

## Answer on Question #57017 – Math – Algebra

8. How many times more intense is an earthquake that measures 7.5 on the Richter scale than one that measures 6.7? (Recall that the Richter scale defines magnitude of an earthquake with the equation  $M = \log I/S$ , where  $I$  is the intensity of the earthquake being measured, and  $S$  is the intensity of a standard earthquake.)

### Solution

$$M = \log I/S$$

$$I/S = 10^M$$

$$I_{7.5} / I_{6.7} = 10^{7.5} / 10^{6.7} = 10^{7.5-6.7} = 10^{0.8} = 6.31$$

**Answer:** 6.31 times more.

9. The  $n$ th term of a geometric sequence is given by a sub  $n = 27(0.1)^{n-1}$ . Write the first 5 terms and find the 10th partial sum.

### Solution

$$a_n = 27 \cdot 0.1^{n-1}$$

First five terms: **27 2.7 0.27 0.027 0.0027**

10th partial sum:  $S_{10} = 27 (1-0.1^{10}) / (1-0.1) = 29.999999997 \approx 30$

10. A basketball is dropped from an original height of 9 feet and on each bounce, bounces up  $2/3$  the distance it fell. How far will it have traveled by the time it hits the ground the 4th time?

### Solution

$$9 \cdot (2/3)^{4-1} = 8/3 \approx 2.67$$

**Answer:** 2.67 feet.