Chemskills Quantitative Practice Test

Select the best answer.

1) The liter is defined as

a) 1000 m^3. b) 1000 cm^3.

c) 1000 g^3. d) 1000 c^3.

2) The density of aluminum is 2.70 g/cm^3. The volume of a solid piece of aluminum is 1.50 cm^3. Find its mass.

a) 1.50 g b) 1.80 g

c) 2.70 g d) 4.05 g

3) The density of sugar is 1.59 g/cm^3. The mass of a sample is 4.0 g. Find the volume of the sample.

a) 2.5 cm^3 b) 6.36 cm^3

c) 0.39 cm^3 d) 2.5 g/cm^3

4) 1.06 L of water is equivalent to

a) 0.001 06 mL. b) 10.6 mL.

c) 106 mL. d) 1060 mL.

5) The number of grams equal to 0.5 kg is

a) 0.0005. b) 0.005.

c) 500. d) 5000.

6) How many minutes are in 1 week?

a) 168 min b) 1440 min

c) 10 080 min d) 100 800 min

7) If 1 inch equals 2.54 cm, how many centimeters equal 1 yard?

a) 0.07 cm b) 14.17 cm

c) 36 cm d) 91.4 cm

8) These values were obtained as the mass of products from the same reaction: 8.83 g; 8.84 g; 8.82 g. The known mass of products from that reaction is 8.60 g. The values are

a) accurate. b) precise.

c) both accurate and precise. d) neither accurate nor precise.

9) To two significant figures, the measurement 0.0255 g should be reported as

a) 0.02 g. b) 0.025 g.

c) 0.026 g. d) 2.5×10^2 g.

10) In division and multiplication, the answer must not have more significant figures than the

a) number in the calculation with fewest significant figures. b) number in the calculation with most significant figures.

c) average number of significant figures in the calculation. d) total number of significant figures in the calculation.

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11) The number of significant figures in the measurement 0.000 305 kg is

a) 3. b) 4.

c) 5. d) 6.

12) The number of significant figures in the measured value 0.003 20 g is

a) 2. b) 3.

c) 5. d) 6.

13) The number of significant figures in the measurement 170.040 km is

a) 3. b) 4.

c) 5. d) 6.

14) The number of significant figures in the measurement 210 cm is

a) 1. b) 2.

c) 3. d) 4.

15) The dimensions of a rectangular solid are measured to be 1.27 cm, 1.3 cm, and 2.5 cm. The volume should be recorded as

a) 4.128 cm^3. b) 4.12 cm^3.

c) 4.13 cm^3. d) 4.1 cm^3.

16) Three samples of 0.12 g, 1.8 g, and 0.562 g are mixed together. The combined mass of all three samples, expressed to the correct number of significant figures, should be recorded as

a) 2.4 g. b) 2.48 g.

c) 2.482 g. d) 2.5 g.

17) The correct number of significant figures that should appear in the answer to the calculation $3.475 \times 1.97 + 2.4712$ is

a) 2. b) 3.

c) 4. d) 5.

18) Expressed in scientific notation, 0.0930 m is

a) 93×10^{-3} m. b) 9.3×10^{-3} m.

c) 9.30×10^{-2} m. d) 9.30×10^{-4} m.

19) The speed of light is 300 000 km/s. In scientific notation, this speed is

a) 3×10^5 km/s. b) 3.00×10^5 km/s.

c) 3.0×10^6 km/s. d) 3.00×10^6 km/s.

20) The average distance between the Earth and the moon is 386 000 km. Expressed in scientific notation, this distance is

a) 386×10^3 km. b) 38×10^4 km.

c) 3.8×10^5 km. d) 3.86×10^5 km.

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21) An analytical balance can measure mass to the nearest 1/10 000 of a gram, 0.0001 g. In scientific notation, the accuracy of the balance would be expressed as

a) 1.0×10^{-3} g. b) 1×10^{3} g.

c) 1×10^{4} g. d) 1×10^{-4} g.

22) When 1.92×10^{-6} kg is divided by 6.8×10^{2} mL, the quotient in kg/mL equals

a) 2.8×10^{-4}. b) 2.8×10^{-5}.

c) 2.8×10^{-8}. d) 2.8×10^{-9}.

23) When 6.02×10^{23} is multiplied by 9.1×10^{-31}, the product is

a) 5.5×10^{-8}. b) 5.5×10^{54}.

c) 5.5×10^{-7}. d) 5.5×10^{-53}.

24) In an experiment, the gram atomic mass of magnesium was determined to be 24.7. Compared to the accepted value 24.3, what is the percent error for this determination?

A) 24.7 B) 98.4 C) 1.65 D) 0.400

25) A student calculated the percent by mass of water in a hydrate to be 37.2%. If the accepted value is 36.0%, the percent error in the student's calculation is equal to

A) $\frac{36.0}{37.2} \times 100$ B) $\frac{37.2}{36.0} \times 100$ C) $\frac{1.2}{37.2} \times 100$ D) $\frac{1.2}{36.0} \times 100$

ANSWER KEY

1) b
2) d
3) a
4) d
5) c
6) c
7) d
8) b
9) c
10) a
11) a
12) b
13) d
14) b
15) d
16) d
17) b
18) c
19) a
20) d
21) d
22) d
23) c
24) C
25) D