

Radical Expressions & Geometry

CHAPTER

10

PRACTICE

ASSIGNMENTS

Intermediate ALGEBRA

Name: _____ HR: _____

CONCEPT 1 (Part 1): Simplify the radical completely.

1) $\sqrt{192}$

2) $\sqrt{64}$

3) $\sqrt{27}$

4) $\sqrt{16x}$

5) $\sqrt{28n}$

6) $\sqrt{12m^2}$

7) $\sqrt{28p^2}$

8) $\sqrt{256x^3y^4}$

9) $\sqrt{147x^4y^2}$

10) $\sqrt{343a^3b^3}$

11) $\sqrt{288a^4b^4}$

12) $\sqrt{196ab^3c^2}$

13) $\sqrt{252hj^2k}$

14) $\sqrt{180xyz^3}$

CONCEPT 1 (Part 2): Simplify the radical completely.

15) $\sqrt{48}$

16) $2\sqrt{81}$

17) $3\sqrt{48}$

18) $6\sqrt{18}$

19) $\sqrt{12x^3}$

20) $2\sqrt{50a}$

21) $-3\sqrt{20x}$

22) $4\sqrt{72b^3}$

23) $\sqrt{75a^2b^2}$

24) $-5\sqrt{64m^2}$

25) $-3\sqrt{18hk^2}$

26) $\sqrt{25x^3y^2}$

27) $\sqrt{160pq^3}$

28) $-2\sqrt{400x^4y^3}$

CONCEPT 2: Multiply or divide the radicals. Then simplify completely.

29) $\sqrt{6} \cdot \sqrt{15}$

30) $\sqrt{3} \cdot \sqrt{3}$

31) $\sqrt{20} \cdot \sqrt{5}$

32) $\sqrt{5a} \cdot \sqrt{10a^3}$

33) $\sqrt{3k^3} \cdot \sqrt{5k}$

34) $\sqrt{8p^3} \cdot \sqrt{10p}$

35) $-4\sqrt{4} \cdot 4\sqrt{3}$

36) $2\sqrt{10} \cdot -5\sqrt{15}$

37) $2\sqrt{12} \cdot -4\sqrt{10}$

38) $2\sqrt{8x} \cdot -3\sqrt{8x^3}$

39) $2\sqrt{12r^2} \cdot -4\sqrt{6r}$

40) $2\sqrt{15n^3} \cdot -3\sqrt{15n^2}$

41) $\frac{\sqrt{4}}{\sqrt{25}}$

42) $\frac{\sqrt{16}}{\sqrt{25}}$

43) $\frac{\sqrt{15}}{\sqrt{25}}$

44) $\frac{3\sqrt{10}}{5\sqrt{32}}$

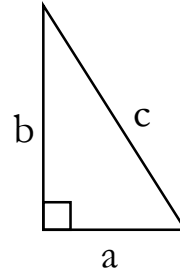
45) $\frac{3\sqrt{8}}{5\sqrt{50}}$

46) $\frac{3\sqrt{15}}{3\sqrt{48}}$

CONCEPT 3: Use the triangle at the right. Find the length of the missing side. Round to nearest tenth if necessary.

47) $a = 6, b = 8$

48) $a = 15, b = 20$



49) $a = 8, b = 15$

50) $a = 10, b = 24$

51) $a = 1.5, b = 2$

52) $a = 3, c = 5$

53) $b = 12, c = 13$

54) $a = 9, c = 15$

Determine whether the given lengths can be sides of a right triangle.

55) 9 ft, 12 ft, 15 ft

56) 1 in, 2 in, 3 in

57) 2 m, 4 m, 5 m

58) 16 cm, 30 cm, 34 cm

59) 4 m, 4 m, 8 m

60) 10 in, 24 in, 26 in

CONCEPT 4: Simplify by rationalizing the denominator.

