

## Section 2.6 Multiplication and Division of Real Numbers

### Section 2.6 Calculator Exercises

1. 30

3. 625

5. -625

7. 5.76

9. 4

### Section 2.6 Practice Exercises

1. (a)  $\frac{1}{a}$

(b) 0

(c) 0

(d) undefined

(e) positive

(f) negative

(g) 1;  $-\frac{3}{2}$

(h) All of these

3. True;  $20 \leq 20$

5. False;  $6 \leq 0$

7. -56

9. 143

11. -12.76

13.  $\left(-\frac{2}{3}\right)\left(-\frac{9}{8}\right) = \frac{18}{24} = \frac{3}{4}$

15.  $(-6)^2 = 36$

17.  $-6^2 = -36$

19.  $\left(-\frac{3}{5}\right)^3 = \left(-\frac{3}{5}\right)\left(-\frac{3}{5}\right)\left(-\frac{3}{5}\right) = -\frac{27}{125}$

21.  $(-0.2)^4 = 0.0016$

23.  $\frac{54}{-9} = -6$

25.  $\frac{-15}{-17} = \frac{15}{17}$

27.  $\frac{-14}{-14} = 1$

29.  $\frac{13}{-65} = -\frac{1}{5}$

31.  $(-2)(-7) = 14$

33.  $-5 \cdot 0 = 0$

35. No number multiplied by 0 equals 6.

37.  $(-6)(4) = -24$

39.  $2 \cdot 3 = 6$

41.  $2(-3) = -6$

43.  $(-24) \div 3 = -8$

45.  $(-24) \div (-3) = 8$

47.  $-6 \cdot 0 = 0$

49. Undefined

51.  $0\left(-\frac{2}{5}\right) = 0$

53.  $0 \div \left(-\frac{1}{10}\right) = 0$

55.  $\frac{-9}{6} = -\frac{3}{2}$

57.  $\frac{-30}{-100} = \frac{3}{10}$

59.  $\frac{26}{-13} = -2$

61.  $(1.72)(-4.6) = -7.912$

63.  $-0.02(-4.6) = 0.092$

65.  $\frac{14.4}{-2.4} = -6$

67.  $\frac{-5.25}{-2.5} = 2.1$

69.  $(-3)^2 = 9$

71.  $-3^2 = -9$

73.  $\left(-\frac{4}{3}\right)^3 = \left(-\frac{4}{3}\right)\left(-\frac{4}{3}\right)\left(-\frac{4}{3}\right)$   
 $= -\frac{64}{27}$

75.  $(-6.8) \div (-0.02) = 340$

77.  $\left(-\frac{7}{8}\right) \div \left(-\frac{9}{16}\right) = \left(-\frac{7}{8}\right) \cdot \left(-\frac{16}{9}\right)$   
 $= \frac{112}{72}$   
 $= \frac{\cancel{8} \cdot 14}{\cancel{8} \cdot 9} = \frac{14}{9}$

79.  $(-2)(-5)(-3) = (10)(-3) = -30$

81.  $(-8)(-4)(-1)(-3) = (32)(3) = 96$

83.  $100 \div (-10) \div (-5) = (-10) \div (-5) = 2$

85.  $-12 \div (-6) \div (-2) = 2 \div (-2) = -1$

87.  $\frac{2}{5} \cdot \frac{1}{3} \cdot \left(-\frac{10}{11}\right) = \frac{2}{15} \cdot \left(-\frac{10}{11}\right)$   
 $= -\frac{20}{165} = -\frac{4}{33}$

89.  $\left(1\frac{1}{3}\right) \div 3 \div \left(-\frac{7}{9}\right) = \frac{4}{3} \cdot \frac{1}{3} \div \left(-\frac{7}{9}\right)$   
 $= \frac{4}{9} \cdot \left(-\frac{9}{7}\right) = -\frac{4}{7}$

91.  $12 \div (-2)(4) = (-6)(4) = -24$

93.  $\left(-\frac{12}{5}\right) \div (-6) \cdot \left(-\frac{1}{8}\right)$   
 $= \left(-\frac{12}{5}\right) \cdot \left(-\frac{1}{6}\right) \cdot \left(-\frac{1}{8}\right)$   
 $= \frac{12}{30} \cdot \left(-\frac{1}{8}\right)$   
 $= \frac{2}{5} \cdot \left(-\frac{1}{8}\right) = -\frac{2}{40} = -\frac{1}{20}$

