

Comprehensive Test 8.1

Rules of Exponents

1. Simplify $(15^5)^{10}$.

- a. 15^{-5}
- b. 15^{15}
- c. 15^{50}
- d. 75^{10}

2. Which expression equal $(3xy^2z^3)^2$?

- a. $9x^2y^4z^6$
- b. $6x^2y^4z^6$
- c. $6x^2y^4z^6$
- d. $9x^3y^4z^5$

3. What is $(2^{-2})^3$ in standard form?

- a. 2^{-6}
- b. $\frac{1}{12}$
- c. $\frac{1}{64}$
- d. 64

4. Write $(b)(b)(b)(b)(b)$ in exponential form.

- a. 5^b
- b. b^5
- c. b^{-5}
- d. b^6

5. Which expressions are equivalent to $\frac{3^{-8}}{3^{-4}}$? Select all that apply.

- a. 3^{-12}
- b. 3^{-4}
- c. 3^2
- d. $\frac{1}{3^2}$
- e. $\frac{1}{3^4}$

6. Find an expression equivalent to the one shown below. $(3^2)^4 \div 3^{17}$

- a. $\frac{1}{3^9}$
- b. 3^9
- c. $\frac{1}{3^{11}}$
- d. 3^{25}

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7. $(2a^9)(4a^2)$
- a. $6a^{11}$
 - b. $8a^{18}$
 - c. $6a^{18}$
 - d. $8a^{11}$

Evaluating Perfect Squares and Cubes

8. What is the value of $\sqrt[3]{27}$?
- a. 3
 - b. 5
 - c. 9
 - d. 13.5
9. Solve for y. $y^2 = 225$
- a. $y = 14$
 - b. $y = 16$
 - c. $y = 13$
 - d. $y = 15$
10. Which statement below is true? Select all that apply.
- a. $\sqrt{1} = \sqrt[3]{1}$
 - b. $\sqrt{2} = \sqrt[3]{3}$
 - c. $\sqrt{4} = \sqrt[3]{8}$
 - d. $\sqrt{4} = \sqrt[3]{9}$
11. Which equation has 4 and -4 as possible values of y? Check all that apply.
- a. $\sqrt{16}$
 - b. $y^2 = 8$
 - c. $y^3 = 8$
 - d. $y^2 = 16$
 - e. $y^3 = 64$
12. A square mosaic is made of small glass squares. If there are 196 small squares in the mosaic, how many are along an edge?
- a. 13
 - b. 15
 - c. 12
 - d. 14

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13. Jordan drove a^3 miles per hour for a^5 hours. How far did Jordan drive?
- a^2 miles
 - a^8 miles
 - a^{12} miles
 - a^{15} miles

Rational VS Irrational

14. Which of the following is rational number?

- $\sqrt{5}$
- $\frac{\sqrt{16}}{4}$
- 0.6251364.....
- 3.14159.....

15. Which number below is *NOT* an irrational number?

- $\sqrt{46}$
- $\sqrt{47}$
- $\sqrt{48}$
- $\sqrt{49}$

16. Which of the following is an irrational number?

- $\sqrt{5}$
- $\frac{300}{2}$
- 0.6
- $\sqrt{144}$

Approximating Irrational Roots

17. Between which two consecutive integers is $\sqrt[3]{200}$?

- 66 and 67
- 20 and 21
- 6 and 7
- 5 and 6

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18. A square-shaped playground has an area of 300 ft^2 . Approximately to the nearest tenth, how long is one side of the playground?

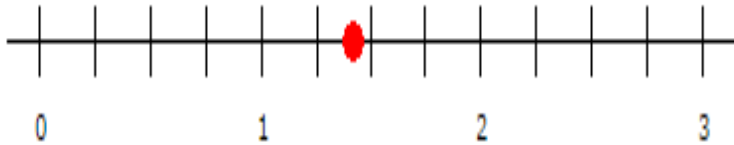
- a. 17.7 ft
- b. 17.2 ft
- c. 18.1 ft
- d. 17.3 ft

19. The three sides of a right triangle are 2, 3, and $\sqrt{13}$ centimeters long. What is the best whole-number estimate of $\sqrt{13}$?

- a. 6
- b. 3
- c. 5
- d. 4

20. At what position on the number line is the black dot located?

- a. $\sqrt{4}$
- b. $\sqrt{2}$
- c. $\sqrt{6}$
- d. $\sqrt{5}$



Bonus +3 each- Complete on the back of the ZIPGRADE

1. Simplify each radicand by factoring out the perfect square. $\sqrt{45}$.

2. Simplify each radicand by factoring out the perfect square. $\sqrt{200}$.