

**Unit 1 Long Division and Decimal Operations**

Name \_\_\_\_\_

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	Long Division			
	Add/Sub Decimals			
	Add/Sub Decimals			
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	Multiply Decimals			
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	Divide Decimals			
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## Long Division

These are the four main steps when doing long division. An easy way to remember is Dad, Mom, Sister, Brother, your family.

- Divide .....
- Multiply .....
- Subtract .....
- Bring down .....

Lets use this in an example. Lets divide 486 by 9.

Dad - Divide. How many times does 9 go into 4? Zero, it is too big to divide into 4. So now look at the next number. How many times does 9 go into 48? It goes in 5 times.

$$\begin{array}{r} 5 \\ 9 \overline{)486} \\ \underline{45} \phantom{0} \\ 36 \\ \underline{36} \\ 0 \end{array}$$

Mom - Multiply. Multiply 5 times 9:

$$\begin{array}{r} 5 \\ \times 9 \\ \hline 45 \end{array}$$

Sister - Subtract. Subtract the 45 from the 48:

$$\begin{array}{r} 5 \\ 9 \overline{)486} \\ \underline{45} \phantom{0} \\ 36 \end{array}$$

Brother - Bring down. Bring down the 6:

$$\begin{array}{r} 5 \\ 9 \overline{)486} \\ \underline{45} \phantom{0} \\ 36 \end{array}$$

And now repeat the 4 steps with the 36.



Dad - Divide. How many times does 9 go into 36? It goes in 4 times.

$$\begin{array}{r} 54 \\ 9 \overline{)486} \\ \underline{36} \phantom{0} \\ 126 \\ \underline{126} \\ 0 \end{array}$$

Mom - Multiply. Multiply 4 times 9:

$$\begin{array}{r} 4 \\ \times 9 \\ \hline 36 \end{array}$$

Write in the 36 under the 36:

$$\begin{array}{r} 54 \\ 9 \overline{)486} \\ \underline{36} \phantom{0} \\ 126 \\ \underline{126} \\ 0 \end{array}$$

Sister - Subtract. Subtract the 36 from the 36:

$$\begin{array}{r} 54 \\ 9 \overline{)486} \\ \underline{36} \phantom{0} \\ 126 \\ \underline{126} \\ 0 \end{array}$$

Brother - Bring down. There are no more numbers to bring down, so you are done.

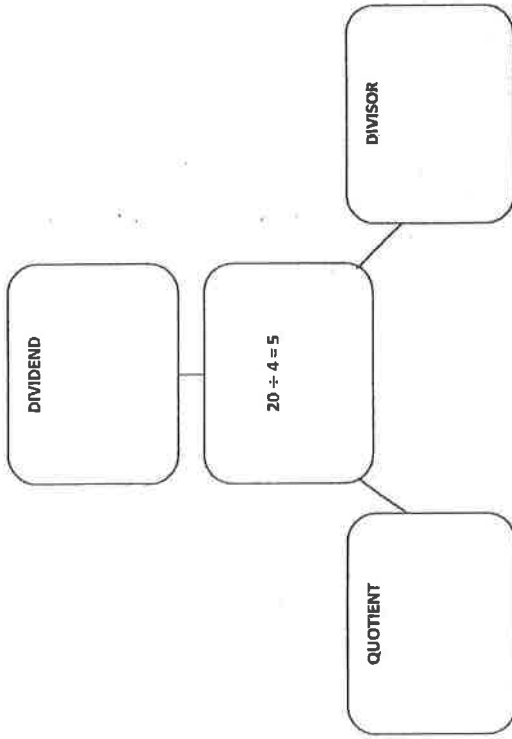


NAME \_\_\_\_\_ DATE \_\_\_\_\_ CORE \_\_\_\_\_

### Dividing Whole Numbers

#### STAR DIAGRAM

Define each of the three elements in a division problem. Below each definition, write the number from the central equation that corresponds to that element.



### Multi-Digit Division

When would you use division in "real life"?

Give at least one example that has "left overs"

1)  $14 \overline{) 875}$

2)  $36 \overline{) 1248}$

3)  $675 \div 15$

4)  $1741 \div 24$

#### FILL IN THE CHART

Complete the following table by filling in the missing dividends, divisors, and quotients.

