



Measure Your Reaction Time

Suggested Grades: 5–12

Activity Overview

In this activity, you will test your reaction time. At the same time, you will see how gravity causes the speed of a falling object to increase over time.

Note: This activity takes two people to complete.

STEPS

1. As an object falls, gravity causes the object's speed to increase. Figure 1 shows how far an object will move as it falls. This activity lets you see how this works. On the long strip of paper, mark one end with the number 0.
2. Starting from the end of the paper labeled 0, measure each of the distances shown in Figure 1. Draw a line across the strip of paper for each distance, and label them with the correct times.
3. Did you notice that the distance between the lines is greater as the time increases? This is because the falling object is moving faster over time. That's the effect gravity has on an object!
4. Tape the scale (strip of paper) onto a meter/yard stick, placing the end with the 0 second mark approximately 5 cm (2 inches) from one end of the meter/yard stick.

Time: 45 minutes

Materials:

- Meter stick (a yard stick will work as well)
- Strip of paper (1 cm x 75 cm or 0.5 inch x 30 inch)
- Tape
- Pencil
- Stopwatch or other way to measure time in seconds

Time in Seconds	Distance in Centimeters	Distance in Inches
.10 sec	.49 cm	.2 in
.15 sec	1.1 cm	.4 in
.20 sec	2 cm	.8 in
.25 sec	3.1 cm	1.2 in
.30 sec	4.4 cm	1.7 in
.35 sec	6 cm	2.4 in
.40 sec	7.8 cm	3.1 in
.45 sec	9.9 cm	3.9 in
.50 sec	12.3 cm	4.8 in
.55 sec	14.8 cm	5.8 in
.60 sec	17.6 cm	6.9 in
.65 sec	20.7 cm	8.1 in
.70 sec	24 cm	9.4 in
.75 sec	27.6 cm	10.9 in
.80 sec	31.4 cm	12.4 in
.85 sec	35.4 cm	13.9 in
.90 sec	39.7 cm	15.6 in
.95 sec	44.2 cm	17.4 in
1 sec	49 cm	19.3 in
1.05 sec	54 cm	21.3 in
1.10 sec	59.3 cm	23.3 in
1.15 sec	64.8 cm	25.5 in
1.20 sec	70.6 cm	27.8 in

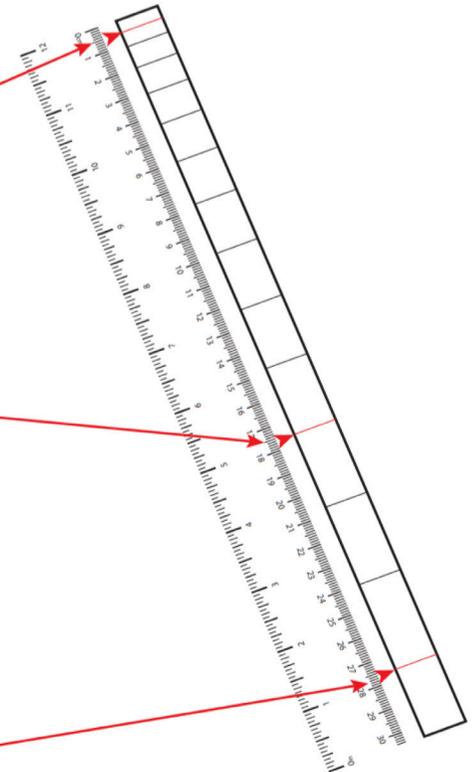


Figure 1. Distance the object falls in different time periods.

**FLIGHT LOG
ENDORSEMENT
CODE:
MYRTIME**

5. Hold your fingers about 5 cm (2 inches) apart, and have a partner hold the meter/yard stick so that the 0 second mark is located between your fingers. See Figure 2.



Figure 2: Where to hold your fingers before the drop

6. Without warning, have your partner drop the meter/yard stick. Once it starts falling, squeeze your fingers together to pinch the stick, stopping its fall. See Figure 3.



Figure 3: Squeeze your finger together to catch the falling meter stick

7. Look at the strip of paper to see which line your fingers are closest to. The time indicated on this line tells you your reaction time. Record this number somewhere.
8. Repeat for a total of five drops.
9. Add the five reaction times you recorded and divide the total by five. This will give you your average reaction time. Note: Your reaction time will probably get faster after each trial.

You might want to try:

- Try it with your other hand to see how your reaction time changes.
- Try closing your eyes. Have your partner make a noise when he or she drops the meter/yard stick.
- Switch roles to see what your partner's reaction time is.

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