% Change the World V

ABSODELS/GETTY IMAGES

Attention, humans of Earth! I am Plantor, from the star system Chlorophyllia. You have not taken good care of your planet, so I am here to take it over. But first, I will have a sip of water, because my throat is dry after my long intergalactic journey. YUCK! Even your water is polluted? You humans can't do *anything* right. Well, take this fifth-annual *percent of increase and decrease* practice test. It will increase your knowledge of how to decrease some of your planet's troubles. Do well, and I'll put your town toward the bottom of the global-takeover list.

–test by Josh Rapps

STUDY TIP: PERCENT CHANGE

- **Percent change shows how much a quantity has increased or decreased compared with the original amount.**

$$\text{Percent change} = \frac{\text{amount of increase or decrease}}{\text{original amount}}$$

- **Your answer will first be a decimal number. Write it as a percent by multiplying by 100 and adding a % sign.**

EXAMPLE

Original amount: 40 barrels; new amount: 32 barrels

- **Percent change**
  = (40 – 32) ÷ 40
  = 8 ÷ 40
  = .2
- **It was a 20% decrease.**

For questions 1 to 6, fill in the circle of the correct answer.

1 Climate change is a major environmental concern, and the melting of glaciers likely is evidence of climate change. Glacier National Park in Montana, which had 150 glaciers in 1910, has just 27 glaciers today. This represents…
Ⓐ a decrease of 177 glaciers.
Ⓑ an increase of 177 glaciers.
Ⓒ a decrease of 123 glaciers.
Ⓓ an increase of 123 glaciers.

2 Calculate the percent change in Glacier National Park's glaciers from 1910 to today.
Ⓐ 455.6% decrease
Ⓑ 18% decrease
Ⓒ 82% increase
Ⓓ 82% decrease

3 Mountain gorillas have long been an endangered species. Some good news, though, in Rwanda in Africa. There, in the past 30 years, the number of mountain gorillas has gone from 250 to 300. This represents a…
Ⓐ 16.7% increase.
Ⓑ 16.7% decrease.
Ⓒ 20% increase.
Ⓓ 20% decrease.

4 In the late 1970s, Brazil had about 4,000,000 sq. km of rainforest. Now that estimate is 3,400,000 sq. km. What was the percent decrease?
Ⓐ 15% Ⓒ 40%
Ⓑ 18% Ⓓ 75%

5 Currently, wind energy is being used in the U.S. to power 1.6 million homes. It is projected that by the year 2020, the country will harness enough wind energy to power 25 million homes. What would be the percent increase?
Ⓐ 14.6% Ⓒ 1,462.5%
Ⓑ 146.2% Ⓓ 14,625%

6 Volunteering is a great way to help. In California, on Earth Day 2007, 600 volunteers cleaned the coastline. The next year, 3,235 volunteers showed up! What was the percent increase, expressed with a repeating decimal?
Ⓐ $81.5\overline{5}\%$ Ⓒ $439.1\overline{6}\%$
Ⓑ $91.\overline{8}\%$ Ⓓ $439.16\overline{6}\%$

For questions 7 to 10, write in the correct answer.

7 Last year's BP oil spill off the coast of Louisiana caused terrible damage to the environment. The initial estimates were that 5,000 barrels worth of oil were spilling each day. Actually, 60,000 barrels of oil were leaking into the Gulf each day. What was the percent increase?

8 An electric car emits about 115 grams (g) of carbon dioxide (CO_2) per km driven, while a gas-powered car emits about 250 g per km driven. (CO_2 pollution is linked to harmful climate change and illness.) What percent change would be made in g of CO_2 per km by switching from a gas car to an electric one?

9 The U.S. Environmental Protection Agency put the Chesapeake Bay (near Maryland) on a "pollution diet" to clean the water. This will cut nitrogen in the Bay from 17.9 million lbs per year to 15.7 million lbs. What will be the percent decrease, rounded to the nearest tenth?

BREAK THE MISTAKE!

10 Bottled-water firms are reducing their plastic use. The average 16.9-ounce water bottle's weight dropped from 18.9 grams to 12.7 grams in the past decade. We said this is a decrease, rounded to the nearest tenth, of 48.8%. What error did we make, and what is the correct answer?