



- \_\_\_\_\_ 9. Evaluate  $196^{\frac{1}{2}}$ .
- a. 98  
b. 15  
c. 13  
d. 14
- \_\_\_\_\_ 10. Which power is equivalent to  $\sqrt[3]{264}$ ?
- a.  $264^3$   
b.  $264^{\frac{1}{3}}$   
c.  $\frac{1}{264^3}$   
d.  $\frac{1}{264^{\frac{1}{3}}}$
- \_\_\_\_\_ 11. Simplify  $[(5^{\frac{1}{3}})^2]^{\frac{4}{3}}$ .
- a. 25  
b.  $5^{\frac{3}{2}}$   
c.  $\sqrt[3]{25}$   
d.  $\sqrt[12]{5^{18}}$
- \_\_\_\_\_ 12. Express  $\sqrt{6480}$  as an equivalent mixed radical.
- a.  $6\sqrt{80}$   
b.  $9\sqrt{80}$   
c.  $12\sqrt{45}$   
d.  $36\sqrt{5}$
- \_\_\_\_\_ 13. Which of the following is equivalent to  $\frac{1}{(\sqrt[4]{x})^3}$ ?
- a.  $x^{-\frac{4}{3}}$   
b.  $x^{\frac{3}{4}}$   
c.  $x^{\frac{3}{4}}$   
d.  $x^{\frac{4}{3}}$
- \_\_\_\_\_ 14. Convert  $\sqrt[4]{48}$  to an equivalent mixed radical.
- a.  $4\sqrt{12}$   
b.  $2\sqrt{12}$   
c.  $2^4\sqrt{3}$   
d.  $3^4\sqrt{2}$
- \_\_\_\_\_ 15. Express  $v^{-\frac{5}{9}}$  as an equivalent radical.
- a.  $\sqrt[9]{v^5}$   
b.  $\sqrt[5]{v^9}$   
c.  $\frac{1}{\sqrt[9]{v^5}}$   
d.  $\frac{1}{\sqrt[5]{v^9}}$

**Matching**

Match the correct term to each of the following descriptions. A term may be used more than once or not at all.

- |                  |                      |
|------------------|----------------------|
| a. radicand      | d. irrational number |
| b. radical       | e. index             |
| c. mixed radical | f. entire radical    |

- \_\_\_\_\_ 1. a number that cannot be expressed as a terminating or repeating decimal
- \_\_\_\_\_ 2. the number 3 in the expression  $\sqrt[3]{81}$
- \_\_\_\_\_ 3. the number 25 in the expression  $\sqrt[3]{25}$
- \_\_\_\_\_ 4. the product of 1 and a radical
- \_\_\_\_\_ 5. the product of a rational number and a radical
- \_\_\_\_\_ 6. the number 2.236... is an example
- \_\_\_\_\_ 7. consists of a root symbol, an index, and a radicand

**Completion**

Complete each statement.

1. When multiplying powers that have the same base, \_\_\_\_\_ the exponents.
2. To simplify a power of a power, \_\_\_\_\_ the exponents.
3. Any non-zero base raised to the exponent of \_\_\_\_\_ is equal to 1.
4. The radical  $\sqrt[3]{\frac{m^2}{n^3}}$ , when expressed as a power, is \_\_\_\_\_.

**Short Answer**

1. Evaluate  $\sqrt{9604}$  using prime factorization.

2. Simplify  $\frac{[(a^2bc^4)(ab^3c^2)]^2}{(b^2c^5)^3}$ .

3. Simplify each expression. Write the answer using positive exponents. Do not evaluate.

a)  $\frac{(-2.5)^3}{(-2.5)^{-2}}$

b)  $(3^3)(3^{-6})$

c)  $\frac{s^2t^{-1}}{(s^4t^4)^{\frac{1}{2}}}$

### Problem

1. The amount of time that a particular drug remains in the human bloodstream is given by the equation

$$M = M_0(0.40)^{\frac{h}{2}}, \text{ where}$$

- $M$  is the mass of drug remaining in the bloodstream, in milligrams,
- $M_0$  is the mass of the dose administered, in milligrams, and
- $h$  is the time, in hours, since the dose was given.

If 240 mg is administered, how much of the drug will remain in the bloodstream after 3 h? Express the answer to one decimal place.