

CHAPTER 1—BASIC MATHEMATICS

MULTIPLE CHOICE

1. $1/7 + 5/9 =$

- a. $6/16$
- b. $35/63$
- c. $44/63$
- d. $9/35$

ANS: C PTS: 1 DIF: Easy

2. $5/8 \times 7/9 =$

- a. $12/17$
- b. $45/56$
- c. $12/72$
- d. $35/72$

ANS: D PTS: 1 DIF: Easy

3. $1/6 \div 4/5 =$

- a. $1/5$
- b. $4/11$
- c. $5/24$
- d. $4/30$

ANS: C PTS: 1 DIF: Easy

4. $46.3 + 29.87 =$

- a. 245
- b. 2,450
- c. 76.17
- d. 7.617

ANS: C PTS: 1 DIF: Easy

5. $16.3 \times 1.2 =$

- a. 19.56
- b. 195.6
- c. 17.5
- d. 1.75

ANS: A PTS: 1 DIF: Easy

6. $1,800 \div 0.30 =$

- a. 0.0001
- b. 540
- c. 6,000
- d. 60,000

ANS: C PTS: 1 DIF: Easy

7. Convert $7/12$ to a decimal.

- a. 0.583
- b. 1.714
- c. 19.83
- d. 84.00

ANS: A PTS: 1 DIF: Medium

8. Convert 87.3% to a decimal.

- a. 0.0873
- b. 0.873
- c. 8.73
- d. 87.3

ANS: B PTS: 1 DIF: Medium

9. Change 23.46 to a percent.

- a. 0.2346 %
- b. 23.46 %
- c. 2,346 %
- d. 2,346 %

ANS: D PTS: 1 DIF: Medium

10. The number of significant digits in 3.75×10^4 is
- a. two.
 - b. three.
 - c. four.
 - d. five.

ANS: B PTS: 1 DIF: Medium

11. The inverse of 0.137 is approximately
- a. 1.37.
 - b. 7.30.
 - c. 73.
 - d. 137.

ANS: B PTS: 1 DIF: Medium

12. Convert 540.7 to scientific notation.
- a. 5.407×10^2
 - b. 5.407×10^{-2}
 - c. 5.407×10^3
 - d. 5.407×10^{-3}

ANS: B PTS: 1 DIF: Medium

13. $2.63 \times 10^{-2} =$
- a. 0.00263
 - b. 0.0263
 - c. 26.3
 - d. 263

ANS: B PTS: 1 DIF: Medium

14. If you purchase four (4) twelve-packs of soda as a fundraiser for \$10.00 and sell each can of soda for 50 cents, your profit is
- a. \$9.74.
 - b. \$14.00.
 - c. \$24.00.
 - d. \$34.00.

ANS: B PTS: 1 DIF: Medium

15. Mercury (Hg), a metal, is liquid at room temperature. Its density is 13.6 g/cm^3 . If you have 100 mL of Hg, how many grams do you have?
- a. 0.136
 - b. 1.36×10^{-3}
 - c. 136
 - d. 1.36×10^3

ANS: D PTS: 1 DIF: Difficult

16. Convert 113°F to $^\circ\text{C}$.
- a. 20.3°C
 - b. 62.8°C
 - c. 81°C
 - d. 235°C

ANS: B PTS: 1 DIF: Medium

17. The equation $(x+y)^2$ can be expressed as:
- a. $x^2 + 2xy + y^2$
 - b. $2x + 2y$
 - c. $x + 2xy + y^2$
 - d. $x^2 + y^2 + xy$

ANS: A PTS: 1 DIF: Medium

18. Consider the following proportional relationship: $x = ay/bd$. Assuming all other quantities remain constant, what happens to the value of x when b increases?
- a. increases
 - b. decreases
 - c. remains the same
 - d. cannot be determined

ANS: B PTS: 1 DIF: Medium

19. Consider the following proportional relationship: $x = ay/bd$. Assuming all other quantities remain constant, what happens to the value of x when d decreases?
- a. increases
 - b. decreases
 - c. remains the same
 - d. cannot be determined

ANS: A PTS: 1 DIF: Medium

20. Consider the following proportional relationship: $x = ay/bd$. Assuming all other quantities remain constant, what happens to the value of x when the product of bd increases?
- a. increases
 - b. decreases
 - c. remains the same
 - d. cannot be determined

ANS: B PTS: 1 DIF: Medium

COMPLETION

1. 74 kV is equal to _____ volts.

ANS: 74,000

PTS: 1 DIF: Easy

2. 400 mA is equal to _____ amperes.

ANS: 0.40

PTS: 1 DIF: Easy

3. 120,000 V is equal to _____ kVp.

ANS: 120

PTS: 1 DIF: Easy

4. 3.7 m are equal to _____ cm.

ANS: 370

PTS: 1 DIF: Easy

PROBLEM

1. $1/R = 1/R_1 + 1/R_2$; solve for R_2 .

ANS:
 $RR_1 / R_1 - R$

PTS: 1 DIF: Difficult

2. $F = Gm_1m_2/r^2$; solve for m_1 .

ANS:
 Fr^2/Gm_2

PTS: 1 DIF: Difficult

3. $PV = nRT$; solve for T.

ANS:
 PV/nR

PTS: 1 DIF: Difficult

4. $I = E/R + r$; solve for r.

ANS:
 $E - IR/I$

PTS: 1 DIF: Difficult

5. $P = 2L + 2W$; solve for L.

ANS:
 $(P - 2W)/2$

PTS: 1 DIF: Difficult

6. $V = 1/3\pi r^2h$; solve for π .

ANS:
 $3V/r^2h$

PTS: 1 DIF: Difficult

7. $P_1V_1/T_1 = P_2V_2/T_2$; solve for V_2 .

ANS:
 $P_2V_2T_1/P_1V_1$

PTS: 1 DIF: Difficult