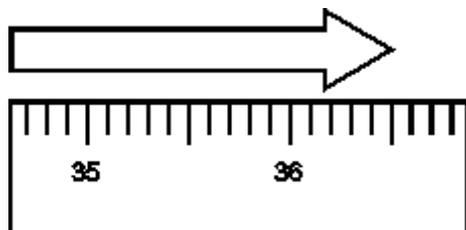


Practice Problems for Intro, Conversions, and Measurements

1) How long is this arrow?

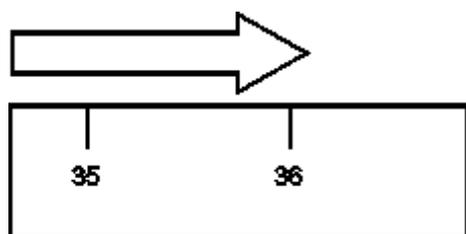
1) _____



- A) 36.5 cm B) 36.99 cm C) 36.50 cm D) 36.500 E) 36.525

2) How long is this arrow?

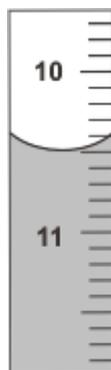
2) _____



- A) 36.1 cm B) 36 cm C) 36.10 cm D) 36.25 cm E) 36.0 cm

3) What is a correct reading on this burette?

3) _____



- A) 11.50 mL B) 16.00 mL C) 10.50 mL D) 10.5 mL E) 11.5 mL

4) The measurement of the gravitational pull on an object is its _____.

4) _____

- A) weight B) volume C) size D) mass E) length

5) The amount of space occupied by a substance is its _____.

5) _____

- A) length B) volume C) mass D) density E) weight

6) Which of the following is a unit of volume in the SI system?

6) _____

- A) gram B) gallon C) fluid ounce D) kilogram E) liter

- 7) What is the metric relationship between grams and micrograms? 7) _____
- A) $1 \mu\text{g} = 0.000001 \text{ g}$
 B) $1 \mu\text{g} = 100 \text{ g}$
 C) $1 \mu\text{g} = 0.001 \text{ g}$
 D) $1 \mu\text{g} = 1000 \text{ g}$
 E) $1 \mu\text{g} = 1\,000\,000 \text{ g}$
- 8) The prefix "milli" means: 8) _____
- A) 10^{-3} B) 10^{-6} C) 10^{-2} D) 10^{-9} E) 10^{-1}
- 9) The prefix "micro" means: 9) _____
- A) 10^{-6} B) 10^{-1} C) 10^{-3} D) 10^{-9} E) 10^{-2}
- 10) The prefix "nano" means: 10) _____
- A) 10^{-6} B) 10^{-3} C) 10^{-2} D) 10^{-1} E) 10^{-9}
- 11) Express the following numbers using scientific notation: 11) _____
- A) 156000 _____
 B) 680000000 _____
 C) 0.000430 _____
 D) 0.00302 _____
 E) 30650 _____
- 12) Which of the following numbers is the smallest? 12) _____
- A) 4.0×10^{-12} B) 4.0×10^{-6} C) 4.0×10^{15} D) 4.0×10^{-2} E) 4.0×10^{-8}
- 13) Which of the following numbers is the largest? 13) _____
- A) 2.0×10^5 B) 2.0×10^{-12} C) 2.0×10^3 D) 2.0 E) 2.0×10^8
- 14) How many significant figures do each of the following measurements have? 14) _____
- A) 0.051 m _____
 B) 510 m _____
 C) 0.005 m _____
 D) 0.510 m _____
 E) 5100 m _____

15) How many significant figures do each of the following numbers have?

a) 1.04 _____ b) 156000 _____ c) 0.00320 _____ d) 1000 _____

e) 0.004 _____ f) 5390.0 _____ g) 6.30×10^{-4} _____ h) 0.20 _____

16) Which of the following conversion factors is a measured number, not an exact number?

A) 100 cm/m

B) 12 in/ft

C) 12 eggs/dozen

D) 2.70g/cm³

16) _____

17) A calculator answer of 423.6059 must be rounded off to three significant figures. What answer should be reported?