	DIVIDEND	÷	DIVISOR	=	QUOTIENT
1.	_____	÷	11	=	9
2.	64	÷	8	=	_____
3.	42	÷	_____	=	6
4.	144	÷	12	=	_____
5.	_____	÷	4	=	6
6.	10	÷	_____	=	2

#### QUESTION & ANSWER

When you are done dividing, how can you check your answer?

What is a remainder?

What is a repeating decimal?

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We are going to use estimation to help us add/subtract/multiply/divide decimals.

What is estimation?

How or when do we use estimation in our daily life?

An estimation strategy:

Use EASY numbers, don't make things too complicated

$$3.41 \times 5.07 = 3.4 \times 5.1 \text{ too complicated} \\ = 3 \times 5 = 15 \text{ much easier}$$

$$33.9 / 5.6 = 34 / 6 \text{ too complicated} \\ = 30 / 6 = 5 \text{ much easier}$$

### To add and subtract decimals

- 1.) Line up the decimals, fill in any place holding zeroes
- 2.) Add or subtract as you normally would
- 3.) Carry down the decimal
- 4.) Use estimation to check your answer

1.  $8.9 + 2.4$

2.  $12.7 - 9.6$

3.  $18.35 - 4.16$

4.  $7.21 + 11.6$

5.  $0.975 + 3.8$

6.  $20.66 - 9.1$

# Adding and Subtracting Decimals

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Steps:

- 1) \_\_\_\_\_ your decimals
- 2) Add in \_\_\_\_\_ as placeholders.
- 3) Use estimation to check if the answer is reasonable.

Examples:

1)  $3.62 + 18.57$

CHECK:

2)  $9 + 3.245$

CHECK:

3)  $5.78 + (18.3)$

CHECK:

4)  $12.49 - 7.25$

CHECK:

5)  $14 - 7.32$

CHECK:

6)  $8.43 + 3.2$

CHECK:

You try. Add or subtract. Use estimation to check.

1)  $6.98 + 14.27$

2)  $8.46 + (19.2)$

3)  $6.72 - 4.16$

4)  $24 - 3.8$

5) Renee finished her first lap in the 200m freestyle event in 28.76 seconds. She completed the second lap in 29.17 seconds. What was her total time for the two laps?

Steps to Multiplying Decimals:

1. Line up the numbers vertically just like multiplying whole numbers.

$$\begin{array}{r} 12.3 \\ \times 4.8 \\ \hline \end{array}$$

Multiply the numbers (ignoring the decimals for now).

$$\begin{array}{r} 12.3 \\ \times 4.8 \\ \hline 5904 \end{array}$$

2. Once the answer is reached, the decimal has to be placed in the product:
  - a. Count the total number of decimal places in both numbers.

$$\begin{array}{r} 12.3 \\ \times 4.8 \\ \hline 5904 \end{array}$$

Total: 2

- b. From the right side of the product, count to the left the number of decimal places.

$$\begin{array}{r} 12.3 \\ \times 4.8 \\ \hline 5904 \end{array}$$

- c. Place the decimal in the product.

$$\begin{array}{r} 12.3 \\ \times 4.8 \\ \hline 59.04 \end{array}$$

3. Check your answer to be sure it makes sense.



**Multiplying Decimal Notes (estimate and compute)**

1) The farmer fills each jug with 3.7 liters of cider. If you buy 4 jugs, how many liters of cider is that?  
Estimate: Solve/show your work:

2) A grocery store manager donated 15 boxes of cereal to a food bank. Each box held 1.75 pounds of cereal. How many pounds of cereal did the manager donate altogether?  
Estimate: Solve/show your work:

3) Jeff went to the store to buy some school supplies. He bought 2 packs of pencils for \$2.99 each and 3 notebooks for \$1.47 each. How much did he spend on school supplies?  
Estimate: Solve/show your work:

4) The price of admission to the concert for a student is \$4.75 and for an adult is \$7.50. How much would it cost for 4 students and 2 adults to attend the concert?  
Estimate: Solve/show your work:

5) A deli charges \$2.89 for a pound of turkey. If Tim wants to purchase 4 pounds of turkey, how much will it cost?  
Estimate: Solve/show your work:

6) The average mail carrier walks 4.8 km in a workday. How far do mail carriers walk in a 6 day work week?  
Estimate: Solve/show your work:

**Reflection:**  
**Why are estimates important when multiplying?**

**How did you determine where to put the decimal in your final answer?**

**Estimate:  $24 \times 63$**

**Compute:  $24 \times 63$**

Using the result of the estimation and computation from above, give the exact answer to each of the following

Problem	Computation
$0.24 \times 6.3$	
$24 \times 0.63$	
$2.4 \times 63$	
$0.24 \times 0.63$	



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**Multiplying decimal by decimal notes**

- 1) A rectangular garden has a length of 4.25 meters and a width of 2.8 meters. How many square meters are there in the garden?

