazard.

Name _____ Date _____

Complete Each Sentence

Write the word or words that complete(s) the following statements.

1. The two forces that work on your vehicle as you go around a curve are inertia and _____.
2. To maintain high levels of traction, the road must be clean, dry, level, and _____
_____.
3. Ice tends to form first on areas such as bridges and _____.
4. Check tire pressure when tires are _____.
5. Some vehicles have supplemental restraint systems called _____.
6. Most collisions occur at speeds of less than 40 mph and within _____ miles of home.

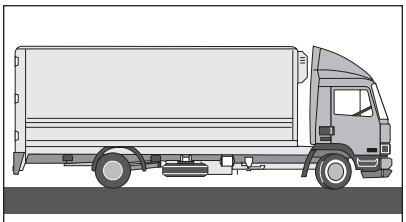
Check Roadways and Tires

Place a check by each of the following items that result in *good* traction.

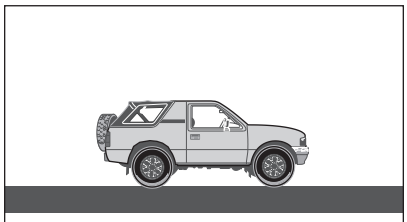
_____ **1.** Ice-covered roadway
_____ **2.** Loose-packed gravel roadway
_____ **3.** Dry, smooth roadway
_____ **4.** Snow tires on snow-covered roadway
_____ **5.** Roadway covered with rain
_____ **6.** Bald tires
_____ **7.** Overinflated tires
_____ **8.** Dry, bumpy roadway
_____ **9.** Underinflated tires
_____ **10.** Tires with wide, deep tread on snow-covered roadway

Use the Picture

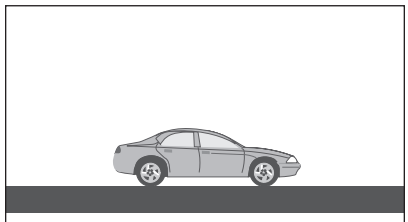
Study pictures A, B, and C and answer the questions below about the effects of gravity and speed on vehicles.



Weight: 40,000 pounds
A



Weight: 7,000 pounds
B

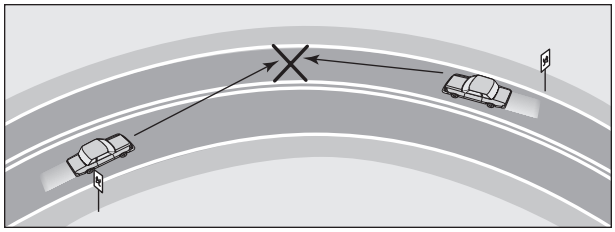


Weight: 3,000 pounds
C

1. Gravity has the greatest effect on the vehicle shown in picture _____.
2. The center of gravity has been raised on the vehicle shown in picture _____.
3. If all three vehicles are traveling at the same speed, is vehicle C's energy of motion *more than* or *less than* that of vehicles A or B? _____
4. When going uphill, will the force of gravity *decrease* or *increase* each vehicle's speed? _____
5. Assume all three vehicles are traveling at 55 mph. They are the same distance from a roadway barrier. Which vehicle will hit the barrier with the greatest force of impact? _____

Name _____ Date _____

Use the Picture

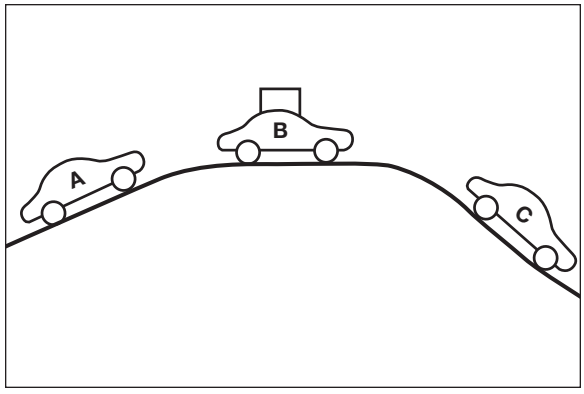


Study the picture. Assume that both cars in the picture are traveling at 55 mph. Both cars have advisory speed signs of 40 mph. Now answer the following questions.

