

Chapter 1 Review Exercises

Fill in each blank with the word or phrase that correctly completes the sentence.

1. 0 (zero) is the additive _____ . (1.1)
2. Whole numbers and their opposites make up the set of _____. (1.2)
3. Numbers that end after a few decimal places are called _____ decimals. (1.2)
4. The sum of two negative numbers is always _____. (1.3)
5. A(n) _____ is a combination of numbers and letters connected by operations and grouping symbols. (1.8)
6. In a term, the numerical factor is called the _____. (1.8)
7. In applying the distributive property, the number (or term) that is distributed is called the _____. (1.9)
8. In an expression, the last operation to be applied is called the _____. (1.10)

True or false.

9. The identity for multiplication is 1. _____ (1.1)
10. The number π (pi) is an irrational number. _____ (1.2)
11. Zero has no value. _____ (1.3)
12. The sum of a positive number and a negative number is always negative. _____ (1.3)
13. The sum of a number and its opposite is always zero. _____ (1.3)
14. The product of a positive and negative number is always negative. _____ (1.5)

Section 1.1

Write each as a mathematical expression and find the result.

15. The quotient of 63 and 7. 16. The product of 15 and 6.

Write each expression in English.

17. $41 - 16$ 18. $12 + 65$

Use a factor pair table to identify all of the factor pairs of:

19. 36 20. 45 21. 90 22. 100

Evaluate each according to the order of operations. Show all steps.

23. $30 \div (5 - 2) \cdot 2$

24. $5 \cdot 2^3 - 10 + 15$

25. $(12 + 28) \div (7 - 3)$

26. $\sqrt{15 \cdot 3 - 9}$

27. $5^2 - 6 \cdot (5 - 3)^2$

28. $\frac{2 \cdot 10 + 8}{24 \div 6 - 2}$

Which property does each represent?

29. $6 + (3 + 9) = (6 + 3) + 9$

30. $19 \cdot 6 = 6 \cdot 19$

31. $0 + 11 = 11$

32. $3 \cdot (6 \cdot 7) = (3 \cdot 6) \cdot 7$

33. $96 + 12 = 12 + 96$

34. $18 \cdot 1 = 18$

Section 1.2

Insert the correct symbol between each pair of numbers, either $<$ (less than) or $>$ (greater than).

35. $0 \quad -9$

36. $-1 \quad 1$

37. $8 \quad -5$

38. $-4 \quad -3$

Find the absolute value, as indicated.

Identify the numerical value and direction of each number.

39. $|-11|$

40. $|9|$

41. 8

42. -5

Decide into which category or set of the real numbers each fits. Put a check mark in the box(es) that describe that number. Check all that apply. (Hint: Simplify first, wherever possible.)

		Natural	Whole	Integer	Rational	Irrational
43.	$-\sqrt{36}$	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
44.	$1.\overline{42}$	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
45.	$\sqrt{5}$	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
46.	$\frac{8}{2}$	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Section 1.3

Find the sum.

47. $5 + (-7)$

48. $-4 + (-5)$

49. $-4 + 4$

50. $-19 + 87$

51. $-80 + 17$

52. $93 + (-61)$

53. $8 + 3 + (-11) + (-19)$

54. $9 + (-10) + 5 + 18 + (-10) + (-7)$

Section 1.4

Evaluate each expression.

- 55.** $-8 - 2$ **56.** $-9 - (-10)$ **57.** $81 - 86$ **58.** $58 - (-93)$
59. $-10 - (-10)$ **60.** $5.7 + (-6.3)$ **61.** $-0.53 - 3.7$
62. $-16 + 2 - (-5) - 3$ **63.** $7 + (-8) - 4 - (-5)$ **64.** $-389 - (-522)$

For each, write a numerical expression and then evaluate. Also, write a sentence answering the question.

- 65.** Chuck's account had a debit of \$33.16 when he deposited a check for \$55. What is Chuck's new account balance? Is this a debit or a credit?
66. Sherona's credit card had a debit of \$129.55 when she used it to buy a coffee maker for \$83.26. What is Sherona's new credit card balance? Is this a debit or a credit?
67. At 2:00 AM the outside temperature was -8° F. By noon the temperature had risen 15° F. What was the temperature at noon?
68. Find the difference in altitude of the top of a cliff 73 feet above sea level and an ocean floor 28 feet below sea level.

