SKILLS PRACTICE 30

For use with Lessons 11-1–11-3

NAME Key

DATE Ch. 10 Study Guide

Simplify.

1. $\sqrt{64}$ 8
2. $-\sqrt{144}$ -12
3. $\sqrt{625}$ 25
4. $-\sqrt{256}$ -16
5. $-\sqrt{100}$ -10
6. $\sqrt{49}$ 7
7. $-\sqrt{1}$ -1
8. $\sqrt{1}$ 1

#'s circled indicate attached work

Identify each square root as rational or irrational.

9. $\sqrt{48}$ irr.
10. $\sqrt{10}$ irr.
11. $\sqrt{36}$ rat.
12. $\sqrt{144}$ rat.
13. $\sqrt{120}$ irr.
14. $\sqrt{169}$ rat.
15. $\sqrt{400}$ rat.
16. $\sqrt{200}$ irr.

Determine the values of x that will make each expression a real number.

17. $\sqrt{x-1}$ $x \geq 1$
18. $\sqrt{3x}$ $x \geq 0$
19. $\sqrt{2x^2}$ all real #s
20. $\sqrt{x+7}$ $x \geq -7$
21. $\sqrt{x^2+1}$ all real #s
22. $\sqrt{x-10}$ $x \geq 10$
23. $\sqrt{2x+1}$ $x \geq -\frac{1}{2}$
24. $\sqrt{3x-5}$ $x \geq \frac{5}{3}$

Simplify.

25. $\sqrt{a^2b^2c^2}$ $|abc|$
26. $\sqrt{(x-2)^2}$ $|x-2|$
27. $\sqrt{(9m)^2}$ $9|m|$
28. $\sqrt{(x+1)^2}$ $|x+1|$
29. $\sqrt{(-5c)^2}$ $5|c|$
30. $\sqrt{49t^2}$ $7|t|$
31. $\sqrt{y^2-16y+64}$ $|y-8|$
32. $\sqrt{x^2+6x+9}$ $|x+3|$

Factor and simplify. Assume that all variables are nonnegative.

33. $\sqrt{27}$ $3\sqrt{3}$
34. $\sqrt{128}$ $8\sqrt{2}$
35. $\sqrt{80}$ $4\sqrt{5}$
36. $\sqrt{16t}$ $4\sqrt{t}$
37. $\sqrt{64y}$ $8\sqrt{y}$
38. $\sqrt{15y^2}$ $y\sqrt{15}$
39. $\sqrt{12a^2}$ $2a\sqrt{3}$
40. $\sqrt{400y^2}$ $20y$
41. $\sqrt{31y^2}$ $y\sqrt{31}$
42. $\sqrt{250b}$ $5\sqrt{10b}$
43. $\sqrt{180}$ $6\sqrt{5}$
44. $\sqrt{18a^2b^2}$ $3ab\sqrt{2}$
45. $\sqrt{165}$ $\sqrt{165}$
46. $\sqrt{1000}$ $10\sqrt{10}$
47. $\sqrt{75x}$ $5\sqrt{3x}$
48. $\sqrt{44m^2}$ $2m\sqrt{11}$
49. $\sqrt{50a}$ $5\sqrt{2a}$
50. $\sqrt{60c^2}$ $2c\sqrt{15}$
51. $\sqrt{200x}$ $10\sqrt{2x}$
52. $\sqrt{90x^2}$ $3x\sqrt{10}$
53. $\sqrt{y^{24}}$ y^{12}
54. $\sqrt{32m^{13}}$ $4m^6\sqrt{2m}$
55. $\sqrt{108(x+1)^{12}}$ $6(x+1)^6\sqrt{3}$
56. $\sqrt{125x^5y^2}$ $5x^2y\sqrt{5x}$
57. $\sqrt{y^{11}}$ $y^5\sqrt{y}$
58. $\sqrt{(a+b)^5}$ $(a+b)^2\sqrt{a+b}$
59. $\sqrt{64m^3}$ $8m\sqrt{m}$
60. $\sqrt{27a^3b^3}$ $3ab\sqrt{3ab}$
61. $\sqrt{12(x+4)^9}$ $2(x+4)^4\sqrt{3(x+4)}$
62. $\sqrt{x^7y^{12}}$ $x^3y^6\sqrt{x}$

SKILLS PRACTICE 32

For use with Lessons 11-6–11-9

NAME _____

DATE _____

Add or subtract.

