2.7 Multiplying a Single Digit by a Power of 10 – Part 1

Activity 2 - Express each number on the left as a power of ten. You may use the "Power of Ten Bank" for help.

1 =	**Power of Ten Bank**
1,000,000 =	10^3 10^9
100 =	10^4
1,000,000,000 =	10^7
100,000,000 =	10^8 10^1
10,000 =	
10 =	10^6 10^5
10,000,000 =	10^0
100,000 =	10^2
1,000 =	

Explain the pattern that you see above.

Activity 1 - Complete the following.

100 x 3	1,000 x 5	10,000 x 9	100,000 x 6	1,000,000 x 2

What powers of ten are used above?

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

$5 \times 10^{?} = 5{,}000$	$6 \times 10^{?} = 600{,}000$	$9 \times 10^{?} = 90{,}000$	$3 \times 10^{?} = 300$	$2 \times 10^{?} = 2{,}000{,}000$

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 2,000,000	6,000	90
LP#5 70,000	500,000	30,000,000
LP#6 400	8,000,000	2,000

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 $7 \times 10^{9} =$ $4 \times 10^{0} =$	200 5,000,000
R#2 $9 \times 10^{11} =$ $2 \times 10^{4} =$	9 7,000,000,000

R#3 $6 \times 10^7 =$ $3 \times 10^0 =$	3,000 80,000

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) $4 \times 10^0 =$ **11)** $6 \times 10^0 =$ **12)** $9 \times 10^0 =$

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

13) 300,000 **14)** 8,000 **15)** 400

16) 700,000 **17)** 60,000 **18)** 90,000,000

19) 4,000 **20)** 800,000,000 **21)** 2,000,000

22) 1,000,000 **23)** 5 **24)** 8,000,000,000

Synthesis

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

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

28) $(1 \times 10^{11})(7 \times 10^4) =$ **29)** $(3 \times 10^4)(3 \times 10^7) =$ **30)** $(5 \times 10^{10})(1 \times 10^2) =$

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)** $\dfrac{9 \times 10^6}{9 \times 10^0} =$