

Learning Goal 2.1 - Radicals Practice Test

Name: Key

Date: _____

1. The sum of $\sqrt{18}$ and $6\sqrt{2}$ is

$$\begin{aligned} & \bar{8} + 6\sqrt{2} \\ & \bar{3} \cdot \bar{3} + 6\sqrt{2} \\ & \sqrt{2} + 6\sqrt{2} \\ & 9\sqrt{2} \end{aligned}$$

- A. $7\sqrt{20}$ B. $9\sqrt{2}$
C. $15\sqrt{2}$ D. 18

2. The sum of $\sqrt{50}$ and $\sqrt{18}$ is

$$\begin{aligned} & \bar{5} \cdot \bar{5} + \sqrt{2 \cdot \bar{3} \cdot \bar{3}} \\ & \sqrt{2} + 3\sqrt{2} \\ & 8\sqrt{2} \end{aligned}$$

- A. $2\sqrt{17}$ B. $8\sqrt{2}$
C. $15\sqrt{2}$ D. 34

3. The expression $\sqrt{200}$ is equivalent to

$$\begin{aligned} & 200 \\ & \wedge \\ & 100 \quad 2 \\ & \wedge \quad \wedge \\ & 10 \quad 2 \\ & \wedge \quad \wedge \\ & 5 \quad 2 \cdot 5 \end{aligned}$$

$$\sqrt{2 \cdot 2 \cdot 2 \cdot 5 \cdot 5} = 10\sqrt{2}$$

- A. $25\sqrt{8}$ B. $100\sqrt{2}$
C. $2\sqrt{10}$ D. $10\sqrt{2}$

4. The expression $\sqrt{50}$ is equivalent to

$$\begin{aligned} & 50 \\ & \wedge \\ & 25 \quad 2 \\ & \wedge \\ & 5 \quad 5 \end{aligned}$$

$$\sqrt{2 \cdot 5 \cdot 5} = 5\sqrt{2}$$

- A. $5\sqrt{2}$ B. $25\sqrt{2}$
C. $2\sqrt{5}$ D. $5\sqrt{10}$

5. The expression $5\sqrt{3} - \sqrt{27}$ is equivalent to

$$\begin{aligned} & \sqrt{3} - \sqrt{3 \cdot 3 \cdot 3} \\ & \sqrt{3} - 3\sqrt{3} \\ & 2\sqrt{3} \end{aligned}$$

- A. $8\sqrt{3}$ B. $-8\sqrt{3}$
C. $-2\sqrt{3}$ D. $2\sqrt{3}$

6. The sum of $\sqrt{27}$ and $6\sqrt{3}$ is

$$\begin{aligned} & \sqrt{3 \cdot \bar{3} \cdot \bar{3}} + 6\sqrt{3} \\ & 3\sqrt{3} + 6\sqrt{3} \\ & 9\sqrt{3} \end{aligned}$$

- A. $7\sqrt{30}$ B. $9\sqrt{3}$
C. $9\sqrt{6}$ D. $15\sqrt{3}$

7. Which is equivalent to $\sqrt{40}$?

- A. $2\sqrt{10}$
C. $4\sqrt{10}$

- B. $2\sqrt{20}$
D. $10\sqrt{2}$

$$\begin{aligned} & 40 \\ & \wedge \\ & 4 \quad 10 \\ & \wedge \quad \wedge \\ & 2 \quad 2 \quad 2 \quad 5 \\ & \sqrt{2 \cdot 2 \cdot 2 \cdot 5} \\ & 2\sqrt{10} \end{aligned}$$

8. The expression $5\sqrt{8} - 3\sqrt{2}$ is equivalent to

- A. 7 B. $7\sqrt{2}$ C. $2\sqrt{6}$ D. $\sqrt{34}$

$$\begin{aligned} & 5\sqrt{2 \cdot 2 \cdot 2} - 3\sqrt{2} \\ & 10\sqrt{2} - 3\sqrt{2} \\ & 7\sqrt{2} \end{aligned}$$

$$\sqrt{81} \pm \sqrt{100}$$

9. The expression $\sqrt{93}$ is a number between

- A. 3 and 9 B. 8 and 9
C. 9 and 10 D. 46 and 47

10. When $\sqrt{72}$ is expressed in simplest $a\sqrt{b}$ form, what is the value of a?

- A. 6 B. 2 C. 3 D. 8

$$\begin{aligned} & 72 \\ & \wedge \\ & 9 \quad 8 \\ & \wedge \quad \wedge \\ & 3 \quad 3 \quad 4 \quad 2 \\ & \wedge \\ & 2 \quad 2 \end{aligned}$$

$$\begin{aligned} & \sqrt{2 \cdot 2 \cdot 2 \cdot 2 \cdot 3 \cdot 3} \\ & 6\sqrt{2} \end{aligned}$$

11. Expressed in simplest radical form, the product of $\sqrt{6} \cdot \sqrt{15}$ is

$$\begin{array}{r} \overline{90} \\ \sqrt{3 \cdot 3} \cdot 5 \\ 3\sqrt{10} \end{array}$$

- A. $\sqrt{90}$ B. $9\sqrt{10}$
 C. $3\sqrt{10}$ D. $3\sqrt{15}$

12. Which expression is equivalent to $7\sqrt{90}$?

$$\begin{array}{r} 90 \\ \wedge \\ 9 \ 10 \\ \wedge \ \wedge \\ 3 \ 2 \ 5 \\ \hline \sqrt{3 \cdot 3} \cdot 5 \\ \downarrow \\ 3\sqrt{10} \\ \sqrt{10} \end{array}$$

- A. $16\sqrt{10}$ B. $21\sqrt{10}$
 C. $70\sqrt{9}$ D. $\sqrt{630}$

13. What is $2\sqrt{45}$ expressed in simplest radical form?

$$\begin{array}{r} 45 \\ \wedge \\ 9 \ 5 \\ \wedge \ \wedge \\ 3 \ 3 \\ \hline 2 \cdot \sqrt{3 \cdot 3} \cdot 5 \\ 2 \cdot 3\sqrt{5} \\ 6\sqrt{5} \end{array}$$

- A. $3\sqrt{5}$ B. $5\sqrt{5}$
 C. $6\sqrt{5}$ D. $18\sqrt{5}$

14. Which represents an irrational number?

- A. 0 B. $\frac{3}{4}$ C. $\sqrt{3}$ D. $\sqrt{4} = 2$

15. Which does not represent a rational number?

- A. $\frac{3}{2}$ B. $\sqrt{7}$ C. $\sqrt{16} = 4$ D. $0.\overline{29}$

16. Which is a rational number?

- A. $\sqrt{7}$ B. $\sqrt{18}$ C. $\sqrt[7]{49}$ D. $\sqrt{20}$

17. Express $\sqrt{25} - 2\sqrt{3} + \sqrt{27} + 2\sqrt{9}$ in the simplest radical form.

$$\begin{array}{l} \sqrt{25} - 2\sqrt{3} + \sqrt{27} + 2\sqrt{9} \\ 5 - 2\sqrt{3} + \sqrt{3 \cdot 3 \cdot 3} + 2 \cdot 3 \\ 5 - 2\sqrt{3} + 3\sqrt{3} + 6 \end{array}$$

$$\begin{array}{r} 27 \\ \wedge \\ 9 \ 3 \\ \wedge \ \wedge \\ 3 \ 3 \end{array}$$

$$\boxed{11 + \sqrt{3}}$$