Name key

Algebra I Chapter 10 Practice Test

Simplify.

1. $\sqrt{125}$ $\sqrt{25} \cdot \sqrt{5}$

$5\sqrt{5}$

2. $\sqrt{108}$ $\sqrt{36} \cdot \sqrt{3}$

$6\sqrt{3}$

3. $\sqrt{5} \bullet \sqrt{15}$

$\sqrt{75}$

$\sqrt{25} \cdot \sqrt{3}$

$5\sqrt{3}$

4. $\sqrt{500x^7y^{10}}$

$\sqrt{100} \cdot \sqrt{5} \cdot \sqrt{x^7y^{10}}$

$10x^3y^5\sqrt{5x}$

5. $\frac{\sqrt{11}}{\sqrt{7}} \cdot \frac{\sqrt{7}}{\sqrt{7}} = \frac{\sqrt{77}}{\sqrt{49}} = \frac{\sqrt{77}}{7}$

6. $\sqrt{75}+8\sqrt{3}-11\sqrt{3}$

$\sqrt{25}\cdot\sqrt{3}$

$5\sqrt{3}+8\sqrt{3}-11\sqrt{3}$

$2\sqrt{3}$

7. $\sqrt{18}+\sqrt{12}+\sqrt{50}$

$\sqrt{9}\sqrt{2}+\sqrt{4}\sqrt{3}+\sqrt{25}\sqrt{2}$

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

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

8. $2\sqrt{50}-3\sqrt{32}$

$2\sqrt{25}\sqrt{2}-3\sqrt{16}\sqrt{2}$

$2\cdot 5\cdot\sqrt{2}-3\cdot 4\cdot\sqrt{2}$

$10\sqrt{2}-12\sqrt{2}$

$-2\sqrt{2}$

9. $6\sqrt{27}+8\sqrt{12}+2\sqrt{75}$

$6\sqrt{9}\sqrt{3}+8\sqrt{4}\sqrt{3}+2\sqrt{25}\sqrt{3}$

$6\cdot 3\cdot\sqrt{3}+8\cdot 2\cdot\sqrt{3}+2\cdot 5\cdot\sqrt{3}$

$18\sqrt{3}+16\sqrt{3}+10\sqrt{3}$

$44\sqrt{3}$

10. $\sqrt{6}\left(\sqrt{10}-\sqrt{3}\right)$

$\sqrt{60}-\sqrt{18}$

$\sqrt{4}\sqrt{15}-\sqrt{9}\sqrt{2}$

$2\sqrt{15}-3\sqrt{2}$

Solve each equation. Check your solution.

11. $(\sqrt{x})^2 = (11)^2$

$x = 121$

✓ $\sqrt{121} = 11$

$11 = 11$

$+8 \quad +8$

$(\sqrt{3y})^2 = (30)^2$

$\frac{3y}{3} = \frac{900}{3}$

$y = 300$

✓ $\sqrt{3(300)} - 8 = 22$

$\sqrt{900} - 8 = 22$

$30 - 8 = 22$

13. $(\sqrt{5x-5})^2 = (5)^2$

$5x - 5 = 25$

$+5 \quad +5$

$\frac{5x}{5} = \frac{30}{5}$

$x = 6$

✓ $\sqrt{5(6)-5} = 5$

$\sqrt{30-5} = 5$

$\sqrt{25} = 5$

$5 = 5$

14. $\left(\sqrt{\frac{x}{7}}\right)^2 = 8$

$7 \cdot \frac{x}{7} = 64 \cdot 7$

$x = 448$

✓ $\sqrt{\frac{448}{7}} = 8$

$\sqrt{64} = 8$

$8 = 8$

15. $(\sqrt{28-3x})^2 = (-2)^2$

$28 - 3x = 4$

$-28 \quad -28$

$-3x = -24$

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

$x = 8$

$\sqrt{\sqrt{28-3(8)} = -2}$

$\sqrt{28-24} = -2$

$\sqrt{4} = -2$

$2 \neq -2$

$\emptyset$

16. $\sqrt{6x-8}=2$

$(\sqrt{6x-8})^2=(2)^2$

$6x-8=4$

$+8 \quad +8$

$6x=12$

$\frac{6x}{6}=\frac{12}{6}$

$x=2$

$\sqrt{\sqrt{6(2)-8}=2}$

$\sqrt{4}=2$

$2=2$

If c is the measure of the hypotenuse of a right triangle, find each missing measure. If necessary round to the nearest hundredth.

17. a = 16, b= 63, c = ?

$a^2+b^2=c^2$

$16^2+63^2=c^2$

$256+3969=c^2$

$4225=c^2$

$\sqrt{4225}=\sqrt{c^2}$

$65=c$

18. a= 11, b= ? , c= 61

$a^2+b^2=c^2$

$11^2+b^2=61^2$

$121+b^2=3721$

$-121 \qquad -121$

$b^2=3600$

$\sqrt{b^2}=\sqrt{3600}$

$b=60$

19. a= ? , b= 9, c= 14

$a^2+b^2=c^2$

$a^2+9^2=14^2$

$a^2+81=196$

$-81 \quad -81$

$a^2=115$

$\sqrt{a^2}=\sqrt{115}$

$a \approx 10.72$

20. $a=\sqrt{11}, b=4, c=?$

$a^2+b^2=c^2$

$(\sqrt{11})^2+4^2=c^2$

$11+16=c^2$

$27=c^2$

$\sqrt{27}=\sqrt{c^2}$

$c \approx 5.20$

Determine whether the following side measures form right triangles. Show your work.

21. 20, 30 , 50

$a^2+b^2=c^2$

$20^2+30^2=50^2$

$400+900=2500$

$1300 \neq 2500$

NO

22. 4, 7, $\sqrt{65}$

$a^2 + b^2 = c^2$

$4^2 + 7^2 = \sqrt{65}^2$

$16 + 49 = 65$

$65 = 65$

Yes

Find the distance between each pair of points whose coordinates are given. Express answers as a decimal approximation rounded to the nearest hundredth if necessary.

23. (12, 3), (-8, 3)

$d = \sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$

$d = \sqrt{(-8-12)^2+(3-3)^2}$

$= \sqrt{(-20)^2+0^2}$

$= \sqrt{400}$

$d = 20$

24. (-8, -4), (-3, -8) $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

$d = \sqrt{(-3 + (+8))^2 + (-8 + (+4))^2}$

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

$= \sqrt{25 + 16}$

$d = \sqrt{41} \approx 6.40$

25. (2, 7), (10, -5)

$d = \sqrt{(x_2-x_1)^2+(y_2-y_1)^2}$

$d = \sqrt{(10-2)^2+(-5-7)^2}$

$d = \sqrt{8^2+(-12)^2}$

$= \sqrt{64+144}$

$d = \sqrt{208} \approx 14.42$