1. $11\sqrt{3} + 4\sqrt{3}$ $15\sqrt{3}$
2. $-2\sqrt{x} + 4\sqrt{x}$ $2\sqrt{x}$
3. $\sqrt{32} - \sqrt{18}$ $\sqrt{2}$
4. $\sqrt{48x} + \sqrt{75x^3}$ $(4+5x)\sqrt{3x}$
5. $6\sqrt{x^2y} - \sqrt{64y}$ $(6x-8)\sqrt{y}$
6. $\sqrt{7} - 2\sqrt{\frac{1}{7}}$ $\frac{5\sqrt{7}}{7}$
7. $\sqrt{\frac{1}{3}} + \sqrt{\frac{1}{12}}$ $\frac{\sqrt{3}}{2}$
8. $-12\sqrt{8} + 7\sqrt{18} + 2\sqrt{50}$ $7\sqrt{2}$
9. $3\sqrt{24} + 2\sqrt{54} - 2\sqrt{27}$ $12\sqrt{6} - 6\sqrt{3}$
10. $\sqrt{16x+32} + \sqrt{4x+8}$ $6\sqrt{x+2}$
11. $2a\sqrt{a^3b} + a\sqrt{ab^3} + b\sqrt{a^3b}$ $(2a^2+2ab)\sqrt{ab}$
12. $\sqrt{36a} + 3\sqrt{4a}$ $12\sqrt{a}$

Find the length of the side not given for a right triangle with hypotenuse c and legs a and b.

13. $a = 16,\ b = 30,\ c =$ 34
14. $a = 15,\ c = 25,\ b =$ 20
15. $a = 5,\ c = 13,\ b =$ 12
16. $b = 12,\ c = 20,\ a =$ 16
17. $b = 24,\ c = 25,\ a =$ 7
18. $a = 9,\ b = 12,\ c =$ 15
19. $a = 6,\ b = 8,\ c =$ 10
20. $a = 6.5,\ c = 10.5,\ b =$ $2\sqrt{17}$

Solve.

21. Littleton airport is 50 miles due south of Milford. Milford is 120 miles due east of Fielding airport. How far is it from Fielding airport to Littleton airport? 130 mi.

22. A 13-ft ladder is leaning against a building. The bottom of the ladder is 5 ft from the building. How high is the top of the ladder? 12 ft.

Solve.

23. $\sqrt{x} = 11$ 121
24. $\sqrt{x} = 8.6$ 73.96
25. $12 - 6\sqrt{9n} = 0$ 4/9
26. $\sqrt{y+1} + 4 = 0$ No Solution
27. $\sqrt{t+1} - 4 = 9$ 168
28. $\sqrt{2x+2} = \sqrt{x+7}$ 5
29. $\sqrt{13-6x} = \sqrt{15-5x}$ -2
30. $\sqrt{4x+3} = 4\sqrt{x}$ $\frac{1}{4}$
31. $2\sqrt{9x} - 7 = 5$ 4
32. $\sqrt{5x-3} = \sqrt{x+5}$ 2

① $\frac{4\sqrt{72}+\sqrt{18}}{\sqrt{7}}$

$\frac{27+\sqrt{14}}{7}$

② $9\sqrt{2}-3\sqrt{18}$

0

③ $-2\sqrt{10}\cdot 5\sqrt{6}$

$-20\sqrt{15}$

④ $\frac{3\sqrt{64}}{2}$

12

⑤ $-2\sqrt{3}(3\sqrt{5}-4\sqrt{7})$

$-6\sqrt{15}+8\sqrt{21}$

⑥ $5\sqrt{2}+8\sqrt{5}-8\sqrt{2}$

$3\sqrt{2}+8\sqrt{5}$

⑦ $-\sqrt{27}(5\sqrt{2})$

$-15\sqrt{6}$

⑧ $\sqrt{3}(\sqrt{8}-3\sqrt{15})$

$2\sqrt{6}-9\sqrt{5}$

⑨ $\frac{4\sqrt{3}-\sqrt{3}}{6}$

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

⑩ $\frac{5\sqrt{3}+\sqrt{12}}{2}$

$\frac{7\sqrt{6}}{2}$

⑪ $\sqrt{12}-5\sqrt{3}+\sqrt{4}$

$-3\sqrt{3}+2$

⑫ $5\sqrt{10}(3\sqrt{5}+4\sqrt{20})$

$225\sqrt{2}$

⑬ $\frac{\sqrt{24}}{2\sqrt{9}}$

$\frac{\sqrt{6}}{3}$

⑭ $\sqrt{75}+2\sqrt{28}-9\sqrt{3}$

$-4\sqrt{3}+4\sqrt{7}$