

Summer Chemistry Homework - AP

- What is the elemental symbol for each of the following elements?
a. Hydrogen b. Helium c. Sodium d. Nitrogen e. Neon f. Silver
- What is the elemental symbol for each of the following elements?
a. Potassium b. Platinum c. Plutonium d. Lead e. Tin f. Phosphorus
- What is the name of each of the following elements?
a. As b. Ar c. Al d. Hg e. Au f. Ag g. At h. Fe
- What is the name of each of the following elements?
a. Br b. Be c. B d. Ba e. Bi f. Se
- What element is just after xenon in the periodic table?
- What element is just before sodium on the periodic table?
- What are the names and chemical symbols of the elements that are vertical and horizontal neighbors of sulfur in the periodic table? Which of these have chemical properties similar to those of sulfur?
- What are the names and chemical symbols of the elements that are vertical and horizontal neighbors of tin in the periodic table? Which of these have chemical properties similar to those of tin?
- Classify each of the following as a pure substance, solution, or heterogeneous mixtures:
a. Block of iron b. Cup of coffee c. Glass of milk d. Atmosphere, when free of dust
e. Atmosphere, when dusty f. Block of wood
- Classify each of the following as a pure substance, solution, or heterogeneous mixture:
a. Blood b. Dry ice c. Krypton gas d. A rusty nail e. Table salt
- Classify each of the following as a solid, liquid or gas:
a. Gasoline b. Teflon tape c. Snow d. Water vapor
- Classify each of the following as a solid, liquid or gas:
a. Tree sap b. Ozone c. Dry ice d. Motor oil
- Classify each of the following as a chemical or physical change:
a. Formation of frost b. Drying of clothes c. Burning of leaves
- Classify each of the following as a chemical or physical change:
a. Water boiling b. Coffee brewing c. Photographic film being developed
- Classify each of the following as an element, a compound, or a mixture:
a. Lake water b. Distilled water c. Mud d. Helium inside a balloon
e. Rubbing alcohol f. Paint
- Classify each of the following as an element, a compound, or a mixture:
a. Earth's atmosphere b. Beer c. Iron magnet d. Ice
e. Liquid bromine f. Mercury in a barometer

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17. What is the total mass in grams, expressed in scientific notation with the correct # of significant figures, of a solution containing 2.000 kg of water, 6.5 g sodium chloride and 47.546 g of sugar?

18. Convert the following:

a. 5.00 days to seconds b. 0.0550 mi to m c. \$1.89/gal to \$/liter d. 0.510 in/s to km/hr

19. The speed of light in a vacuum is 2.998×10^8 m/s. Calculate the speed in km/hr.

20. A plastic block measures 15.5 cm by 4.6 cm by 1.75 cm, and its mass is 98.456 g. Calculate the density of the plastic.

21. A penny has a diameter of 1.9 cm and a thickness of 0.12 cm, and its mass is 2.51 g.

Calculate the density of the penny. (Cylinder volume = $\Pi r^2 h$)

22. A cylindrical rod formed from silicon is 16.8 cm long and has a mass of 2.17 kg. The density of silicon is 2.33 g/cm^3 . What is the diameter of the cylinder?

23. Gold can be hammered into extremely thin sheets called gold leaf. If a 200.0 mg piece of gold (density = 19.32 g/cm^3) is hammered into a sheet measuring 2.40 x 1.00 ft, what is the average thickness of the sheet?

24. A chemist who wished to verify the density of water constructed a cylindrical container of aluminum 4.500 inches high, whose inside radius measured 0.875 inch. The empty cylinder has a mass of 93.054 g. When filled with water, its mass was 270.064g. Find the density of water from these data, expressing your results in SI units with the correct significant figures.

25. A chemist who prepared a new organic liquid wanted to determine its density. Having only a small sample to work with, the chemist had to use a small container. A tube whose volume was $8.00 \times 10^{-3} \text{ cm}^3$ weighed 0.4763 g when empty and 0.4827 g when filled with the liquid. Calculate the density of the liquid in g/cm^3 .

26. Bromine is one of the two elements that is a liquid at room temperature (mercury is the other). The density of bromine at room temperature is 3.12 g/mL. What volume of bromine is required if a chemist needs 36.5 g for an experiment?

27. The density of gasoline at room temperature is 0.700 g/mL. If the gas tank of a car holds 12.0 gallons, what is the mass of a tankful of gasoline?

28. Round each of the following # to four significant figures, and express the result in standard exponential notation:

a. 102.53070 b. 656,980 c. 0.00854321 d. 0.000257870 e. -0.0357202

29. Carry out the following operations, and express the answer with the appropriate # of significant figures.

a. $320.55 - (6104.4/2.3)$ b. $[(285.3 \times 10^5) - (1.200 \times 10^3)] \times 2.8954$
c. $(0.0045 \times 20,000.0) + (2813 \times 12)$ d. $863 \times [1255 - (3.45 \times 10^8)]$

30. Convert the following temperatures.

a. 62°F to °C b. 216.7°C to °F c. 2500°F to K d. 315 K to °F