Chapter 6 – Study Guide

Investigations in Measurement and Decimal Multiplication & Division

1.) Multiply the numbers.

a) $2.8 * 10^2 =$ __280.0__

b) $2.8 * 10^3 =$ __2800.0__

c) $2.8 * 10^4 =$ __28000.0__

2.) Where did you place the decimal point in your answer to $2.8 * 10^3$? How did you know to place it there?

We moved the decimal 3 places to the right, the same amount as the exponent

3.) Divide the numbers.

a) $14.3 \div 10^2 =$ __0.143__

b) $14.3 \div 10^3 =$ __0.0143__

c) $14.3 \div 10^4 =$ __0.00143__

4.) Where did you place the decimal point in your answer to $14.3 \div 10^4$? How did you know to place it there?

We moved the decimal 4 places to the left, the same amount as the exponent

5.) Convert between millimeters (mL) and liters (L) to complete the "What's My Rule?" table. Then **write a rule using a power of 10 in exponential notation.**

in
↓
| Rule |
| $\div 10^3$ |
out
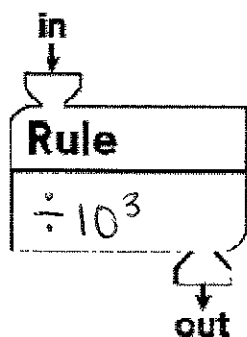
In (mL)	out (L)
1,000	1
3,500	3.5
150	0.150
55	0.055
280	0.28
2400	2.4

6.) Lisa is conducting an experiment for a science project. She is creating a mixture that requires 1.8 liters to complete. She needs 50 milliliters to have enough of the mixture. How much of the mixture does she currently have?

Answer: __1750 mL__

$1.8 L = 1800 mL$

$$\begin{array}{r} 1800 \\ -50 \\ \hline 1750 \, mL \end{array}$$

7.) Use an estimate to place the decimal point in each product.

a) $38.4 * 6.1 = 2\ 3\ 4.2\ 4$ $40 \times 6 = 240$

b) $2.78 * 14.6 = 4\ 0.5\ 8\ 8$ $3 \times 15 = 45$

c) Explain how you determined where to place the decimal point in the problem:
   $38.4 * 6.1 = 2\ 3\ 4\ 2\ 4$
   We rounded both numbers in the equation and multiplied to get a product. Using our estimated product, we placed the decimal in a spot that made sense and was close to our estimate

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Solve the problem.

8.) $14.7 * 3.2 =$ _____

$$\begin{array}{r} 147 \\ \times 32 \\ \hline 294 \\ +4410 \\ \hline 47.04 \end{array}$$

9.) $26.8 * 37.3 =$ _____

$$\begin{array}{r} 268 \\ \times 373 \\ \hline 804 \\ 18760 \\ +80400 \\ \hline 999.64 \end{array}$$

10.) Explain how you solved the problem $14.7 * 3.2$

Ignore the decimal and multiply 147 × 32 traditionally. With the answer we get, we then look at the number of places behind decimals in the original problem, and place the decimal in the answer to match the amount.

11.) Make an estimate. Then divide as if the dividend were a whole number. Use your estimate to place the decimal point in the answer.

$6.71 \div 2 =$ _3.35_   Estimate: _$8 \div 2 = 4$_

OR

Divide the traditional method and place the decimal as we learned in class.

$$\begin{array}{r} 3.35 \\ 2\,\overline{\smash{)}\,6.71} \\ -6\downarrow \\ \hline 07 \\ -6\downarrow \\ \hline 11 \\ -10 \\ \hline 1 \end{array}$$

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12.) Write an equivalent problem that has a whole number divisor. Then solve the
equivalent problem and complete the number sentence.

$4.8 \div 0.6 =$ ___8___   Equivalent Problem: ___$48 \div 6 = 8$___

OR

Use the traditional method and move the decimal point in the divisor and the dividend.
Then solve the problem.

$$0.6\overline{)4.8} \longrightarrow \begin{array}{r} 8 \\ 6\overline{)48} \\ -48 \\ \hline 0 \end{array}$$

13.) a) A rectangular one – story house covers an area of 2,600 square feet. The ceilings
are 9 feet high. What is the volume of the interior of the house?

Number model: ___2600×9___

Volume: ___23,400___ cubic feet

$$V = B \times h$$

$$V = 2600 \times 9$$

b) The owners added a second floor to the house. The second floor is 60 feet long
and 20 feet wide with ceilings that are 8 feet tall. What is the volume of the second
floor?

Number model: ___$60 \times 20 \times 8$___

Volume of 2nd floor: ___9,600___ Cubic feet

$$V = l \times w \times h$$

c) What is the total volume of the interior of the house (the whole house)?

Number model: 23,400 + 9,600

Volume of the whole house: 33,000 cubic feet

14.) Solve the problem.

a) 6.7 * 4.5 = _____

```
     67
  x  45
  ----
+   335
  2680
  ------
  30.15
```

c) 4.231 * 3.5 = _____

```
      4231
   x    35
   --------
     21155
 + 126930
   --------
   14.8085
```

b) 12.4 * 3.8 = _____

```
     124
  x   38
  -----
    992
+  3720
  ------
  47.12
```

d) 5.12 * 2.7 = _____

```
     512
  x   27
  -----
   3584
+ 10240
  ------
  13.824
```

15.) Luca is starting a rock collection. He collects unusual rocks wherever he can find them. He wants to know how different rock sizes compare to their weights, so he measures the weights of his 10 favorite rocks and recorded the results below.

Rock Weights (ounces)

$5\frac{3}{4}$	$6\frac{1}{2}$	$7\frac{1}{4}$	$7\frac{3}{4}$	$5\frac{1}{2}$	$8\frac{1}{4}$	$7\frac{3}{4}$	$5\frac{1}{4}$	$7\frac{3}{4}$	$6\frac{1}{4}$

a) Complete the line plot using Luca's data. Remember to add a title and label .

Rock Weights
(title)
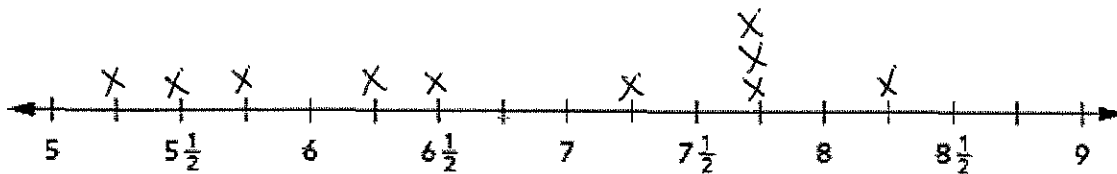
b) What is the most common weight of the rocks in his collection? $7\frac{3}{4}$

c) What is the combined weight of the five heaviest rocks?

Number model: $8\frac{1}{4} + 7\frac{3}{4} + 7\frac{3}{4} + 7\frac{3}{4} + 7\frac{1}{4}$

The combined weight is: $38\frac{3}{4}$ ounces

d) What is the difference between the heaviest and lightest rocks?

Number model: $8\frac{1}{4} - 5\frac{1}{4}$

The difference in weight is: 3 ounces