

**LEVEL: EMERGING**

1) Identify the power and the base:

$$7^{10}$$

Power: \_\_\_\_\_ Base: \_\_\_\_\_

2) Expand the following term:

$$2^8 =$$

3) Circle the power of the following term:

$$100^{11}$$

Directions: Simplify the following expressions.

4)  $\frac{8^{10}}{8^3}$

5)  $\frac{(-5)^5}{(-5)^2}$

6)  $\frac{2^3 \cdot 2^4}{2^{10}}$

7)  $\frac{x^2}{x^7}$

8)  $3\left(\frac{1}{3^2}\right)^3$

9)  $\left(\frac{3}{w^4}\right)^2$

10)  $\left(\frac{h}{m}\right)^6$

11)  $\frac{a^4 b^{15}}{a^2 b^{20}}$

**LEVEL: PROFICIENT**

Directions: Simplify the following expressions.

12)  $\frac{3x^{13}}{x^5}$

13)  $\frac{10m^4}{5m^{10}}$

14)  $\frac{-5xy^3}{2y^2}$

15)  $\frac{-9x^3}{3x^6y^4}$

16)  $\frac{1}{x} \cdot \frac{x^4}{x^2}$

17)  $\frac{x^2}{y^5} \cdot \frac{y}{x^5}$

18)  $-\left(\frac{2x^4}{y^3}\right)^4$

19)  $\frac{4yx^2}{x^2}$

Directions: Find the missing exponent.

20)  $\frac{x^6}{x^?} = x^2$

21)  $\left(\frac{x^2}{m^4}\right)^? = \frac{x^6}{m^{12}}$

22)  $\frac{2x^2y^{14}}{5x^3} = \frac{2x^5y^{14}}{5}$

**LEVEL: MASTERY**

Directions: Simplify the following expressions.

23)  $\left(\frac{x^4y^4}{-2y^3}\right)^3$

24)  $\frac{(4x^{10}y^7)^3}{2xy^{11}}$

25)  $10^5 \cdot \left(\frac{-1}{10^2}\right)^2$

26)  $\frac{-4ab^2}{b} \cdot \frac{(-3a)^2}{2a^3b^8}$

Directions: Let A, b, and c. Represent real numbers. What values of A, b, and c would make this statement true?  
Then find the product of A, b, and c.

27)  $\frac{14m^bn^c}{Am^6n^{10}} = 2m^2n^5$

28)  $\frac{Ay^bz^{12}}{8y^5z^c} = 2y^6z^2$

29)  $\frac{Ay^5z^{12}}{20y^bz^c} = \frac{1}{4}y^2z$

a: \_\_\_\_\_

a: \_\_\_\_\_

a: \_\_\_\_\_

b: \_\_\_\_\_

b: \_\_\_\_\_

b: \_\_\_\_\_

c: \_\_\_\_\_

c: \_\_\_\_\_

c: \_\_\_\_\_

Product: \_\_\_\_\_

Product: \_\_\_\_\_

Product: \_\_\_\_\_

### Worksheet 1.3B ANSWERS

1) Power: 10, Base: 7

2)  $2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2$

3) 11

4)  $8^7$

5)  $(-5)^3$

6)  $\frac{1}{2^3}$

7)  $\frac{1}{x^5}$

8)  $\frac{1}{3^5}$

9)  $\frac{3^2}{w^8}$

10)  $\frac{h^6}{m^6}$

11)  $\frac{a^2}{b^5}$

12)  $3x^8$

13)  $\frac{2}{m^6}$

14)  $\frac{-5xy}{2}$

15)  $\frac{-3}{x^3y^4}$

16) x

17)  $\frac{1}{y^4x^3}$

18)  $\frac{-2^4x^{16}}{y^{12}}$

19) 4y

20) 4

21) 3

22) 8

23)  $\frac{x^{12}y^3}{(-2)^3}$

24)  $\frac{4^3x^{29}y^{10}}{2}$

25)  $10 \cdot (-1)^2$

6)  $\frac{-4(-3)^2}{2b^7}$

27) A = 7, b = 8, c = 15

28) A = 16, b = 11, c = 10

29) A = 5, b = 3, c = 11