

91. let  $a = 1$  &  $b = 2$ 

$$a \odot b \neq b \odot a$$

$$1 \odot 2 \neq 2 \odot 1$$

$$2 \cdot 1 + 2 \neq 2 \cdot 2 + 1$$

$$4 \neq 5$$

So, the Commutative Property is not true.

let  $a = 1, b = 2, c = 3$ 

$$a \odot (b \odot c) \neq (a \odot b) \odot c$$

$$1 \odot (2 \odot 3) \neq (1 \odot 2) \odot 3$$

$$2 \cdot 1 + (2 \cdot 2 + 3) \neq (2 \cdot 1 + 2) \odot 3$$

$$2 + 7 \neq 4 \odot 3$$

$$9 \neq 2 \cdot 4 + 3$$

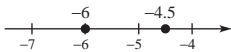
$$9 \neq 8 + 3$$

$$9 \neq 11$$

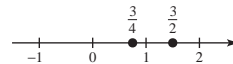
So, the Associative Property is not true.

## Mid-Chapter Quiz for Chapter P

1.  $-4.5 > -6$



2.  $\frac{3}{4} < \frac{3}{2}$



3.  $|-3.2| = 3.2$

4.  $-|5.75| = -5.75$

5.  $|-15 - 7| = |-22| = 22$

6.  $|(-10.5) - (-6.75)| = |-10.5 + 6.75|$   
 $= |-3.75| = 3.75$

7.  $32 + (-18) = 14$

8.  $-10 - 12 = (-10) + (-12) = -(10 + 12) = -22$

9.  $\frac{3}{4} + \frac{7}{4} = \frac{3+7}{4} = \frac{10}{4} = \frac{5}{2}$

10.  $2\frac{2}{3} - \frac{1}{6} = \frac{4}{6} - \frac{1}{6}$   
 $= \frac{4-1}{6} = \frac{3}{6} = \frac{1}{2}$

11.  $(-12)(-4) = 48$

12.  $\left(-\frac{4}{5}\right)\left(\frac{15}{32}\right) = \frac{(-4)(15)}{(5)(32)}$   
 $= \frac{(-4)(15)}{(5)(32)} = -\frac{3}{8}$

13.  $\frac{7}{12} \div \frac{5}{6} = \frac{7}{12} \cdot \frac{6}{5}$   
 $= \frac{(7)(6)}{(12)(5)} = \frac{(7)(\cancel{6})}{(\cancel{12})(5)} = \frac{7}{10}$

14.  $\left(-\frac{3}{2}\right)^3 = \left(-\frac{3}{2}\right)\left(-\frac{3}{2}\right)\left(-\frac{3}{2}\right)$   
 $= \frac{(-3)(-3)(-3)}{(2)(2)(2)} = -\frac{27}{8}$

15.  $3 - 2^2 + 25 \div 5 = 3 - 4 + 25 \div 5$   
 $= 3 - 4 + 5$   
 $= -1 + 5$   
 $= 4$

16.  $\frac{18 - 2(3 + 4)}{6^2 - (12 \cdot 2 + 10)} = \frac{18 - 2(7)}{36 - (24 + 10)}$   
 $= \frac{18 - 14}{36 - (34)}$   
 $= \frac{4}{2}$   
 $= 2$

17. (a)  $8(u - 5) = 8 \cdot u - 8 \cdot 5$  Distributive Property

(b)  $10x - 10x = 0$  Additive Inverse Property

18. (a)  $(7 + y) - z = 7 + (y - z)$  Associative Property of Addition

(b)  $2x \cdot 1 = 2x$  Multiplicative Identity Property

19.  $1522.76 - 328.37 - 65.99 - 50.00 + 413.88 = \$1492.28$

20.  $(\$30)(2)(12)(5) = \$3600$

21.  $1 = \frac{1}{3} + \frac{1}{4} + \frac{1}{8} + x$

$$1 - \frac{1}{3} - \frac{1}{4} - \frac{1}{8} = x$$

$$\frac{24}{24} - \frac{8}{24} - \frac{6}{24} - \frac{3}{24} = x$$

$$\frac{7}{24} = x$$

The sum of the parts of a circle is equal to 1.

## Section P.4 Algebraic Expressions

1. Terms:  $10x$ ,  $5$

3. Terms:  $-3y^2$ ,  $2y$ ,  $-8$

5. Terms:  $4x^2$ ,  $-3y^2$ ,  $-5x$ ,  $2y$

7. Terms:  $x^2$ ,  $-2.5x$ ,  $-\frac{1}{x}$

9. The coefficient of  $5y^3$  is 5.

11. The coefficient of  $-\frac{3}{4}t^2$  is  $-\frac{3}{4}$ .

13.  $4 - 3x = -3x + 4$  illustrates the Commutative Property of Addition

15.  $-5(2x) = (-5 \cdot 2)x$  illustrates the Associative Property of Multiplication

17.  $5(x + 6) = 5x + 30$

19.  $6x + 6 = 6(x + 1)$

21.  $x^3 \cdot x^4 = x \cdot x \cdot x \cdot x \cdot x \cdot x \cdot x$

23.  $z^2 \cdot z^5 = z \cdot z \cdot z \cdot z \cdot z \cdot z \cdot z$

25.  $(-5x)(-5x)(-5x)(-5x) = (-5x)^4$

27.  $(x \cdot x \cdot x)(y \cdot y \cdot y) = x^3y^3$

29.  $-2^3 \cdot 2^4 = -2^{3+4}$   
 $= -2^7$

31.  $x^5 \cdot x^7 \cdot x = x^{5+7+1} = x^{13}$

33.  $3^3y^4 \cdot y^2 = 3^3y^{4+2} = 27y^6$

35.  $(-4x)^2 = (-4)^2 \cdot x^2 = 16x^2$

37.  $-4(2x)^2 = -4(4x^2)$   
 $= -16x^2$

39.  $(-5z^2)^3 = (-5z^2)(-5z^2)(-5z^2)$   
 $= (-5 \cdot -5 \cdot -5)(z^{2+2+2})$   
 $= -125z^6$

41.  $(2xy)(3x^2y^3) = (2 \cdot 3) \cdot (x \cdot x^2) \cdot (y \cdot y^3)$   
 $= 6 \cdot (x^{1+2}) \cdot (y^{1+3})$   
 $= 6x^3y^4$

43.  $(5y^2)(-y^4)(2y^3) = (5 \cdot -1 \cdot 2)(y^{2+4+3})$   
 $= -10y^9$

45.  $-5z^4(-5z)^4 = -5z^4(625z^4)$   
 $= (-5 \cdot 625)(z^{4+4})$   
 $= -3125z^8$