#1 Leave in exponential form.

MAC0024 Test 3 Name Key

D. Howard (3-16)

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

1.) $5^3 \cdot 5^6 =$ 5^9

2.) $-3^2 =$ $-3 \cdot 3 =$ -9

3.) $(-3)^2 =$ $-3 \cdot -3 =$ 9

4.) $(\frac{1}{2})^0 =$ 1

5.) $4^{-2} =$ $\frac{1}{4^2} =$ $\frac{1}{16}$

6.) Convert 0.000000913 to scientific notation. 9.13×10^{-7}

7.) Write 2.1×10^7 in standard form. 21,000,000

8.) Find the area of a rectangle whose width measures $10x^3$ and whose length measures $5x$. $w = 10x^3$ $\quad l = 5x$

$A = lw = 10x^3 \cdot 5x = 50x^4$

9.) Find the equation of a line containing the points (0, 4) and (3, -1).

$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-1-4}{3-0} = \frac{-5}{3}$

y int

$b = 4$

$y = mx + b$

$\boxed{y = -\frac{5}{3}x + 4}$

10.) Find the equation of a line containing the point (5, 2) with slope equal to 6.

(x, y)

not y int!

$m = 6$

$y = mx + b$

$2 = 6(5) + b$

$2 = 30 + b$

$-28 = b$

$\boxed{y = 6x - 28}$

Simplify each of the following in problems #11-21. Write answers using positive exponents only.

11.) $(a^2b)^3(a^3b^4)^2 = a^6b^3\ a^6b^8 = \boxed{a^{12}b^{11}}$

12.) $\frac{x^{-2}}{x^{-5}} = \frac{x^5}{x^2} = \boxed{x^3}$

OR $x^{-2-(-5)} = x^3$

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

14.) $(12a^2b + 2ab^4) + (3ab^4 - 7a^2b) =$

$= 12a^2b + 2ab^4 + 3ab^4 - 7a^2b$

$= \boxed{5a^2b + 5ab^4}$

15.) $(12a^2b + 2ab^4) - (3ab^4 - 7a^2b) =$

$= 12a^2b + 2ab^4 - 3ab^4 + 7a^2b$

$= \boxed{19a^2b - ab^4}$

16.) $(4a^2b^3)(-3a^4b^3) =$ $\boxed{-12a^6b^6}$

17.) $-2x(x+4) =$ $\boxed{-2x^2 - 8x}$

FOIL

18.) $(3x-1)(x-6) =$

$= 3x^2 - 18x - 1x + 6$

$= \boxed{3x^2 - 19x + 6}$

19.) $(x+4)(x-4) =$

$= x^2 - 4x + 4x - 16$

$= \boxed{x^2 - 16}$

20.) $(x+4)^2 =$ $(x+4)(x+4)$

$= x^2 + 4x + 4x + 16$

$= \boxed{x^2 + 8x + 16}$

21.) $(x+1)(3x^2+x+8) =$

$= 3x^3 + x^2 + 8x + 3x^2 + x + 8$

$= \boxed{3x^3 + 4x^2 + 9x + 8}$