Name: _____

SPEEDING + STOPPING DISTANCE = DANGER

DO THE MATH!

There are a lot of factors involved in stopping a moving car. First, the driver has to react and decide to brake. The driver might be reacting to a stop sign or light or to an unexpected issue, such as a car stopping in front of him or someone darting into the road. **Reaction distance** is the distance the car travels during the time it takes the driver to react and hit the brakes.

The car's weight and tires also impact the car's ability to stop. Add road conditions (it can take longer to stop on wet roads versus dry roads) and the speed the car is traveling, and you have the elements that determine the distance a car covers from the time the driver applies the brakes until the car actually stops. That's **braking distance**. The total **stopping distance** is equal to the reaction distance plus the braking distance.

Speed makes a difference. The higher the speed, the greater the distance the car will travel before stopping. Drivers who speed have a greater risk of not stopping in time and crashing, putting themselves, their passengers, and the cars and pedestrians around them in danger. Try this real-world example:

CALCULATING STOPPING DISTANCE

A car is traveling **40 mph**. An animal darts out onto the road. It takes the driver **1.5 seconds** to realize what's happening and hit the brakes.

Find the Reaction Distance

- Convert mph to feet per hour: 40 mph x 5,280 feet per mile = 211,200 feet per hour
- Convert feet per hour to feet per second:
  211,200 feet ÷ 3,600 seconds per hour = 59 feet per second*
- Calculate the reaction distance in feet per second: 59 feet x 1.5 seconds = 89 feet*

The reaction distance is **89 feet**.

MATH FACTS

1 mile = 5,280 feet
1 hour = 3,600 seconds

Consider the Braking Distance

Now imagine the roads are dry. The car travels another **76 feet** in braking distance before stopping.

Find the Stopping Distance

89 feet (reaction distance) + 76 feet (braking distance) = 165 feet

The car travels a total of **165 feet** before stopping—that's more than the width of a football field. A football field is 360 feet long and 160 feet wide.

*Answer rounded to the nearest whole number

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DO THE MATH!

MATH FACTS

1 mile = 5,280 feet
1 hour = 3,600 seconds

Round each answer to the nearest whole number.

1 A car is traveling 55 mph. Another car stops in front of it.

a) It takes the driver 1.5 seconds to react. What's the reaction distance? _____

b) The pavement is dry. The car begins to slow. It travels another 144 feet in braking distance before stopping. What's the total stopping distance on dry pavement? _____

c) Add 39 feet for wet roads. What's the stopping distance now? _____

2 A car is speeding at 70 mph. The driver sees something blocking the road.

a) The reaction time is 1.5 seconds. What's the reaction distance? _____

b) The braking distance as the car decelerates on dry pavement is 233 feet. What's the stopping distance? _____

c) Now imagine that the driver is distracted. It takes the driver 3 seconds to react. What's the reaction distance? _____

d) Assuming the same 233 feet braking distance, what's the stopping distance? _____

e) How does each stopping distance compare to a football field, which is 360 feet long and 160 feet wide? _____

_____

3 What are the potential risks for a driver who is speeding and attempting to stop the car?

_____

_____

_____

DID YOU KNOW? In 2015, **9,557 people died** in car crashes where at least one person was speeding.

Sources: National Highway Traffic Safety Administration, "Safety in Numbers," August 2015. Available at: one.nhtsa.gov/nhtsa/Safety1nNum3ers/august2015/S1N_Aug15_Speeding_1.html. NHTSA's National Center for Statistics and Analysis, "Traffic Safety Facts–2015 Data: Speeding," July 2017. Available at https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812409.