

## 7-1

## Practice

Form K

## Zero and Negative Exponents

Simplify each expression.

1.  $37^0$  1

2.  $3^{-4}$   $\frac{1}{81}$

3.  $\frac{5}{5^{-2}}$  125

4.  $\frac{3}{6^{-1}}$  18

5.  $-(5)^{-2}$   $-\frac{1}{25}$

6.  $112^{-1}$   $\frac{1}{112}$

7.  $-11^0$  -1

8.  $-(7n)^{-2}$   $-\frac{1}{49n^2}$

9.  $-(15p)^0$  -1

10.  $\left(\frac{3}{5}\right)^{-2}$   $\frac{25}{9}$

11.  $4x^{-3}y^0$   $\frac{4}{x^3}$

12.  $\frac{8m^{-2}}{4n^{-1}}$   $\frac{2n}{m^2}$

13.  $\frac{-6a^{-2}(bc)^2}{d^{-4}}$   $-\frac{6b^2c^2a^4}{a^2}$

14.  $\left(\frac{5s}{6t}\right)^{-2}$   $\frac{36t^2}{25s^2}$

15.  $4^{-2}h^{-4}j^3$   $\frac{j^3}{16h^4}$

16.  $-(6yz)^{-2}x^0$   $-\frac{1}{36y^2z^2}$

17.  $\frac{10fg^{-5}h^0}{h^{-2}}$   $\frac{10fh^2}{g^5}$

18.  $\frac{6t^{-1}}{11(uv)^{-3}w^4}$   $\frac{6u^3v^3}{11tw^4}$

## 7-1

## Practice (continued)

Form K

## Zero and Negative Exponents

Evaluate each expression for  $x = -2$ ,  $y = 4$ , and  $z = 2$ .

19.  $4x^{-1} - 2$

20.  $z^{-3} \frac{1}{8}$

21.  $2xy^{-2}z^2 - 1$

22.  $6x^3z^0 - 48$

23.  $-x^{-2} - \frac{1}{4}$

24.  $(-y)^{-3} - \frac{1}{64}$

Write each number as a power of 10 using negative exponents.

25.  $\frac{1}{10,000} 10^{-4}$

26.  $\frac{1}{100,000} 10^{-5}$

Write each expression as a decimal.

27.  $10^{-6} 0.000001$

28.  $6 \times 10^{-3} 0.006$

29. The population of a suburb is 4000 people. The population of the suburb is expected to double each decade. The expression  $4000 \cdot 2^d$  models the population of the suburb after each decade  $d$ . Evaluate the expression for  $d = -2$ . Describe what the value of the expression represents in this situation.

**1000; This is the number of people who lived in the suburb 2 decades ago.**

30. **Writing** Describe how a power with a zero exponent and a power with a negative exponent can be simplified.

**Any term raised to a zero exponent is equal to one. A term raised to a negative exponent should be made positive by moving it to the denominator if it is in the numerator and to the numerator if it is in the denominator.**