



Feel a Minute

When is a minute not a minute? Does the length of a minute seem shorter when you're late for class as opposed to when you are listening to a lecture? Does time fly when you're having fun?

The fact that a day is divided into 24 hours and each hour is 60 minutes is a human invention. Nothing in nature indicates that there is such a thing as an hour of 60 minutes with each minute made up of 60 seconds. The concept of the 24 hour (or 1440 minute) day was developed by the ancient Egyptians but they just as well could have come up with a 30 hour day with 27 or even 41 minutes to the hour. The lengths of an hour and a minute are arbitrary intervals. However, we still use them because of tradition.

Not until modern times were the lengths of an hour, minute and second codified. With the development of mechanical [LINK to mechanical clock activity] clocks and then atomic clocks like the Hydrogen Clock [LINK to H1 picture in main site] and the Cesium Clock, humans established a uniform standard for measuring time. At present, the length of a second, and therefore a minute, is agreed upon by the countries of the world to be 9, 192, 631, 770 oscillations of a Cesium-133 atom. The length of time is an agreement, not a law of nature.

Materials

stopwatch
partner
paper
pen/ pencil

Activity (in 4 parts)

Part 1

- 1) One partner says, "Go!" and begins timing.
- 2) On "Go!", the other partner remains quiet until he or she believes a minute has passed. When he or she thinks it has been a minute, they say "Stop!"
- 3) The partner with the stopwatch stops the timer and shows the time to the other.
- 4) Switch tasks and repeat steps 1-3.

Questions: Part 1

Did you correctly guess the length of a minute?

Were you early or late?

Based on your perception of a minute, if you were to determine the length of a second instead of a cesium atom would your hour



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contain more or less than 60 minutes?

Part 2

- 1) Without telling the other how long he or she will sit, one partner says, "Go!" and begins timing for 1 minute.
- 2) On "Go!", the other partner remains quiet until the partner with the stopwatch says, "Stop!", after 1 minute has elapsed.
- 3) Inform the silent partner that he or she just sat for 1 minute.

Questions: Part 2

With paper and a pen or pencil, record your feeling of a minute. Were you surprised at its length? Was it longer or shorter than you thought before the activity?

Part 3

Repeat Part 2, however, instead of remaining silent, the partner without the stopwatch should hop on one foot for a minute.

Questions: Part 3

Using the same paper as Part 2, record your feeling of the past minute. How did hopping up and down affect your perception of the length of a minute? Did it feel longer or shorter than when you were silent?

Part 4

- 1) Without telling the other how long he or she must write, one partner says, "Go!" and begins timing for 1 minute.
- 2) On "Go!", the other partner writes as many words about time on a piece of paper until the partner with the stopwatch says, "Stop!", after 1 minute has elapsed.
- 3) Inform the active partner that he or she wrote for 1 minute.

Questions: Part 4

Using the same paper as Part 2, record your feeling of the past minute. Did the pressure of writing affect your perception of a minute? Did it feel longer or shorter than the previous activities?