

RAFT IDEAS

Topics: Health,
Physiology, Reaction
time, Safety issues

Materials List

- ✓ Base: ruler, flat stick, matte board, or other material at least 45 cm (18") long
- ✓ Reaction time scale (page 2)
- ✓ Tape or glue

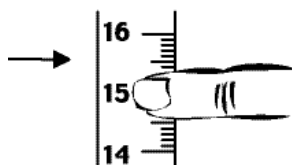
This activity can be used to teach:

- Senses (Next Generation Science Standards: Grade 4, Life Science, 1-2; Middle School, Life Science, 1-8)
- Body systems & Structures (Next Generation Science Standards: Grade 4, Life Science, 1-1, Middle School, Life Science, 1-3)



Human Reaction Time

Exploring Reaction Time



Reaction time is key to many things we do: operating a car, flying a plane, riding a bike, or playing sports. In space, astronauts test physical fitness with reaction tests.

Assembly

1. Cut out the reaction time scale from the next page and glue or tape the pieces together. Note: The numbered scale spaces increase in size due to the fact that the acceleration of gravity causes objects to fall faster as time passes.
2. Tape the reaction time scale to the base.

To Do and Notice

1. Have students work in pairs. One student will be the “dropper” and the other will be the “catcher”.
2. The dropper holds the top of the scale assembly, the catcher places a thumb and index finger on either side of the reaction scale at the “0” point, without actually touching the scale.
3. The dropper lets go of the assembly without any warning to indicate the timing.
4. The catcher then pinches the scale to stop its drop.
5. Record the number pinched on the scale, which indicates the hundreds of a second taken to react to the drop and stop the base’s fall.
6. Have student switch roles. Each student should repeat the test several times and calculate their average time.
7. Optional: As a group, students calculate a class average and discuss the different factors that may affect reaction time.

The Science Behind the Activity

Reaction time is an essential concern for drivers and operators of heavy equipment and other machinery. Fatigue and drowsiness often cause deterioration in reaction time which will affect how a person performs important tasks. Astronauts in space are concerned about reaction time both because it affects how they perform their tasks aboard the Space Station or Shuttle, and also serves as a measurement of the maintenance of proper body function while in space. Astronauts have the additional challenge of working in microgravity, and they sometimes experience dizziness, disorientation, and even nausea as they adjust to this new environment.

Taking it Further

Have students identify tasks performed by people in which reaction time is a critical concern. Many factors can influence our reaction time; try the “Stroop Effect” test on the following web link. <http://faculty.washington.edu/chudler/words.html>

Web Resources (Visit www.raft.net/raft-idea?isid=164 for more resources!)

- Brain games and Experiments - faculty.washington.edu/chudler/experi.html
- Fastball reaction time test - www.exploratorium.edu/baseball/reactiontime.html
- Hockey & Reaction times - www.exploratorium.edu/hockey/save1.html

Human Reaction Time Measuring Scale

Photo copy this scale. The markings on the scale are calibrated to 1/100ths of a second. Cut out a pair of scales. Tape the tab of the .21 to the .20 so that they are flush with on another. Tape the scale to a meterstick or other base.

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Reaction Time (in seconds)

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TAPE HERE

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Reaction Time (in seconds)

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