18) A calculator answer of 510000000 must be rounded off to three significant figures. What answer should be reported?

19) What is the correct answer for this operation?

$$4.392 \text{ g} + 102.40 \text{ g} + 2.51 \text{ g} =$$

20) What is the correct answer for this operation?

$$7.5 \text{ g} + 2.26 \text{ g} - 1.311 \text{ g} + 2 \text{ g} =$$

21) What is the correct answer for this operation?

$$\frac{7.5 \text{ g}}{2.26 \text{ g}} =$$

22) What is the correct answer for this operation?

$$\frac{1.5 \times 10^{13} \text{ g}}{2.96 \times 10^2 \text{ g}} =$$

23) What is the correct answer for this operation?

$$89.3 \text{ m} \times 12.396 \text{ m} =$$

24) What is the correct answer for this operation?

$$6.782 \text{ g} \times \frac{\text{mg}}{10^{-3} \text{ g}} =$$

25) What is the correct answer for this operation?

$$\frac{28.58}{16 \times 8.02} =$$

26) The cubic centimeter (cm³ or cc) has the same volume as a _____.

26) _____

- A) cubic decimeter
- B) centimeter
- C) cubic liter
- D) milliliter
- E) cubic inch

27) One centimeter is equal to how many meters?

28) How many pounds are in 3.5 kg (1kg = 2.2lbs)?

29) How many kilograms are in 30.4 lb (1kg = 2.2lbs)?

30) What is 6.5 m converted to inches (1 inch = 2.54 cm)?

31) Convert 1400 mm to inches (1 inch = 2.54 cm)?

32) What is 21.0 quarts expressed in cm³ (1 L = 1.06 qt)?

33) Absolute zero is _____.

33) _____

- A) the freezing point of liquid nitrogen
- B) the coldest temperature possible
- C) the temperature on the Kelvin scale corresponding to 32°F
- D) the boiling point of liquid nitrogen
- E) the freezing point of water using the Celsius scale

34) The temperature of liquid nitrogen is about -196°C. What is this temperature on the Kelvin scale?

35) A patient has a temperature of 38.5°C. What is the temperature in degrees Fahrenheit?

36) On a hot day, the thermometer read 95°F. What is the temperature in degrees Celsius?

37) On a hot day, the thermometer read 95°F. What is the temperature in Kelvins?

38) Which of the following is the highest temperature?

A) 0 °C

B) 270 K

C) 0 K

D) 20 °F

E) 0 °F

38) _____

39) The ratio of the mass of a substance to its volume is its _____.

A) specific gravity

B) conversion factor

C) density

D) buoyancy

E) weight

39) _____

40) Mercury has a density of 13.6 g/mL. How many milliliters of mercury have a mass of 0.35 kg?

41) What is the mass of a 468 mL sample of ethanol? The density of ethanol is 0.789 g/mL.

42) Ethylene glycol, the main component of most types of antifreeze solutions, has a density of 1.11 g/mL. What is the volume occupied by 30.0 g of ethylene glycol?

43) Calculate the density in g/cm³ of a 15.0 g block of aluminum with a displacement volume of 5.56 mL.

- 44) A block of wood has dimensions of $1.2\text{ m} \times 5.0\text{ cm} \times 7.0\text{ cm}$ and has a mass of 3.0 kg . What is the density of the wood?
- 45) The density of a solution is 1.18 g/mL , and its volume is 25.0 mL . What is the mass of the sample?
- 46) What is the density of a substance with a mass of 45.00 g and a volume of 26.4 mL ?
- 47) A nugget of gold with a mass of 521 g is added to 50.0 mL of water. The water level rises to a volume of 77.0 mL . What is the density of the gold?
- 48) A dose of aspirin of 5.0 mg per kilogram of body weight has been prescribed to reduce the fever of an infant weighing 8.5 pounds . How many milligrams of aspirin should be administered to the infant? ($1\text{kg} = 2.2\text{lbs}$)