

For answers, send email to: [admin@tutor-homework.com](mailto:admin@tutor-homework.com).

**Include file name:** Chemistry\_Worksheet\_0070

Price: \$3

(c) 2012 [www.tutor-homework.com](http://www.tutor-homework.com): Tutoring, homework help, help with online classes.

**1.**

The heat of combustion of *n*-octane, C<sub>8</sub>H<sub>18</sub>, is  $-4.79 \times 10^7$  J/kg. What is the heat of combustion expressed in kJ/g?

**Student Response**

1.  $-4.79 \times 10^3$  kJ/g
2.  $-4.79 \times 10^1$  kJ/g
3.  $-4.79 \times 10^4$  kJ/g
4.  $-4.79 \times 10^{10}$  kJ/g
5.  $-4.79 \times 10^7$  kJ/g

**2.**

The number of significant figures in  $9.3002 \times 10^{-2}$  g is

**Student Response**

1. 3.
2. 4.
3. 5.
4. 6.
5. 7.

**3.**

One-hundredth of a centigram is

**Student Response**

1. 0.01 g.
2. 100 g.
3. 0.00001 g.
4. 0.0001 g.
5. 0.001 g.

**4.**

The heat of combustion of benzoic acid is  $-26.4$  kJ/g. What is the heat of combustion expressed in joules per kilogram?

**Student Response**

1.  $-2.64 \times 10^7$  J/kg
2.  $-2.64 \times 10^4$  J/kg
3.  $-2.64 \times 10^1$  J/kg

4.  $-2.64 \times 10^{10}$  J/kg

5.  $-2.64 \times 10^3$  J/kg

**5.**

The smallest identifying unit of an element is

**Student Response**

1. a photon.
2. a mole.
3. an atom.
4. anti-matter.
5. a proton.

**6.**

Weight is

**Student Response**

- A. measured in moles.
- B. a measurement of the gravitational force on a body.
- C. measured in pounds according to the SI system of measurements.
- D. a measure of the amount of matter in a body.
- E. none of the above.

**7.**

How many scruples are there in 25.8 lb? Which of the following represents a correct setup to solve the problem? Some equivalents that may be helpful are given below:

1.00 scruple = 20.0 grains

1.00 g = 15.4 grains

1.00 grain = 0.0648 g

1.00 lb = 453.6 g

1.00 kg = 2.205 lb

**Student Response**

1.  $\frac{1.00 \text{ scruple}}{20.0 \text{ grains}} \times \frac{15.4 \text{ grains}}{1.00 \text{ g}} \times \frac{453.6 \text{ g}}{1.00 \text{ lb}} \times 25.8 \text{ lb}$
2.  $\frac{20.0 \text{ grains}}{1.00 \text{ scruple}} \times \frac{1.00 \text{ g}}{15.4 \text{ grains}} \times \frac{1.00 \text{ grain}}{0.0648 \text{ g}} \times \frac{453.6 \text{ g}}{1.00 \text{ lb}} \times 25.8 \text{ lb}$
3.  $\frac{1.00 \text{ scruple}}{20.0 \text{ grains}} \times \frac{15.4 \text{ grains}}{1.00 \text{ g}} \times \frac{0.0648 \text{ g}}{1.00 \text{ grain}} \times \frac{453.6 \text{ g}}{1.00 \text{ lb}} \times 25.8 \text{ lb}$
4.  $\frac{1.00 \text{ scruple}}{20.0 \text{ grains}} \times \frac{1.00 \text{ grain}}{0.0648 \text{ g}} \times \frac{1.00 \text{ kg}}{2.205 \text{ lb}} \times \frac{1.00 \text{ lb}}{453.6 \text{ g}} \times \frac{1000 \text{ g}}{1 \text{ kg}} \times 25.8 \text{ lb}$
5.  $\frac{1.00 \text{ scruple}}{20.0 \text{ grains}} \times \frac{1.00 \text{ grain}}{0.0648 \text{ g}} \times \frac{1.00 \text{ kg}}{2.205 \text{ lb}} \times 25.8 \text{ lb}$

**8.**

The distance between atoms is sometimes given in picometers where 1 pm is equivalent to  $1 \times 10^{-12}$  m. If the distance between the layers of atoms in a particular compound is given as 340 pm, what is the distance in cm?

