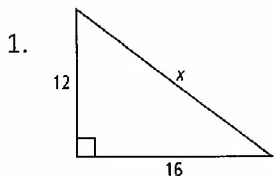


10.1-10.4 Review

Name: Key

Find the missing length. Show your work!!

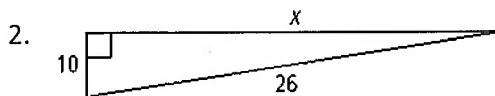


$$12^2 + 16^2 = c^2$$

$$144 + 256 = c^2$$

$$\sqrt{400} = c^2$$

$$c = 20$$



$$10^2 + b^2 = 26^2$$

$$100 + b^2 = 676$$

$$-100 \quad -100$$

$$\sqrt{b^2} = 576$$

$$b = 24$$

3. Could the lengths 18 in., 80 in., and 82 in. be the side lengths of a right triangle? Explain.

$$18^2 + 80^2 = 82^2$$

$$324 + 6400 = 6724$$

$$6724 = 6724$$

Yes!

Simplify each expression. Show your work!!

4. $8\sqrt{6} - 3\sqrt{6}$

$$5\sqrt{6}$$

5. $\frac{1}{3}\sqrt{7} + \frac{2}{3}\sqrt{7}$

$$1\sqrt{7} \text{ or } \sqrt{7}$$

6. $4\sqrt{11} - 7\sqrt{11}$

$$-3\sqrt{11}$$

7. $\sqrt{243}$

$$\sqrt{81} \sqrt{3}$$

$$9\sqrt{3}$$

8. $\sqrt{25c^2}$

$$5c$$

9. $(\sqrt{25})^2$

$$25$$

10. $\sqrt{32}$

$$\sqrt{16} \sqrt{2}$$

$$4\sqrt{2}$$

11. $\sqrt{128}$

$$\sqrt{64} \sqrt{2}$$

$$8\sqrt{2}$$

12. $\sqrt{300}$

$$\sqrt{100} \sqrt{3}$$

$$10\sqrt{3}$$

13. $\sqrt{50} + \sqrt{8}$

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

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

$$7\sqrt{2}$$

14. $4\sqrt{3} + \sqrt{27}$

$$\sqrt{9} \sqrt{3}$$

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

$$7\sqrt{3}$$

15. $\sqrt{8} - \sqrt{2}$

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

$$2\sqrt{2} - 1\sqrt{2}$$

$$1\sqrt{2} \text{ or } \sqrt{2}$$

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

$$\boxed{\frac{5\sqrt{7}}{7}}$$

17. $\frac{\sqrt{120}}{\sqrt{6}} = \sqrt{20}$

$$\boxed{\frac{\sqrt{4} \sqrt{5}}{2\sqrt{5}}}$$

18. $\frac{-5\sqrt{3}}{\sqrt{12}} \frac{\sqrt{12}}{\sqrt{12}} = \frac{-5\sqrt{36}}{\sqrt{144}}$

$$\frac{-5 \cdot 6}{12} = \frac{-30}{12} = \boxed{\frac{-5}{2}}$$

Simplify each expression. Show your work!!

19. $\sqrt{3}(\sqrt{12} + 4)$

$$\begin{aligned} &\sqrt{36} + 4\sqrt{3} \\ &6 + 4\sqrt{3} \end{aligned}$$

20. $\sqrt{8}(\sqrt{3} + 3)$

$$\begin{aligned} &\sqrt{24} + 3\sqrt{8} \\ &\sqrt{4}\sqrt{6} + 3\sqrt{4}\sqrt{2} \\ &2\sqrt{6} + 3 \cdot 2\sqrt{2} \\ &2\sqrt{6} + 6\sqrt{2} \end{aligned}$$

21. $\sqrt{7}(\sqrt{7} - 2)$

$$\begin{aligned} &\sqrt{49} - 2\sqrt{7} \\ &7 - 2\sqrt{7} \end{aligned}$$

22. $(2\sqrt{3} + \sqrt{5})(6\sqrt{5} - 4\sqrt{3})$

	$2\sqrt{3}$	$+\sqrt{5}$	
$6\sqrt{5}$	$12\sqrt{15}$	$6\sqrt{25} = 6 \cdot 5 = 30$	
$-4\sqrt{3}$	$-8\sqrt{9}$ $-8 \cdot 3 = -24$	$-4\sqrt{15}$	

$8\sqrt{15} + 6$

23. $(7 + 3\sqrt{5})(7 - 3\sqrt{5})$

	7	$3\sqrt{5}$	
7	49	$21\sqrt{5}$	
$-3\sqrt{5}$	$-21\sqrt{5}$	$-9 \cdot 5 = -45$	4

Solve each radical equation. Show your work and check your answer!!

24. $\sqrt{3x} + 10 = 16$

$$\begin{aligned} &\sqrt{3x} + 10 = 16 \\ &\quad -10 \quad -10 \\ &\sqrt{3x} = 6 \\ &\frac{3x}{3} = \frac{36}{3} \end{aligned}$$

$x = 12$

25. $\sqrt{r+5} = (2\sqrt{r-1})^2$

$$\begin{aligned} r+5 &= 4(r-1) \\ r+5 &= 4r-4 \\ -r+4 &= -r+4 \\ \frac{9}{3} &= \frac{3r}{3} \end{aligned}$$

$r = 3$

26. $\sqrt{2x-1} = x^2$

$$\begin{aligned} 2x-1 &= x^2 \\ -2x+1 &\quad -2x+1 \\ 0 &= x^2-2x+1 \\ &= (x-1)(x-1) \end{aligned}$$

$x = 1$

27. $\sqrt{x-3} = \sqrt{x+5}$

$$\begin{aligned} x-3 &= x+5 \\ -x &\quad -x \\ -3 &\neq 5 \end{aligned}$$

No Solution!

28. $\sqrt{5n-4} = 6$

$$\begin{aligned} 5n-4 &= 36 \\ +4 &\quad +4 \\ 5n &= 40 \\ \frac{5n}{5} &= \frac{40}{5} \end{aligned}$$

$n = 8$

29. $\sqrt{\frac{a}{2}-3} = (-32)^2$

$$\begin{aligned} \frac{a}{2}-3 &= 1024 \\ \frac{a}{2} &= 1027 \end{aligned}$$

$$\begin{aligned} \sqrt{\frac{2054}{2}-3} &= -32 \\ 32 &\neq -32 \end{aligned}$$

~~$a = 2054$~~
No Solution!

30. $\sqrt{2x^2+17} = \sqrt{(x+3)^2}$

$$\begin{aligned} 2x^2+17 &= (x+3)^2 \\ 2x^2+17 &= x^2+6x+9 \\ -6x-x^2-9 &\quad -x^2-6x-9 \\ x^2-6x+8 &= 0 \\ (x-2)(x-4) &= 0 \end{aligned}$$

$x = 2$
or
 $x = 4$

31. $h = \sqrt{-13h-42}$

$$\begin{aligned} h^2 &= -13h-42 \\ +13h+42 &\quad +13h+42 \end{aligned}$$

$$\begin{aligned} -6 &= \sqrt{-13(-6)-42} \\ -6 &= \sqrt{36} \end{aligned}$$

$$\begin{aligned} h^2+13h+42 &= 0 \\ (h+6)(h+7) &= 0 \\ h &\neq -6 \quad h &\neq -7 \end{aligned}$$

No Solution!
 $-7 = \sqrt{-13(-7)-42}$
 $-7 = \sqrt{49}$
 $-7 \neq 7$