STOPPING DISTANCE

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OBJECTIVES

- Students will calculate the average speed of traffic
- Students will calculate the stopping distance for vehicles with different coefficients of friction and initial speeds
MATERIALS

- Measuring wheel or tape measure
- Timers
- Calculators
- Radar gun (optional)
RAISE YOUR HAND IF YOU...

ARE BETWEEN THE AGES OF 10 AND 24 YEARS OLD
WHY STOPPING DISTANCE?

- Road traffic crashes are the leading cause of death among young people between the ages of 10 and 24 years old.
- Speed limits are posted for a reason; to keep drivers, passengers, and pedestrians safe.
- During inclimate weather (rain, snow, ice, etc.) extra caution must be taken while driving.
What are some possible factors that affect the stopping distance for a car?
BRAINSTORM

- Initial speed of car
- Coefficient of friction between tires and road
WHAT DO YOU THINK?

- How many seconds should you leave between you and the car in front of you?
- What about if it is raining or snowing?
TERMS

- speed
- acceleration
- friction
- coefficient of friction
**TERMS**

- **speed** - rate of change of position (or how fast something moves)

- **acceleration** - rate of change of speed (how quickly something speeds up or slows down)

- **friction** - a contact force between two objects that rub against each other (the friction between tires and the road is what slows down a car)

- **coefficient of friction** - the ratio of frictional force to normal force (the higher the coefficient, the more friction there will be)
TODAY'S LAB

- Prediction
- Part I - Average Speed
  Data Collection
- Part II - Dry road
- Part III - Wet road
REAL WORLD CONNECTION

- Car safety research is done right here in Nebraska...
- UNL College of Engineering [http://www.engineering.unl.edu/](http://www.engineering.unl.edu/)
- Midwest Roadside Safety Facility [http://engineering.unl.edu/specialty-units/mwrsf/](http://engineering.unl.edu/specialty-units/mwrsf/)
- Nebraska Transportation Center [http://ntc.unl.edu/](http://ntc.unl.edu/)
- Mid-America Transportation Center (MATC) [http://matc.unl.edu/](http://matc.unl.edu/)