**Student Response**

1.  $3.40 \times 10^{-6}$  cm
2.  $3.40 \times 10^{-8}$  cm
3.  $3.40 \times 10^{-10}$  cm
4.  $3.40 \times 10^{-12}$  cm
5.  $3.40 \times 10^{-14}$  cm

**9.**

Convert 16.9  $\mu$ L to L.

**Student Response**

1.  $1.69 \times 10^{-11}$  L
2.  $1.69 \times 10^7$  L
3.  $1.69 \times 10^{-5}$  L
4.  $1.69 \times 10^{10}$  L
5.  $1.69 \times 10^{-8}$  L

**10.**

What is the mass of  $\text{H}_2\text{SO}_4$  in a  $48.1\text{-cm}^3$  sample of sulfuric acid that has a density of  $1.44\text{ g/cm}^3$  and consists of 46.2%  $\text{H}_2\text{SO}_4$ ?

**Student Response**

1. 150 g
2. 1.38 g
3. 32.0 g
4. 69.3 g
5. 15.4 g

**11.**

The speed of a car is 52.7 miles per hour. What is its speed in units of km/s? (1 km = 0.6214 mi)

**Student Response**

1.  $9.10 \times 10^{-3}$  km/s
2.  $2.36 \times 10^{-2}$  km/s
3.  $3.05 \times 10^5$  km/s
4.  $1.18 \times 10^5$  km/s
5.  $1.41 \times 10^0$  km/s

**12.**

Which of the following sets of units is *not* in the order of increasing size?

**Student Response**

1. cPa < dPa < kPa
2.  $\mu\text{L}$  < dL < L
3.  $\mu\text{g}$  < mg < cg
4. ns < ms < s
5. pm < mm < nm

**13.**

How many rundlets are there in 226 in<sup>3</sup>? Some conversion factors that may be useful are given below:

- 1.00 barrel = 42.0 gallons
- 1.00 gallon = 231 in<sup>3</sup>
- 1.00 gallon = 3.78 liters
- 1.00 rundlet =  $6.81 \times 10^4$  mL
- 1.00 liter = 1000.0 mL
- 1.00 barrel = 4.00 firkins

**Student Response**

1. 941000
2. 0.543
3. 13,400,000
4. 25,200
5. 0.0543

**14.**

A certain substance makes up  $2.2 \times 10^{-4}$  percent by mass of a normal healthy human being. How many grams of that substance would be found in the body of a person weighing 140 lb? (1.0 kg = 2.2 lb.)

**Student Response**

1. 0.14 g
2. 1.4 g
3. 310 g
4. 140 g
5. 0.7 g

**15.**

What is the best answer to report for  $\frac{3.478 \text{ g} \times 1.164 \text{ g}}{2.00 \text{ mL}} + 0.402 \text{ g/mL}$ ?

**Student Response**

1. 2.43 g/mL
2. 3 g/mL

3. 2.4 g/mL
4. 2.4262 g/mL
5. 2.426 g/mL

**16.**

Which of the following is *not* a step of the scientific method?

**Student Response**

1. Making observations
2. Creating a hypothesis
3. Designing experiments
4. Writing a grant
5. Formulating a question

**17.**

What is the correct answer to the following expression?

$$3.54 \times 10^{-10} + 2.68 \times 10^{-12}$$

**Student Response**

- A.  $3.5668 \times 10^{-10}$
- B.  $3.567 \times 10^{-10}$
- C.  $3.57 \times 10^{-10}$
- D.  $3.6 \times 10^{-10}$
- E. None of the above

**18.**

The number of significant figures in  $0.074100 \times 10^{-4}$  is

**Student Response**

1. 6.
2. 5.
3. 3.
4. 4.
5. 7.

**19.**

Convert  $47.4 \text{ m}^3$  to  $\text{pm}^3$ .

**Student Response**

1.  $4.74 \times 10^{13} \text{ pm}^3$
2.  $4.74 \times 10^{-23} \text{ pm}^3$
3.  $4.74 \times 10^{-35} \text{ pm}^3$
4.  $4.74 \times 10^{25} \text{ pm}^3$

5.  $4.74 \times 10^{37} \text{ pm}^3$

**20.**

Which is the largest mass?

**Student  
Response**

1. 10 dg
2. 10 ng
3. 10 cg
4. 10 pg
5. 10 mg