

## Review for Exponents

1) Express the following using exponents.

a.  $2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2$

b.  $\frac{1}{x}$

c.  $5 \cdot 5 \cdot m \cdot m \cdot n \cdot n \cdot n \cdot n$

d.  $\frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2}$

2) Express the following without using exponents.

a.  $2^3 x^2$

b.  $4^{-3}$

c.  $\left(\frac{3}{4}\right)^3$

d.  $x^{-5}$

**Simplify. Your answer should contain only positive exponents.**

3)  $3^2 \cdot 3^2$

4)  $2^{-2} \cdot 2^4$

5)  $(3^{-4})^2$

6)  $(3^3)^2$

7)  $\frac{2^3}{2^{-1}}$

8)  $\frac{4^{-4}}{4^2}$

9)  $2n^{-4} \cdot 3n^{-3}$

10)  $4m^3 \cdot m^2 \cdot 4m$

11)  $(r^{-3})^3$

12)  $(4a^4)^2$

13)  $-\frac{4x^0}{4x^2}$

14)  $\frac{3n^2}{-n^3}$

15)  $-2y^2 \cdot 4y^{-3}$

16)  $4m^{-2}n^2 \cdot 4m^4$

17)  $(-4x^3y^0)^2$

18)  $(-x^4y^2)^3$

19)  $\frac{4x^0y^4}{-4x^{-4}}$

20)  $\frac{4yx^2}{2yx^0}$

21)  $(2x^3)^3x^{-1}$

22)  $\frac{4r^4 \cdot r^{-2}}{r^4}$

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

24)  $\frac{(-2a^4)^2}{a^3 \cdot -2a^4}$

**Simplify. Write each answer in scientific notation.**

25)  $(5.8 \times 10^9)(3 \times 10^{-5})$

26)  $(2 \times 10^{-9})(6 \times 10^9)$

27)  $\frac{7 \cdot 10^{12}}{2.5 \cdot 10^7}$

28)  $\frac{8.8 \times 10^{-7}}{8 \times 10^{-1}}$

29)  $(8 \cdot 10^{-5})^4$

30)  $(3 \cdot 10^2)^9$

**Express in scientific notation**

31) 5,555,000,000

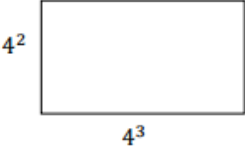
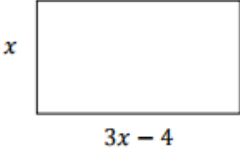
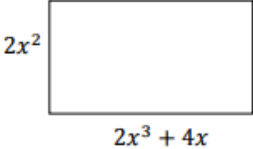
32) 0.0072

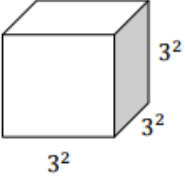
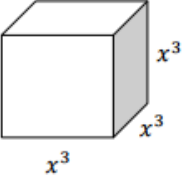
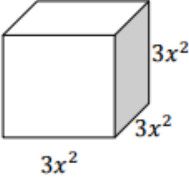
**Express in standard notation (decimal notation).**

33)  $5 \times 10^{-5}$

34)  $8.35 \times 10^6$

## REVIEW APPLICATIONS

Find the area of the following rectangles:		
1. 	2. 	3. 

Find the volume of the following cubes:		
4. 	5. 	6. 

EXPAND
<p style="text-align: center;"><b><u>Expand the following to simplify. SHOW WORK!</u></b></p> <p>7. <math>(3xy^3)^2(2x^4y^2) =</math></p>

RULE
<p style="text-align: center;"><b><u>Use the rules to simplify.</u></b></p> <p>8. <math>(-5x^7y^2z)^4(4xy^0z^9)^3 =</math></p>

9. List the elements in order from least to concentration to greatest concentration.

Elements in Seawater	Concentration (parts per million)
Sulfur	904
Chloride	$1.95 \times 10^4$
Magnesium	$1.29 \times 10^3$
Sodium	10,770