

D. Howard (3-16)

4.5 each

Evaluate each of the following in problems #1-5.

1.)  $2^3 \cdot 3^2 = 2 \cdot 2 \cdot 2 \cdot 3 \cdot 3 = (8)(9) = \boxed{72}$

2.)  $-7^2 = -7 \cdot 7 = \boxed{-49}$

3.)  $(-7)^2 = -7 \cdot -7 = \boxed{49}$

4.)  $7^0 = \boxed{1}$

Any quantity to zero power is always one

5.)  $7^{-2} = \frac{1}{7^2} = \boxed{\frac{1}{49}}$

6.) Convert 0.000081 to scientific notation.

$\boxed{8.1 \times 10^{-5}}$

7.) Write  $5.1 \times 10^4$  in standard form.

$\underline{51,000} = \boxed{51,000}$

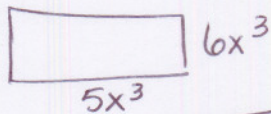
8.) The opposite of  $54x^3$  is*means opposite sign*

$\boxed{-54x^3}$

9.) The degree of the term  $54x^3$  is 3.

10.) The coefficient of the term  $54x^3$  is 54.

11.) Find the area of a rectangle whose width measures  $6x^3$  and whose length measures  $5x^3$ .



$$A = l \cdot w = 5x^3 \cdot 6x^3 = \boxed{30x^6}$$

Simplify each of the following in problems #12-22. Write answers using positive exponents only.

$$12.) (a^2b)^7(a^4b^4)^3 = \begin{matrix} a^{2 \cdot 7} & b^7 & a^{4 \cdot 3} & b^{4 \cdot 3} \\ a^{14} & b^7 & a^{12} & b^{12} \\ a^{14+12} & b^{7+12} & & \end{matrix} = \boxed{a^{26} b^{19}}$$

$$13.) \frac{x^{-6}}{x^{-5}} = x^{-6-(-5)} = x^{-6+5} = x^{-1} = \boxed{\frac{1}{x}}$$

4.5 each

$$14.) \frac{a^4 - 8a^3}{2a^3} = \frac{a^4}{2a^3} - \frac{8a^3}{2a^3} = \boxed{\frac{a}{2} - 4}$$

$$15.) \underline{7a^2b} + \underline{2ab^4} + \underline{3ab^4} - \underline{7a^2b} = \boxed{\cancel{7a^2b} + \cancel{2ab^4} + 3ab^4 - \cancel{7a^2b} = 3ab^4}$$

$$16.) \underline{7a - 2a^3} - \underline{a + 3a^3} =$$
  
$$7a - a - 2a^3 - 3a^3 = \boxed{6a - 5a^3}$$

$$17.) (4a^3b^2)(-3a^3b^3) = \boxed{-12a^6b^5}$$

$$18.) -7x(x - 4) = \boxed{-7x^2 + 28x}$$

$$19.) (2x - 7)(x - 6) = \underbrace{2x^2 - 12x - 7x + 42}$$

$$20.) \overset{\text{FOIL}}{(x + 8)(x - 8)} = x^2 - 8x + 8x - 64 \\ = \boxed{x^2 - 64}$$

$$21.) (4x + 1)(x^2 + x + 2) = 4x^3 + \underline{4x^2} + \underline{8x} + \underline{x^2} + \underline{x} + 2 \\ = \boxed{4x^3 + 5x^2 + 9x + 2}$$

$$22.) (x + 8)^2 = \overset{\text{FOIL}}{(x + 8)(x + 8)} \\ = x^2 + 8x + 8x + 64 \\ = \boxed{x^2 + 16x + 64}$$