

Algebra Chapter 6, Sections 1-3 QUIZ REVIEW

Directions: Solve each problem below to prepare for your quiz on Chapter 6, sections 1-3.

Simplify each expression - Write your answers using only POSITIVE exponents.

$$6^5 \cdot 6^2 = 6^7$$

$$2. (x^2)^6 = x^{12}$$

$$(3z)^{-3} = \frac{3^{-3} z^{-3}}{1} = \frac{1}{3^3 z^3}$$

$$4. \frac{3^{10}}{3^2} = 3^8$$

$$\frac{5}{b^{-2}} = \frac{5}{1} \cdot \frac{1}{b^{-2}} = \frac{5}{1} \cdot \frac{b^2}{1} = 5b^2$$

$$6. \frac{3^{-2} \cdot 3^{-7}}{1} = \frac{1}{3^2} \cdot \frac{1}{3^7} = \frac{1}{3^9}$$

$$(2xy^3)^3 = 2^3 x^3 y^9$$

$$8. (x^3 y^2)^4 \cdot (x^2 y^{-3})^2 = x^{12} y^8 \cdot x^4 y^{-6} = x^{16} y^2$$

$$\frac{s^3 t^4}{(s^2)^3} = \frac{s^3 t^4}{s^6} = s^{-3} t^4 = \frac{t^4}{s^3}$$

$$10. \left(\frac{3ab}{4c^2}\right)^4 = \frac{3^4 a^4 b^4}{4^4 c^8}$$

$$(m^4 n^3)^5 = m^{20} n^{15}$$

$$12. (-2x^4 yz)^{-3} = \frac{1}{(-2x^4 yz)^3} = \frac{1}{-2^3 x^{12} y^3 z^3} = \frac{-1}{8x^{12} y^3 z^3}$$

$$3. \frac{c^3 d^2}{c^2 d^5} = c^{3-2} d^{2-5} = \frac{c^1}{1} \frac{d^{-3}}{1} = \frac{c}{d^3}$$

$$14. \left(\frac{2y^4}{x^3}\right)^5 = \frac{2^5 y^{20}}{x^{15}}$$

Simplify each expression

i. $\sqrt{68} \sqrt{4} \cdot \sqrt{17} = 2\sqrt{17}$

v. $-\sqrt{24} = -1 \cdot \sqrt{24} = -1 \cdot \sqrt{4} \cdot \sqrt{6}$
 $= -1 \cdot 2 \cdot \sqrt{6} = -2\sqrt{6}$

$\frac{\sqrt{19}}{\sqrt{121}} = \frac{\sqrt{19}}{11}$

16. $\sqrt{\frac{19}{121}}$

18. $-\sqrt{\frac{10}{49}} = -1 \cdot \frac{\sqrt{10}}{\sqrt{49}} = -\frac{\sqrt{10}}{7}$

evaluate the expression when $x = -6$, $y = 5$, and $z = 4$.

8. $\sqrt{x^2z + xz^2}$

$\sqrt{(-6)^2 \cdot 4 + (-6) \cdot 4^2} = \sqrt{36 \cdot 4 + -6 \cdot 16}$
 $= \sqrt{144 + -96} = \sqrt{48} = \sqrt{16} \cdot \sqrt{3}$
 $= 4\sqrt{3}$

19. $\sqrt{3y^2 - xz}$

$\sqrt{3(5^2) - (-6)(4)} = \sqrt{3(25) - -24}$
 $= \sqrt{75 + 24} = \sqrt{99} = \sqrt{9} \cdot \sqrt{11}$
 $= 3\sqrt{11}$

Write the number in standard form.

1. -2.7×10^{-2}
 $= -0.027$

21. 4×10^6
 $= 4,000,000$

Write the number in scientific notation.

2. 0.0031
 $= 3.1 \times 10^{-3}$

23. 741,000
 $= 7.41 \times 10^5$

Solve. Write your answer in scientific notation.

4. $(6 \times 10^6) \times (7 \times 10^{-3})$
 $= 42 \times 10^3$
 $= 4.2 \times 10^4$

25. $(1.2 \times 10^{-3}) \times (4 \times 10^5)$
 $= 5.6 \times 10^2$

5. A blue star has a temperature range between 36,000°F and 90,000°F.

a. Write the temperature range using scientific notation.

3.6×10^4 to 9.0×10^4 degrees F

b. Is a star with a temperature of 8.8×10^3 degrees Fahrenheit warmer or cooler than a blue star? Explain. $8.8 \times 10^3 = 8,800^\circ\text{F}$
 It is cooler by 27,200°F.