

Test Your Reaction Time!

Reaction time is the time that passes between a change in your environment and your active response to that change. In this activity, the ruler dropping represents a change in the environment—and catching the ruler is the active response.

Reaction time is related to how fast your nervous system is able to gather, process, and respond to information in your environment. Signals received by your eyes pass down the optic nerve into the visual cortex of the brain. Then, a response signal goes from your brain, down your spinal column, and into nerve cells that tell your muscles to act. All of this takes a measurable amount of time.

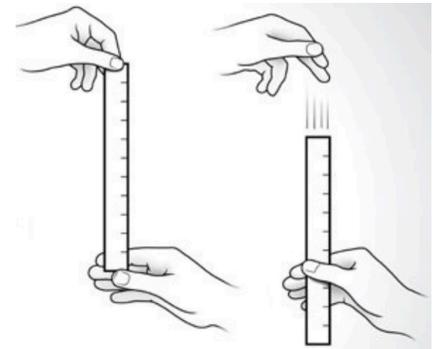
Reaction time can vary with age, degree of physical fitness, and other variables. For this ruler-drop activity, the average reaction time for young adults is about 0.19 seconds.

Materials needed:

- Activity partner
- Ruler or yardstick

Step-by-step instructions:

1. Find an activity partner.
2. Person A should hold the top of the ruler so it hangs down.
3. Person B should position their thumb and index finger just below the bottom of the ruler, ready to catch it.
4. After getting set, person A should release the ruler without warning.
5. Person B must catch the ruler as fast as they can.
6. Record the measurement at which person B caught the ruler.
7. Use a chart to convert the ruler measurement to reaction time.
8. Repeat steps 2 through 7 multiple times, switching roles as well as hands.



Additional explorations:

- Have person A say “go!” before they drop the ruler. Does this improve or decrease person B’s reaction time?

Discussion questions:

- Did your reaction time change the more you repeated this activity?
- Did you try catching the ruler with your left and right hands? Was there any difference in your reaction time?
- Do you think people can improve their reaction time? How?
- How might reaction time help you play sports, musical instruments, or video games?

Additional Resources:

You can print your own reaction time ruler at home. This will save you the time it takes to convert ruler inches into reaction time. Remember to print the reaction time ruler on very thick paper, or tape it to a regular ruler.

<http://www.scienceworld.ca/wp-content/uploads/attachments/resources/ReactionTime.pdf>

Test Your Reaction Time! (continued)

Ruler Measurement (inches)	Reaction Time (seconds)
2	.10
4	.14
6	.17
8	.20
10	.23
12	.25
17	.30
24	.35
31	.40
39	.45
48	.50

*Table modified from The University of Washington's 'Neuroscience for Kids'

