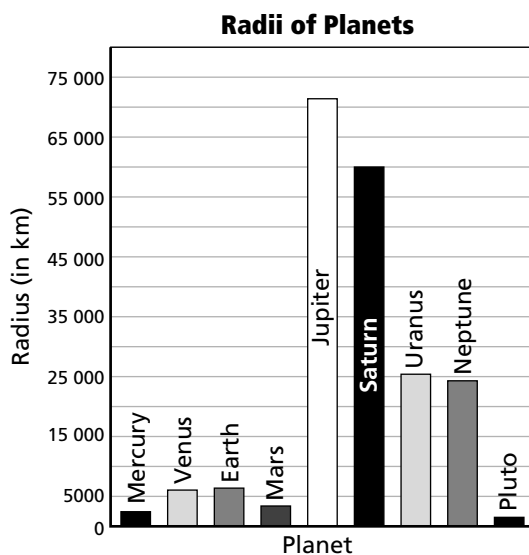


Data Analysis

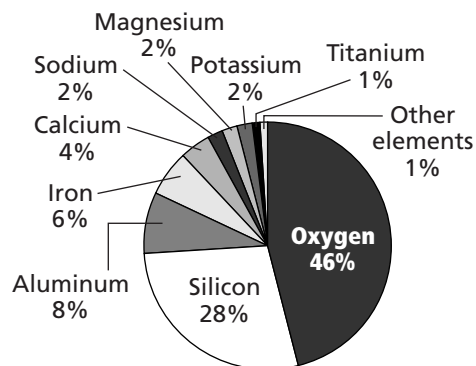
1. A sample of aluminum is placed in a 25-mL graduated cylinder containing 10.0 mL of water. The level of water rises to 18.0 mL. Aluminum has a density of 2.7 g/mL. Calculate the mass of the sample.
2. Saturn is about 1 429 000 km from the Sun. How many meters is Saturn from the Sun? Write your answer in scientific notation.
3. Use the graph to answer the questions.



- a. What kind of graph is this?
- b. What are the variables?
- c. According to the graph, which has a larger radius, Neptune or Uranus?
- d. According to the graph, what is the radius of Saturn?
- e. Convert the radius of Saturn to meters. Write your answer in scientific notation.

4. Look at the graph below. Then answer the questions.

The Composition of Earth's Crust



- a. What kind of graph is this?
 - b. According to the graph, which element is most abundant in Earth's crust?
 - c. According to the graph, what percent of Earth's crust is made up of titanium? Of calcium?
5. You place a 28.95-g piece of gold in a 10-mL graduated cylinder. The level of the water rises 1.50 mL. What is the density of gold? You know that silver has a density of 10.5 g/cm³. What mass of silver will raise the level of the water in the graduated cylinder 1.50 mL?
 6. Convert 55 miles per hour to kilometers per hour. How many kilometers/second is 55 miles per hour? (1 mile = 1.6 km)
 7. Convert the following data to scientific notation.
 - a. 166 000 000 000 000 m²
 - b. 8847 m
 - c. 484 liters

- 8.** Convert the following as indicated.
- Aluminum boils at 2467°C . What is aluminum's boiling point in kelvins?
 - Bromine melts at -7.2°C . What is bromine's melting point in kelvins?
 - Chlorine melts at 172 K . What is chlorine's melting point in $^{\circ}\text{C}$?
 - What is 273 K in $^{\circ}\text{C}$?
- 9.** American cars use about 600 000 000 gallons of oil per year. How many liters of oil do American cars use per year? Report your answer in scientific notation.
($1\text{ L} = 0.908\text{ quart}$; $1\text{ gallon} = 4\text{ quarts}$)

Solve the following problems. Express your answers in proper scientific notation.

- 10.**
- $5.3 \times 10^{12} + 3.0 \times 10^{11} =$
 - $3.7 \times 10^6 - 8.0 \times 10^5 =$
 - $1.85 \times 10^{16} + 9.25 \times 10^{16} =$
 - $2.8 \times 10^{22} + 82 \times 10^{21} =$
 - $3.09 \times 10^{20} - 9.1 \times 10^{19} =$
 - $17 \times 10^3 + 3 \times 10^4 + 1.3 \times 10^4 =$
 - $4.80 \times 10^{15} - 13 \times 10^{13} =$
- 11.**
- $(4.0 \times 10^5) \times (3.0 \times 10^3) =$
 - $(5.0 \times 10^{12}) \times (8.05 \times 10^3) =$
 - $(8.9 \times 10^5) \div (3.0 \times 10^3) =$
 - $(1.6 \times 10^{12}) \div (8.01 \times 10^{-3}) =$
 - $(9.0 \times 10^5) \times (3.0 \times 10^{-3}) =$
 - $(2.4 \times 10^3) \div (8.0 \times 10^{-3}) =$
 - $(6.1 \times 10^{-5}) \div (3.01 \times 10^{-2}) =$
- 12.** Mac measured the density of silver three times and obtained the following results:
Trial 1: 10.6 g/cm^3 ; Trial 2: 10.8 g/cm^3 ;
Trial 3: 9.6 g/cm^3 .
Silver has a density of 10.5 g/cm^3
- Calculate Mac's percent error for each trial.
 - Which trial had the greatest percent error?
- 13.** You calculate that your semester average in history is 97.5. When you get your report card, your average is 96. What was the percent error of your calculation?
- 14.** Determine the number of significant figures in each measurement.
- $0.000\ 301\ 5\text{ m}$
 - $0.121\ 012\ \text{L}$
 - $1.056\ \text{mL}$
 - $12.90\ \text{s}$
 - $5000\ \text{dogs}$
 - $5.78910 \times 10^3\ \text{g}$
- 15.** Round the number 31.257 592 to the requested number of significant figures.
- 7 significant figures
 - 5 significant figures
 - 3 significant figures
- 16.** Complete the following calculations. Round off the answers to the correct number of significant figures.
- $2.30\ \text{m} \times 3.65\ \text{m} \times 0.55\ \text{m} =$
 - $103.8\ \text{m} \div 31\ \text{s} =$
 - $26.0\ \text{cm} \times 2.1\ \text{cm} =$