61) $-\frac{4}{\sqrt{5}}$

62) $\frac{3}{\sqrt{3}}$

63) $\frac{\sqrt{3}}{\sqrt{2}}$

64) $-\frac{5}{\sqrt{5}}$

65) $\frac{5}{\sqrt{2}}$

66) $-\frac{5}{\sqrt{2}}$

67) $\frac{\sqrt{5}}{\sqrt{2}}$

68) $\frac{\sqrt{2}}{\sqrt{3}}$

69) $\frac{\sqrt{4}}{\sqrt{5}}$

70) $\frac{\sqrt{3}}{\sqrt{4}}$

CONCEPT 5: Add or subtract the radical expressions. Make sure you have “like radicals” first!

71) $-\sqrt{6} - 3\sqrt{6}$

72) $-3\sqrt{5} - 2\sqrt{5}$

73) $-3\sqrt{2} - \sqrt{2}$

74) $2\sqrt{3} - \sqrt{6} + 2\sqrt{6}$

75) $-3\sqrt{2} - \sqrt{6} - 3\sqrt{6}$

76) $-\sqrt{2} - 3\sqrt{2} + 2\sqrt{2}$

77) $3\sqrt{3} + 2\sqrt{3} + 2\sqrt{6} - \sqrt{6}$

78) $-2\sqrt{5} - 3\sqrt{5} + 3\sqrt{5} + 2\sqrt{2}$

79) $3\sqrt{5} - 3\sqrt{5}$

80) $3\sqrt{3} + 3\sqrt{3}$

81) $-6\sqrt{2} - 2\sqrt{2}$

82) $3\sqrt{20} + 2\sqrt{20}$

Concept 6: Multiply the radicals. If it is a monomial x binomial, use distribution. If it is a binomial x binomial, use a box/FOIL.

83) $\sqrt{15}(\sqrt{3} + 4)$

84) $\sqrt{5}(\sqrt{2} + 4)$

85) $\sqrt{5}(5 + \sqrt{10})$

86) $\sqrt{15}(\sqrt{5} + \sqrt{6})$

87) $\sqrt{10}(\sqrt{5} + \sqrt{3})$

88) $4\sqrt{5}(4 - 2\sqrt{5})$

89) $(2 + \sqrt{3})(-1 + \sqrt{3})$

90) $(\sqrt{5} - 1)(\sqrt{5} + 4)$

91) $(\sqrt{3} + \sqrt{5})^2$

92) $(\sqrt{2} + \sqrt{5})^2$

93) $(-4 + \sqrt{3})(-5 + \sqrt{3})$

94) $(2\sqrt{3} + 5)(-3\sqrt{3} + 1)$

Concept 7: Solve each equation. Remember to check for extraneous solutions.

95) $\sqrt{p-6} = 8$

96) $\sqrt{\frac{k}{5}} = 1$

97) $\sqrt{-5-5x} = 5$

98) $\sqrt{22n-2} = 8$

99) $7 = \sqrt{-7-8m}$

100) $4 = \sqrt{r-7}$

Concept 8: Solve each equation. Remember to check for extraneous solutions.

$$101) \sqrt{-2 - n} = \sqrt{2n + 22}$$

$$102) \sqrt{\frac{x}{7}} = \sqrt{80 - x}$$

$$103) \sqrt{-8 - b} = \sqrt{2b + 19}$$

$$104) \sqrt{4 - 2v} = \sqrt{3v - 1}$$

$$105) \sqrt{4n - 1} = \sqrt{3n}$$

$$106) \sqrt{x + 4} = \sqrt{-2 - 2x}$$

Concept 9: Find the midpoint of the line segment with the given endpoints.

107) $(0, 6)(-1, -2)$

108) $(-3, 10)(-7, 9)$

109) $(4, 2)(-7, -5)$

110) $(7, -9)(-1, 6)$

111) $(10, 8)(-8, -5)$

112) $(-8, 5)(-2, 5)$

Concept 10: Find the distance between each pair of points.