1. Is either car traveling at a safe speed for the curve? _____
2. What kind of energy has each car built up while moving? _____
3. What should each driver have done to avoid a collision at location X? _____
4. What law of nature pulls each car in a straight line toward point X? _____
5. Each car slows to 20 mph. Which law of nature will help keep each car on the roadway? _____
6. Where should each driver have reduced speed to drive through this curve? _____
7. What design of curve would help hold each car on the roadway? _____
8. How much greater is the amount of traction needed because each car is traveling at 40 mph rather than at 20 mph? _____
9. If the curve was sharper, would each car need *more* or *less* traction? _____
10. At what speed should each driver have been traveling to avoid a collision? _____

Use the Picture

Study each car's position in the picture to the right. Write the letter of the car that best matches each statement.



_____ **1.** Stopping distance increases.

_____ **2.** Speed increases without accelerating.

_____ **3.** The vehicle's center of gravity is raised.

_____ **4.** Speed decreases without deceleration.

_____ **5.** The force of gravity causes speed to decrease.

_____ **6.** Driver has the best clear line of sight ahead and to the rear.

_____ **7.** Driver might need to accelerate to maintain speed.

_____ **8.** Driver has the greatest line-of-sight restriction.

Name _____ Date _____

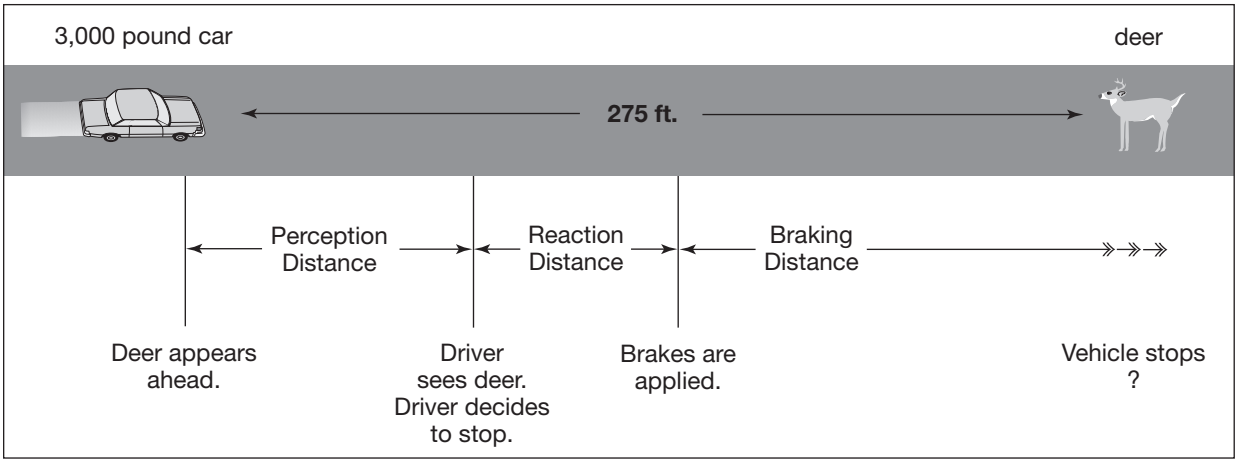
Estimate the Stopping Distance

Use the charts below and to the right to answer the following questions. You are driving the vehicle at 55 mph.

Use the chart on the right as follows:

- to change miles per hour (A) to feet per second (B)
- to find distance covered in 3/4-second reaction time (C)
- to find approximate braking distance (D)

miles per hour (A)	perception distance per second (B)	3/4-Second reaction distance (C)	approximate braking distance (D)
20	29 ft.	22 ft.	20 ft.
30	44 ft.	33 ft.	40 ft.
40	59 ft.	44 ft.	73 ft.
50	73 ft.	55 ft.	119 ft.
55	81 ft.	61 ft.	150 ft.



_____ **1.** A deer appears ahead. You see the deer *one second* later. How many feet did you travel?

_____ **2.** At 55 mph, how far will you travel during your 3/4-second reaction time?

_____ **3.** Traveling at 55 mph, your approximate braking distance is how many feet?

_____ **4.** What is your total stopping distance? (Add the answers to questions 1, 2, and 3.)

_____ **5.** The picture shows the distance between you and the deer. Will you stop in time, or will you collide with the deer?

_____ **6.** What would your total stopping distance have been if you were traveling at 50 mph? (Add B, C, and D across in the chart.)

_____ **7.** Traveling at 50 mph, could you have avoided colliding with the deer?

_____ **8.** Under ideal conditions, what approximate amount of total time do you need to react to a hazard and bring your vehicle to a stop?

_____ **9.** What is the most important factor in determining how hard your vehicle will hit the deer?

_____ **10.** If your vehicle weighed twice as much, how much harder would your vehicle hit the deer?