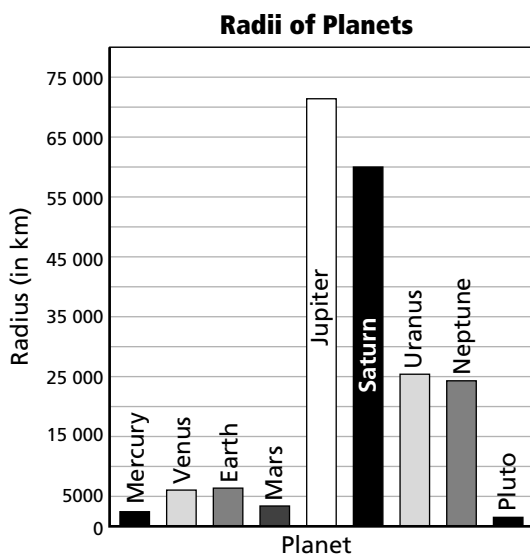


Data Analysis

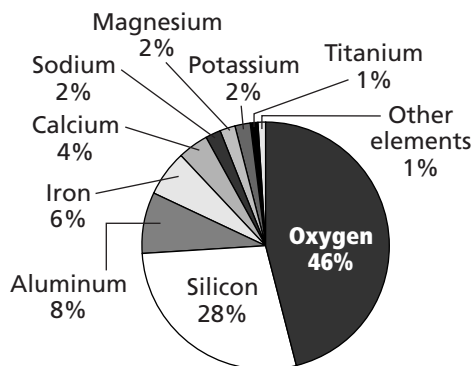
1. A sample of aluminum is placed in a 25-mL graduated cylinder containing 10.0 mL of water. The level of water rises to 18.0 mL. Aluminum has a density of 2.7 g/mL. Calculate the mass of the sample.
2. Saturn is about 1 429 000 km from the Sun. How many meters is Saturn from the Sun? Write your answer 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. a. $5.3 \times 10^{12} + 3.0 \times 10^{11} =$
 b. $3.7 \times 10^6 - 8.0 \times 10^5 =$
 c. $1.85 \times 10^{16} + 9.25 \times 10^{16} =$
 d. $2.8 \times 10^{22} + 82 \times 10^{21} =$
 e. $3.09 \times 10^{20} - 9.1 \times 10^{19} =$
 f. $17 \times 10^3 + 3 \times 10^4 + 1.3 \times 10^4 =$
 g. $4.80 \times 10^{15} - 13 \times 10^{13} =$
11. a. $(4.0 \times 10^5) \times (3.0 \times 10^3) =$
 b. $(5.0 \times 10^{12}) \times (8.05 \times 10^3) =$
 c. $(8.9 \times 10^5) \div (3.0 \times 10^3) =$
 d. $(1.6 \times 10^{12}) \div (8.01 \times 10^{-3}) =$
 e. $(9.0 \times 10^5) \times (3.0 \times 10^{-3}) =$
 f. $(2.4 \times 10^3) \div (8.0 \times 10^{-3}) =$
 g. $(6.1 \times 10^{-5}) \div (3.01 \times 10^{-2}) =$
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.
- $2.30\ \text{m} \times 3.65\ \text{m} \times 0.55\ \text{m} =$
 - $103.8\ \text{m} \div 31\ \text{s} =$
 - $26.0\ \text{cm} \times 2.1\ \text{cm} =$