SIDEBAR 📋

Sample Items from the Program for International Student Assessment Mathematics and Science Assessments

Sample Items from the 2012 Mathematics Assessment

Sample 1

Peter's bicycle has a wheel circumference of 96 cm (or 0.96 m). It is a three-speed bicycle with a low, a middle, and a high gear. The gear ratios of Peter's bicycle are:

| *Low* | *3:1* | *Middle* | *6:5* | *High* | *1:2* |

How many pedal turns would Peter take to travel 960 m in middle gear? Show your work.

NOTE: A gear ratio of 3:1 means 3 complete pedal turns yields 1 complete wheel turn.

(Correct answer: 1,200 pedal turns, with a fully correct method.)

Sample 2

One advantage of using a kite sail is that it flies at a height of 150 m. There, the wind speed is approximately 25% higher than down on the deck of the ship.

At what approximate speed does the wind blow into a kite sail when a wind speed of 24 km/h is measured on the deck of the ship?

a. 6 km/h

b. 18 km/h

c. 25 km/h

d. 30 km/h

e. 49 km/h

(Correct answer: D)

Sample Items from the 2015 Science Assessment

Sample 1

Meteoroids and Craters

Rocks in space that enter Earth's atmosphere are called meteoroids. Meteoroids heat up and glow as they fall through Earth's atmosphere. Most meteoroids burn up before they hit Earth's surface. When a meteoroid hits Earth, it can make a hole called a crater.

As a meteoroid approaches Earth and its atmosphere, it speeds up. Why does this happen?

a. The meteoroid is pulled in by the rotation of Earth.

b. The meteoroid is pushed by the light of the Sun.

c. The meteoroid is attracted to the mass of Earth.

d. The meteoroid is repelled by the vacuum of space.

(Correct answer: C)

Sample 2

What is the effect of a planet's atmosphere on the number of craters on a planet's surface?

*The thicker a planet's atmosphere is, the (**1. More or Fewer**) craters its surface will have because (**2. More or Fewer**) meteoroids will burn up in the atmosphere.*

(Correct answer: 1. Fewer; 2. More)

Additional sample questions are available at https://nces.ed.gov/surveys/pisa/pdf/items_math2012.pdf and https://www.oecd.org/pisa/test/PISA2015-Released-FT-Cognitive-Items.pdf.