

1. False

$$2. a^m \times a^n = a^{m+n}$$

$$3. 0^0 = 1$$

4. No

5. Powers allow us to write very large or small numbers in an easier to work with notation.

$$6. \pi^0 = 1$$

$$7. x^3 y^4$$

$$(x^2 y)(x y^3) = x^2 \cdot x^1 \cdot y^1 \cdot y^3 \\ = x^3 y^4$$

$$8. y^5 z^{10} x^{20}$$

$$(y^2 z^4 x^5)^5 = \\ y^5 z^{10} x^{20}$$

9.  $\frac{1}{t^2}$

$$t^{-2} = \frac{1}{t^2}$$

10.  $w^9$

$$\frac{xw^5}{w^{-4}x} = \frac{\cancel{x}w^5 \cdot w^4}{\cancel{x}} = w^9$$

11.  $a^6b^6c^4$

$$\frac{a^3b^2c^5}{a^{-3}b^{-4}c} = a^3 \cdot a^3 \cdot b^2 \cdot b^4 \cdot c^4$$
$$= a^6b^6c^4$$

12.  $\frac{y^8z^{21}}{x^8}$

$$(yz^2x^4)^3(yz^3x^{-4})^5$$
$$y^3z^6x^{12} \cdot y^5z^{15}x^{-20}$$
$$y^3 \cdot y^5 \cdot z^6 \cdot z^{15} \cdot x^{12} \cdot x^{-20}$$
$$y^8z^{21}x^{-8} = \frac{y^8z^{21}}{x^8}$$

13. a

$$\frac{a^4 b^{-4} c^5}{a^{-3} b^{-4} c} \div \frac{a^3 b^2 c^5}{a^{-3} b^2 c}$$

$$\frac{a^4 c^5}{a^{-3} c} \div \frac{a^3 c^5}{a^{-3} c}$$

$$\frac{a^4 c^5}{a^{-3} c} \cdot \frac{a^{-3} c}{a^3 c^5} = \frac{a^4 \cdot a^{-3} \cdot c^5 \cdot c}{a^{-3} \cdot a^3 \cdot c^5 \cdot c}$$
$$= \frac{a^4}{a^3} = a$$

14.  $2.35 \times 10^6$

$$2,350,000 = 2.35 \times 10^6$$

15. .00000368

$$3.68 \times 10^{-6} = .00000368$$

16.  $6.7 \times 10^{-5}$

$$\underline{.000005323} \quad 6.7 \times 10^{-5}$$

$$5.323 \times 10^{-6} < 6.7 \times 10^{-5}$$

17.  $-6.23653 \times 10^6$

$$\frac{7.8 \times 10^{-4} \times 3598000}{-0.00045} =$$

$$\frac{7.8 \times 10^{-4} \times 3.598 \times 10^6}{-4.5 \times 10^{-4}} =$$

$$\frac{7.8 \times 3.598 \times \cancel{10^{-4}} \times 10^6}{-4.5 \times 10^{-4}} =$$

$$\frac{28.0644 \times 10^6}{-4.5} =$$

$$-6.23653 \times 10^6$$

18. Principal is the amount you have to invest. The money you seek to earn on that initial investment (principal) is called interest

19. \$2676

$$A = P(1 + r)^t$$

$$A = 2000(1 + .06)^5$$

$$A = 2000(1.06)^5$$

$$A = 2000(1.338) = 2676$$

20. investment A

investment A

$$\begin{array}{cccccccc} 10 & + & 20 & + & 40 & + & 80 & + & 160 & + & 320 & + & 640 & + & 1280 & + \\ 1 & & 2 & & 3 & & 4 & & 5 & & 6 & & 7 & & 8 \end{array}$$

$$\begin{array}{cccc} 2560 & + & 5120 & + & 10240 & + & 20480 & = & \text{Total} & = & 40,950 \\ 9 & & 10 & & 11 & & 12 \end{array}$$

investment B

$$\begin{aligned} A &= P(1 + r)^t \\ &= 2000(1 + .08)^1 \\ &= 2000(1.08) = 2160 \end{aligned}$$