Section 1.5

Evaluate each expression.

- 69.** $(-8)(-9)$ **70.** $(11)(-4)$ **71.** $(-0.7)(0.6)$
72. $32 \div (-8)$ **73.** $\frac{-96}{-4}$ **74.** $(-3)(-2)(-1)(8)$
75. $\frac{9}{10} \cdot \frac{-14}{3}$ **76.** $-\frac{25}{12} \cdot \left(-\frac{4}{15}\right)$ **77.** $\frac{-21}{4} \div \frac{-7}{12}$
78. $\frac{-35}{14} \div \left(\frac{-15}{8}\right)$

Section 1.6

Find the winning combination of the Factor Game with the given product and sum numbers. If there is now winning combination, state so.

- 79.** Product = 24,
Sum = 14 **80.** Product = -24,
Sum = -5 **81.** Product = 30,
Sum = 11
82. Product = 54,
Sum = -3 **83.** Product = -12,
Sum = +4 **84.** Product = +18,
Sum = -9

Section 1.7

Evaluate each expression. If an expression is undefined, state so.

85. $\sqrt{25}$

86. $-\sqrt{16}$

87. $\sqrt{-4}$

88. $-\sqrt{-9}$

Evaluate each expression.

89. $(-9)^2$

90. $(-2)^3$

91. $(-1)^4$

92. -5^2

Evaluate each expression using the order of operations. Show all steps.

93. $36 \div 3 + 6 \div (-2)$

94. $-\sqrt{-3 \cdot (-12)}$

95. $9 - \frac{2 \cdot 6}{\sqrt{16}}$

96. $15 - 6 \cdot (-3)$

97. $|2 - 8| - |-9|$

98. $\frac{2 - 3^2}{4 - 5^2}$

Find the equivalent temperature in either Celsius or Fahrenheit.

$$F = \frac{9}{5} C + 32 \quad C = 5 \cdot \frac{F - 32}{9}$$

99. The temperature is 100° C.

100. The temperature is 122° F.

Evaluate the numerical value of each formula with the given replacement values.

101. $A = \frac{1}{2} h(b + B)$

$h = 5$

$b = 3$

$B = 9$

102. $m = \frac{y - w}{x - v}$

$y = 3$

$w = -5$

$x = -6$

$v = -4$

Section 1.8

Answer each question based on the expression $4y - 5y^3 - y^2 + 9$ (in its current form).

103. What is the coefficient of the third term?

104. What is the second term?

105. What is the exponent of the first term?

106. What is the constant term?

Evaluate the following according to the replacement value given.

107. $a^2 - c$ Replace a with 3 and c with -7

108. $y^2 + 5y$ Replace y with -6

Simplify. Combine like terms, if possible.

109. $-5w^3 + w^3$

110. $-7r + 7r$

111. $-4c - 8b - c + b$

112. $-5 - 4x - x + 9$ 113. $\frac{11}{24}y^2 + \frac{-17}{24}y^2$ 114. $\frac{13}{15}x^2 + \frac{3}{10}x^2$

Section 1.9

Multiply and write the product as one term.

115. $3(-4x^2)$ 116. $-9y(-9y)$ 117. $7p^4(5p)$ 118. $(-4a^3)(6a^3)$

Apply the Distributive Property to each expression.

119. $5(2h - 1)$ 120. $9(x^2 + 2x)$ 121. $-2(-m^3 + 4m)$ 122. $-4(2p^4 - 7p)$

Section 1.10

Identify the main operation in each expression and state whether it is a sum, difference, product, quotient or power. Do not evaluate the expressions.

Expression	Main Operation	The expression is a:
123. $28 \div 4 + 3$	_____	_____
124. $(20 - 15) \cdot 4$	_____	_____
125. $6 - 5 \cdot 4$	_____	_____
126. $30 \div (2 - 7)$	_____	_____

Translate each English expression into an algebraic expression. Use any variable to represent the unknown number.

127. The difference of a number and 15. 128. The sum of 11 and a number.
 129. The quotient of a number and 8. 130. The opposite of a number.

Translate each algebraic expression into English. For each, let x represent “a number.”

131. $12 \cdot (x - 3)$ 132. $10 + (x \div 6)$

Translate each English expression into an algebraic expression. Use any variable to represent the unknown number.

133. The square root of the sum of a number and 6.
 134. The quotient of 36 and the product of 7 and a number.