

Name: Answers

Period: \_\_\_\_\_

**Math 8: Chapter 10 Review****Evaluate the expression.**

1.  $-4^2 = -16$

2.  $(-4)^2 = 16$

3.  $2^4 = 16$

4.  $\frac{1}{6^2} + \frac{5}{36} =$

$$\frac{1}{36} + \frac{5}{36} = \frac{6}{36}$$
$$= \frac{1}{6}$$

5.  $8^3 - 8^2 =$

$$512 - 64 = 448$$

6.  $-\left(\frac{1}{4}\right)^3 = -\frac{1}{64}$

7.  $\left(\frac{2}{5}\right)^2 = \frac{4}{25}$

8.  $1 - \left(\frac{1}{5}\right)^3 =$

$$1 - \frac{1}{125}$$
$$\frac{125}{125} - \frac{1}{125} = \frac{124}{125}$$

9.  $\frac{1}{5}(3^2 + 6) =$

$$\frac{1}{5}(9+6)$$
$$\frac{1}{5}(15) = 3$$

10.  $8^2 - 3^3 = 64 - 27$ 
$$= 37$$

**Simplify the expression.**

11.  $\left(\frac{3}{4}w\right)^2 = \frac{9}{16}w^2$

12.  $\frac{3^5}{3^2} = \frac{3^3}{1} = 27$

13.  $\frac{b^6}{(2b)^3} = \frac{b^6}{8b^3} = \frac{b^3}{8}$

14.  $\frac{5^7a}{5^4a^2} = \frac{5^3}{1a}$ 
$$= \frac{125}{a}$$

15.  $(3^2x^4)(2x)^3 =$ 
$$= (9x^4)(8x^3)$$
$$= 72x^7$$

16.  $\frac{q^2 \cdot q^5}{q^7} = \frac{q^7}{q^7} = 1$

17.  $(3x)^4 = 81x^4$

18.  $\frac{3^{12}}{3^9} = \frac{3^3}{1} = 27$

19.  $\frac{1^2}{3^4} \cdot \frac{3^6}{1} = \frac{3^6}{3^4} = \frac{3^2}{1} = 9$

20.  $z^2(z \cdot z^3) = z^2(z^4) = z^6$

Simplify. Write the expression using only positive exponents.

21.  $8w^{-5} = \frac{8}{w^5}$

22.  $\frac{2z^{-3}}{4z^{-5}} = \frac{1}{2} \cdot \frac{z^5}{z^3} = \frac{z^2}{2}$

23.  $3y^{-2} \cdot 6y^{-3} = \frac{3}{y^2} \cdot \frac{6}{y^3} = \frac{18}{y^5}$

24.  $\frac{(ab)^{-3}}{a^2} = \frac{a^{-3}b^{-3}}{a^2} = \frac{1}{a^2 a^3 b^3} = \frac{1}{a^5 b^3}$

Write the number in standard form.

25.  $6.999 \times 10^5 = 699,900$

26.  $7.05 \times 10^{-6} = 0.00000705$

27.  $2 \times 10^{-1} = 0.2$

28.  $4.773 \times 10^8 = 477,300,000$

Evaluate the expression. Write your answer in scientific notation.

29.  $(8.3 \times 10^6) - (4.6 \times 10^6)$   
 $= 3.7 \times 10^6$

30.  $(6.8 \times 10^4) - (8.5 \times 10^3)$   
 $= 5.95 \times 10^4$

31.  $(1.1 \times 10^8) \times (4 \times 10^7)$   
 $= 4.4 \times 10^{15}$

32.  $(8.3 \times 10^3) \times (3 \times 10^{-6})$   
 $= 2.49 \times 10^{-2}$

33.  $(8 \times 10^{-4}) \div (4 \times 10^3)$   
 $= 2 \times 10^{-7}$

34.  $(9 \times 10^{-4}) \div (3 \times 10^{-2})$   
 $= 3 \times 10^{-2}$

35. At Mercury's closest approach to the Sun it is 46,000,000 kilometers away. At its farthest distance it is 69,800,000 kilometers away.

a. Write the distance range using scientific notation.

$$46,000,000 = \underline{4.6 \times 10^7} \text{ (in scientific notation)}$$

$$69,800,000 = \underline{6.98 \times 10^7} \text{ (in scientific notation)}$$

b. Is Mercury ever  $5.8 \times 10^7$  kilometers from the Sun?

*Yes. Since it's between  $4.6 \times 10^7$  and  $6.98 \times 10^7$*

36. A gymnasium is 100 yards wide, 150 yards long, and 30 yards tall.

a. Write the dimensions in scientific notation.

$$100 \text{ yards} = \underline{1 \times 10^2 \text{ yd}}$$

$$150 \text{ yards} = \underline{1.5 \times 10^2 \text{ yd}}$$

$$30 \text{ yards} = \underline{3 \times 10^1 \text{ yd}}$$

b. Find the volume of the building. Write your answer in scientific notation.

$$V = l \times w \times h = (1 \times 10^2) \times (1.5 \times 10^2) \times (3 \times 10^1)$$

$$= 4.5 \times 10^5 \text{ yd}^3$$