La Scuola d'Italia / Huson / Physics First & last name:
20 October 2025 Grade:

1.3 Homework: Precision, Scientific notation, Significant figures

1. Round each value to three significant figures.

   (a) The population of Rome:

   2,746,984

   (b) The population of New York City:

   8,804,190

   When we round a calculated value, copy the calculator display followed by three dots, then round:

   $$\pi = 3.1415926\ldots \approx 3.14$$

2. Round each value to three sig figs.

   (a) $\sqrt{2}$

   (b) $\sqrt{3}$

3. Write down the number of significant digits in each value.

   (a) 8

   (b) 27.5

   (c) 0.0064

   (d) 0.0120

   (e) 105.5

   (f) 1.7320

4. Write in scientific notation, rounding to three sig figs.

   (a) The average distance from the Earth to the Sun: 92,555,000 miles.

   (b) The mean distance of the earth to the moon: 384,400 kilometers.

5. Write in scientific notation, rounding to three sig figs.

   (a) The thickness of a typical human hair: 0.000075 meters.

   (b) The weight of a fruit fly: 0.0015 grams.

6. The Earth's mass is 5.972×10^{24} kg and the moon's mass is 7.348×10^{22} kg. What is the ratio of the Earth's mass to the moon's mass? Round to three significant figures.

7. Convert between inches and centimeters, rounding to three sig figs. (1 in. = 2.54 cm)
   (a) The diameter of a 16 inch pizza in centimeters.

   (b) Forty centimeters of salame piccante in inches.

8. Convert between feet and meters, rounding to three sig figs. (1 m $\approx$ 3.28 ft)
   (a) The height of the Empire State Building: 1454 feet

   (b) The height of the Leaning Tower of Pisa: 55.863 meters

9. Challenge: Running a "four minute mile" is a famous athletic achievement. What is this pace in meters per second? (1 mile = 1609 meters)