

## HW 4-5 Negative Exponents

Write each expression using a positive exponent.

1.  $7^{-10}$

4.  $w^{-13}$

2.  $(-5)^{-4}$

5.  $\frac{1}{12^{-4}}$

3.  $g^{-7}$

6.  $\frac{1}{(-5)^{-7}}$

7. The table shows different metric measurements. Write each decimal as a power of 10.  
(Hint: Change the decimals to fractions first)

Measurement	Value
Decimeter	0.1
Centimeter	0.01
Millimeter	0.001
Micrometer	0.000001

8. An atom is a small unit of matter. A small atom measures about 0.0000000001 meter. Write the decimal as a power of 10.

Simplify.

9.  $2^{-3} \cdot 2^{-4}$

14.  $\frac{a^{-4}}{a^{-6}}$

10.  $s^{-5} \cdot s^{-2}$

15.  $\frac{y^{-6}}{y^{-10}}$

11.  $y^{-1} \cdot y^4$

16.  $\frac{z^{-4}}{z^{-8}}$

12.  $(3a)(a^{-3})$

13.  $\frac{3^{-1}}{3^{-5}}$

17. The mass of a molecule of penicillin is  $10^{-18}$  kilogram and the mass of a molecule of insulin is  $10^{-23}$  kilogram. How many times greater is the mass of a molecule of penicillin than the mass of a molecule of insulin?

18. Without evaluating, order  $11^{-3}$ ,  $11^2$ , and  $11^0$  from least to greatest. Explain your reasoning.

19. Write an expression with a negative exponent that has a value between 0 and  $\frac{1}{2}$ .

Simplify.

20.  $z^2 \cdot z^{-3}$

24.  $2^{-4}$

21.  $n^{-1} \cdot n^3$

25.  $(-5)^{-4}$

22.  $\frac{b^{-7}}{b^5}$

26.  $(-10)^{-4}$

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

27.  $(0.5)^{-4}$

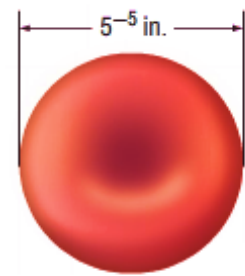
Find the missing exponent.

28.  $\frac{17^\bullet}{17^4} = 17^8$

29.  $\frac{k^6}{k^\bullet} = k^2$

30.  $\frac{p^{-1}}{p^\bullet} = p^{10}$

31. A blood cell has a diameter of about  $5^{-5}$  inches.



Write  $5^{-5}$  using positive exponents.

(A)  $5^5$

(C)  $\frac{5^5}{1}$

(B)  $\frac{1}{5^{-5}}$

(D)  $\frac{1}{5^5}$