2.8 Multiplying a Single Digit by a Power of 10 – Part 2

Activity 1 - Express each number on the left as a power of ten and a decimal. You may use the "Answer Bank" for help.

$\frac{1}{10}$ =		=	
$\frac{1}{100,000}$ =		=	
$\frac{1}{100}$ =		=	
$\frac{1}{10,000}$ =		=	
$\frac{1}{1,000}$ =		=	

Answer Bank

		0.00001
	10^{-3}	
		10^{-5}
10^{-4}	0.001	
0.0001		10^{-1}
0.1	10^{-2}	0.01

Explain the pattern that you see above in relation to the powers of 10.

Explain the pattern that you see above in relation to the decimals.

Activity 2 - Complete the following.

0.0001 x 9	0.01 x 4	0.000001 x 7

What powers of ten are used above?

Activity 3 – Determine the value for the "?" that would make the statement true.

$3 \times 10^{?} = 0.0003$	$5 \times 10^{?} = 0.005$	$8 \times 10^{?} = 0.8$	$6 \times 10^{?} = 0.00006$	$2 \times 10^{?} = 0.0000002$

Explain how you determined each "?" in Activity 3.

Class Notes – Simplify each of the following.

LP#1 $7 \times 10^{-4} =$	$5 \times 10^{-6} =$	$8 \times 10^{-2} =$
LP#2 $3 \times 10^{-10} =$	$6 \times 10^{-1} =$	$2 \times 10^{-8} =$
LP#3 $4 \times 10^{0} =$	$9 \times 10^{-3} =$	$1 \times 10^{-5} =$

Class Notes – Write each number as a product of a whole number and a power of 10.

LP#4 0.00002	0.6	0.009
LP#5 0.0007	0.00005	0.00000003
LP#6 0.04	0.000008	0.002

Review – In the **left column** simplify each expression. In the **right column** write each number as a product of a whole number and a power of 10.

R#1 $7 \times 10^{-9} =$ $4 \times 10^{-1} =$	0.002 0.0000005
R#2 $9 \times 10^{-11} =$ $2 \times 10^{-4} =$	0.9 0.0000000007

R#3 $6 \times 10^{-7} =$ $3 \times 10^{-3} =$	0.0003 0.00008

Homework – Simplify each of the following.

1) $6 \times 10^{-8} =$ **2)** $3 \times 10^{-2} =$ **3)** $7 \times 10^{-5} =$

4) $4 \times 10^{-9} =$ **5)** $5 \times 10^{-3} =$ **6)** $8 \times 10^{-4} =$

7) $3 \times 10^{-5} =$ **8)** $7 \times 10^{-6} =$ **9)** $1 \times 10^{-6} =$

10) $4 \times 10^{-2} =$ **11)** $6 \times 10^{-5} =$ **12)** $9 \times 10^{-6} =$

Write each number as a product of a whole number and a power of 10.

13) 0.00003 **14)** 0.008 **15)** 0.04

16) 0.00007 **17)** 0.000006 **18)** 0.000000008

19) 0.00004 **20)** 0.0000005 **21)** 0.00000002

22) 0.000001 **23)** 0.5 **24)** 0.0000000000009

Synthesis

a) Simplify and write each number as a product of a whole number and a power of 10.

b) Express each number in decimal form.

25) $(4 \times 10^{-5})(2 \times 10^{3}) =$ **26)** $(5 \times 10^{4})(1 \times 10^{-7}) =$ **27)** $(2 \times 10^{2})(3 \times 10^{-3}) =$

28) $(9 \times 10^{-11})(1 \times 10^{4}) =$ **29)** $(3 \times 10^{2})(3 \times 10^{-7}) =$ **30)** $(2 \times 10^{-10})(4 \times 10^{2}) =$

31) $\dfrac{9 \times 10^{-8}}{3 \times 10^{2}} =$ **32)** $\dfrac{8 \times 10^{-7}}{4 \times 10^{-3}} =$ **33)** $\dfrac{6 \times 10^{-13}}{2 \times 10^{5}} =$

34) $\dfrac{4 \times 10^{11}}{2 \times 10^{-7}} =$ **35)** $\dfrac{8 \times 10^{3}}{2 \times 10^{-1}} =$ **36)** $\dfrac{9 \times 10^{-6}}{9 \times 10^{-4}} =$

37) Create a place value chart that shows the place values as a power of 10.