113) $(-7, -8)(6, -4)$

114) $(-4, -3)(3, -5)$

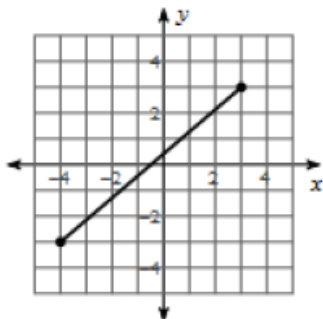
115) $(2, -4)(6, -6)$

116) $(-1, 1)(-8, -6)$

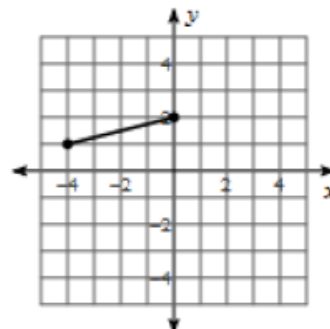
117) $(6, 1)(-6, 2)$

118) $(-8, 5)(8, 1)$

119)



120)



CHAPTER 10 PRACTICE TEST

1) List the first 15 perfect squares

Concept 1: Simplify the following Radical

2) $\sqrt{2}$

3) $\sqrt{48}$

4) $-3\sqrt{125}$

5) $-8\sqrt{18}$

6) $4\sqrt{80x^2}$

7) $-5\sqrt{81x^3y^4}$

Concept 2: Multiply or divide the radicals. Then simplify completely.

8) $\sqrt{2} \cdot \sqrt{5}$

9) $\sqrt{6} \cdot \sqrt{12}$

10) $\sqrt{2r} \cdot \sqrt{6r}$

11) $\sqrt{2k^2} \cdot \sqrt{8k^2}$

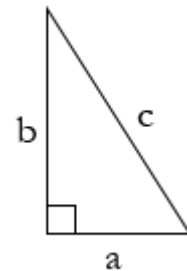
12) $\frac{\sqrt{3}}{\sqrt{12}}$

13) $\frac{\sqrt{16}}{\sqrt{25}}$

Concept 3: Use the triangle at the right. Find the length of the missing side. If necessary, round to the nearest tenth.

14) $a = 8, b = 9$

15) $a = 11, c = 19$



Determine whether the given lengths can be sides of a right triangle.

16) 2 in, 3 in, 5 in,

17) 3 ft, 4 ft, 5 ft

Concept 4: Rationalize the denominator

18) $\frac{8}{\sqrt{3}}$

19) $\frac{-12}{\sqrt{6}}$

20) $\frac{\sqrt{10}}{\sqrt{3}}$

21) $\sqrt{\frac{12}{15}}$

Concept 5: Add or subtract the following radicals

22) $-\sqrt{6} + 27\sqrt{6}$

23) $16\sqrt{3} - 5\sqrt{3}$

24) $5\sqrt{10} + 3\sqrt{10}$

25) $8\sqrt{5} - 2\sqrt{5}$

Concept 6: Multiply the following radicals

26) $\sqrt{3}(\sqrt{2} + 5)$

27) $\sqrt{10}(\sqrt{2} + 1)$

28) $\sqrt{5}(3 + \sqrt{5})$

29) $(2 + \sqrt{5})(-4 + \sqrt{5})$

Concept 7: Solve each equation. Remember to check for extraneous solutions.

30) $\sqrt{x-1} = 6$

31) $4 = \sqrt{16-8n}$

Concept 8: Solve each equation. Remember to check for extraneous solutions.

32) $\sqrt{3k-4} = \sqrt{6-2k}$

33) $\sqrt{2a-14} = \sqrt{3a-23}$

Concept 9: Find the midpoint of the line segment with the given endpoints.

34) $(-4, 2)(-8, -5)$

35) $(-8, 9)(1, -8)$

Concept 10: Find the distance between each pair of points.

36) $(0, -6)(3, 7)$

37) $(-3, 6)(0, -7)$

38)