95.  $8 - 2^3 \cdot 5 + 3 - (-6) = 8 - 8 \cdot 5 + 3 + 6$   
 $= 8 - 40 + 3 + 6$   
 $= -23$

97.  $-(2-8)^2 \div (-6) \cdot 2 = -36 \div (-6) \cdot 2$   
 $= 6 \cdot 2 = 12$

99.  $\frac{6(-4) - 2(5-8)}{-6-3-5} = \frac{-24+6}{-14} = \frac{-18}{-14} = \frac{9}{7}$

101.  $\frac{-4+5}{(-2) \cdot 5 + 10} = \frac{1}{-10+10}$   
 $= \frac{1}{0}$  is undefined

103.  $-4 - 3[2 - (-5 + 3)] - 8 \cdot 2^2$   
 $= -4 - 3[2 - (-2)] - 8 \cdot 4$   
 $= -4 - 3[4] - 32$   
 $= -4 - 12 - 32$   
 $= -48$

105.  $-|-11|-15|=-1-5=-6$

107.  $\frac{|2-9|-|5-7|}{10-15} = \frac{7-2}{-5}$   
 $= \frac{5}{-5} = -1$

109.  $\frac{6-3[2-(6-8)]^2}{-2|2-5|} = \frac{6-3[2-(-2)]^2}{-2 \cdot 3}$   
 $= \frac{6-3 \cdot 16}{-6} = \frac{6-48}{-6}$   
 $= \frac{-42}{-6} = 7$

111.  $-x^2 = -(-2)^2 = -4$

113.  $4(2x-z) = 4(2(-2)-6)$   
 $= 4(-4-6)$   
 $= 4(-10) = -40$

115.  $\frac{3x+2y}{y} = \frac{3(-2)+2(-4)}{-4}$   
 $= \frac{-6+(-8)}{-4} = \frac{-14}{-4} = \frac{7}{2}$

117. No, the first expression equals  $10 \div (5x) = 2 \div x$ , and the second equals  $10 \div 5 \cdot x = 2x$ .

119.  $-3.75(0.3) = -1.125$

121.  $\left(\frac{16}{5}\right) \div \left(-\frac{8}{9}\right) = \frac{16}{5} \cdot \left(-\frac{9}{8}\right)$   
 $= -\frac{144}{40} = -\frac{18}{5}$

123.  $-0.4 + 6(-0.42) = -2.92$

125.  $-\frac{1}{4} - 6\left(-\frac{1}{3}\right) = -\frac{1}{4} + 2$   
 $= -\frac{1}{4} + \frac{8}{4} = \frac{7}{4}$

127.  $-2(3) + 3 = -3$ ; a loss of \$3

129.  $2(5) + 3(-3) = 1$ ; Lorne was 1 sale above quota for the week.

131.  $\frac{12+(-15)+4+(-9)+3}{5} = -1$ ;

The average loss was 1 oz.

133. (a)  $-4-3-2-1$   
 $= -4+(-3)+(-2)+(-1) = -10$

(b)  $-4(-3)(-2)(-1) = 12(2) = 24$

(c) Part (a) is subtraction; part (b) is multiplication.

### Problem Recognition Exercises

1. (a)  $-8 - (-4) = -4$

(b)  $-8(-4) = 32$

(c)  $-8 + (-4) = -12$

(d)  $-8 \div (-4) = 2$

3. (a)  $-36 + 9 = -27$

(b)  $-36(9) = -324$

(c)  $-36 \div 9 = -4$

(d)  $-36 - 9 = -45$

5. (a)  $-5(-10) = 50$

(b)  $-5 + (-10) = -15$

(c)  $-5 \div (-10) = \frac{1}{2}$

(d)  $-5 - (-10) = 5$

7. (a)  $-4(-16) = 64$

(b)  $-4 - (-16) = 12$

(c)  $-4 \div (-16) = \frac{1}{4}$

(d)  $-4 + (-16) = -20$

9. (a)  $80(-5) = -400$

(b)  $80 - (-5) = 85$

$$(c) 80 \div (-5) = -16$$

$$(d) 80 + (-5) = 75$$

$$11. (a) |-6| + |2| = 6 + 2 = 8$$

$$(b) |-6 + 2| = |-4| = 4$$

$$(c) |-6| - |-2| = 6 - 2 = 4$$

$$(d) |-6 - 2| = |-8| = 8$$