

1. Which equation is equal to 0.00539?

- A)  $5.39 \times 10^3$
- B)  $5.39 \times 10^2$
- C)  $5.39 \times 10^{-3}$
- D)  $5.39 \times 10^{-2}$

2. Which equation is equal to 623?

- A)  $6.23 \times 10^3$
- B)  $6.23 \times 10^2$
- C)  $6.23 \times 10^{-3}$
- D)  $6.23 \times 10^{-2}$

3. In the SI system of measurement, the unit of mass is the:

- A) kilogram.
- B) meter.
- C) liter.
- D) yard.

4. The distribution of hits on the bull's-eye is described as:



- A) both accurate and precise.
- B) neither accurate nor precise.
- C) accurate but not precise.
- D) precise but not accurate.

5. A student measures the volume of a solution to be 0.03010 L. How many significant digits are in this measurement?

- A) two
- B) three
- C) four
- D) five

6. A student measures the volume of a solution to be 0.00370 L. How many significant digits are in this measurement?
- A) two
  - B) three
  - C) four
  - D) five
7. A solution has a mass of 15.03 grams and a volume of 14.4 mL. What is the density of this solution, reported to the correct number of significant digits?
- A) 1.04 g/mL
  - B) 1.044 g/mL
  - C) 0.958 g/mL
  - D) 0.9581 g/mL
8. A sample of metal has a mass of 0.0049 grams. What is this mass in milligrams?
- A) 0.0000049 mg
  - B) 4.9 mg
  - C) 490 mg
  - D)  $4.9 \times 10^{12}$  mg
9. A sample of metal has a mass of 0.0793 kilograms. What is this mass in grams?
- A) 0.00000793 g
  - B) 793 g
  - C) 79.3 g
  - D)  $7.93 \times 10^{12}$  g
10. Which amount is equal to 1 mL?
- A) 0.01 L
  - B) 1000 cm<sup>3</sup>
  - C) 1 dm<sup>3</sup>
  - D) 1 cm<sup>3</sup>
11. Which amount is equal to 1 liter?
- A) 0.01 L
  - B) 1 dm<sup>3</sup>
  - C) 1 cm<sup>3</sup>
  - D) 0.1 m<sup>3</sup>

12. A candle made of a certain wax blend burns at a rate of 34.0 mg/min. What is the value of this burn rate if expressed in grams/hour?
- A) 2.04 g/hr
  - B) 567 g/hr
  - C) 1,764 g/hr
  - D) 2,040 g/hr
13. A car is moving at 60.0 mi/hr. How many feet/second is the driver traveling? (1 mile = 5,280 feet)
- A) 8.80 ft/sec
  - B) 88.0 ft/sec
  - C) 880 ft/sec
  - D) 95.2 ft/sec
14. The density of bromine is 3.12 g/mL. What is the mass of 155 mL of bromine?
- A) 0.0201 g
  - B) 38.2 g
  - C) 49.7 g
  - D) 484 g
15. A piece of driftwood has a density of 0.76 g/cm<sup>3</sup>, while a piece of alloy has a density of 6.7 g/cm<sup>3</sup>. Which statement is accurate?
- A) Both the driftwood and the alloy will float on pure water.
  - B) Neither the driftwood nor the alloy will float on pure water.
  - C) The driftwood will sink when placed on pure water, but the alloy will float.
  - D) The driftwood will float on pure water, but the alloy will sink.
16. A block of titanium metal has a mass of 104.3 g. Given titanium's density (4.51 g/cm<sup>3</sup>), what volume does this block of titanium occupy in liters?
- A) 23.2 L
  - B) 0.0231 L
  - C) 232 L
  - D) 0.00231 L
17. A block of titanium metal has a mass of 1.22 kg. Given titanium's density (7.87 g/cm<sup>3</sup>), what volume does this block of titanium occupy in liters?
- A) 0.155 L
  - B) 155 L
  - C) 1.55 L
  - D)  $1.55 \times 10^{-4}$  L

18. Unknown sample #1 has a mass of 0.500 g and a volume of 0.750 mL. Unknown sample #2 has a mass of 12.1 g and a volume of 452 mL. Which statement is accurate concerning the two samples?
- A) Unknown sample #1 has a density of  $1.50 \text{ g/cm}^3$ .
  - B) Unknown sample #2 has a density of  $37.4 \text{ g/cm}^3$ .
  - C) Unknown sample #1 has the greater density— $0.667 \text{ g/cm}^3$
  - D) Unknown sample #2 has the greater density— $0.0268 \text{ g/cm}^3$
19. A 100.0-mL sample of lead has a much greater mass than a 100.0-mL sample of quartz. Select the accurate statement.
- A) The lead sample also has the greater density.
  - B) The quartz sample has the greater density.
  - C) Both the lead sample and the quartz sample have the same density.
  - D) There is not enough information to determine which sample has the greater density.
20. Which element will float on pure water?
- A) iron (density =  $7.87 \text{ g/cm}^3$ )
  - B) copper (density =  $8.96 \text{ g/cm}^3$ )
  - C) gold (density =  $19.31 \text{ g/cm}^3$ )
  - D) None of these elements will float on pure water.
21. A solution has a mass of 17.41 grams and a volume of 14.4 mL. What is the density of this solution, reported to the correct number of significant digits?
- A)  $1.21 \text{ g/mL}$
  - B)  $0.827 \text{ g/mL}$
  - C)  $250.7 \text{ g/mL}$
  - D)  $1.209 \text{ g/mL}$
22. On the Celsius temperature scale, the boiling point of water is
- A)  $0 \text{ }^\circ\text{C}$
  - B)  $32 \text{ }^\circ\text{C}$
  - C)  $100 \text{ }^\circ\text{C}$
  - D)  $212 \text{ }^\circ\text{C}$
23. Which statement is accurate concerning temperature?
- A) The freezing point of water is  $0 \text{ }^\circ\text{F}$ .
  - B) The boiling point of water is  $32 \text{ }^\circ\text{C}$ .
  - C) One degree Celsius is a greater unit than 1 degree Fahrenheit.
  - D) One degree Fahrenheit is a greater unit than 1 degree Celsius.

24. 285.25 K is also \_\_\_\_\_ °C.
- A) -261.10
  - B) 12.10
  - C) 53.69
  - D) 100
25. Which temperature is the HOTTEST?
- A) 516 K
  - B) 234 °C
  - C) 475 °F
  - D) None—all of these temperatures are the same.
26. Which temperature is the COLDEST?
- A) 116 K
  - B) -20 °C
  - C) -105 °F
  - D) None—all of these temperatures are the same.
27. 285.2 K is also \_\_\_\_\_ °F.
- A) -261.1
  - B) 12.05
  - C) 53.69
  - D) 100
28. Select the temperature scale that scientists use for very low temperatures as well as to predict the way gases behave.
- A) Celsius
  - B) Fahrenheit
  - C) Kelvin
  - D) All of these temperature scales are used for these purposes.
29. Select the temperature scale that MOST of the world uses.
- A) Celsius
  - B) Fahrenheit
  - C) Kelvin
  - D) All of these temperature scales are used equally around the world.

30. Normal average normal body temperature is  $98.6\text{ }^{\circ}\text{F}$ . Three children have their temperature taken at a doctor's office. The first child has a temperature of  $310\text{ K}$ . The second child has a body temperature of  $98.5\text{ }^{\circ}\text{F}$ . The third child has a body temperature of  $38.3\text{ }^{\circ}\text{C}$ . Which child is running a fever (has a temperature greater than  $100\text{ }^{\circ}\text{F}$ )?
- A) the first child
  - B) the second child
  - C) the third child
  - D) All of the children are running a fever.

## Answer Key

1. C
2. B
3. A
4. D
5. C
6. B
7. A
8. B
9. C
10. D
11. B
12. A
13. B
14. D
15. D
16. B
17. A
18. C
19. A
20. D
21. A
22. D
23. C
24. B
25. C
26. A
27. C
28. C
29. A
30. C