Estimate:

Solve/show your work:

- 2) The area of Henry's kitchen is 168.5 square feet. The cost of tile is \$4.62 per square foot. What is the total cost to tile the kitchen?

Estimate:

Solve/show your work:

- 3) Katie runs 2.6 miles per day. If she runs 4.5 times a week, how many miles does she run total?

Estimate:

Solve/show your work:

**Where does the decimal go?**

Estimate:  $277 \times 63$

Compute:  $277 \times 63$

Using the result of the estimation and computation from above, give the exact answer to each of the following

<b>Problem</b>	<b>Computation</b>
$2.77 \times 63$	
$0.277 \times 6.3$	
$277 \times 0.63$	
$277 \times 6.3$	



## Long Division with Decimals

It is very easy to use long division to divide a decimal by a whole number.

During the division process, divide as if there were **no decimal point**.

Then, simply put the decimal point in the quotient in the *same place* as it was in the dividend.

$$\begin{array}{r} 0.593 \\ 7 \overline{) 4.151} \\ \underline{-35} \phantom{00} \\ 65 \phantom{00} \\ \underline{-63} \phantom{00} \\ 21 \phantom{00} \\ \underline{-21} \phantom{00} \\ 0 \end{array}$$

Check:

$$\begin{array}{r} 5.93 \\ \times 7 \\ \hline \end{array}$$

1. Divide. Check each division result with multiplication.

a.  $5 \overline{) 5.30}$

Check:

b.  $3 \overline{) 0.72}$

Check:

c.  $7 \overline{) 6.23}$

Check:

d.  $6 \overline{) 2.388}$

Check:

2. Divide. Check each division result with multiplication.

a.  $19 \overline{) 23.94}$

Check:

b.  $23 \overline{) 57.638}$

Check:

3. a. Fill in the explanation, and find the price of one roll.

Twenty-four wheat rolls and one loaf of rye bread cost \$10.70. If the bread costs \$2.30, find the cost of one roll.

First subtract \$\_\_\_\_\_ from \$\_\_\_\_\_.

Then \_\_\_\_\_ that result by \_\_\_\_\_.

One roll costs \$\_\_\_\_\_.

b. Write a *single* expression to match the explanation above.



4. Seven muffins and one drink cost \$7.11. If the drink costs \$1.23, find the cost of one muffin.

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**Divide Decimal by whole number notes (with estimation)**

- 1) Four friends had lunch together. The total bill for lunch came to \$44.80, including tax. If they shared the bill equally, how much did each person pay?  
Estimate: Solve/show your work:

- 2) Bubbles Mirth and her two friends bought a drink containing 0.96 L of root beer. If they divide the drink equally, how much root beer will each person get?  
Estimate: Solve/show your work:

- 3) There are 7.2 milligrams of iron in a dozen eggs. Because there are 12 eggs in a dozen, how many milligrams of iron are in one egg?  
Estimate: Solve/show your work:

- 4) Kyle bought a sheet of lumber 12.6 feet long to build fence rails. He cut the strip into 3 equal pieces. How long is each piece?  
Estimate: Solve/show your work:

- 5) The City Zoo feeds its four giant pandas 225.6 pounds of bamboo shoots each day. Each panda is fed the same amount of bamboo. How many pounds of bamboo does each panda eat every day?  
Estimate: Solve/show your work:

**Divide Decimal by Decimal notes (with estimation)**

- 1) A running track is 0.25 miles long. How many laps around the track will you complete if you run 3 miles?  
Estimate: Solve/show your work:

- 2) Each super chocolate kiss weighs 0.8 ounces. How many kisses can be made from 20 ounces of chocolate?  
Estimate: Solve/show your work:

- 3) A pack of construction paper is 30 cm thick. If each sheet of construction paper is 0.15 cm thick, how many sheets of construction paper are in the pack?  
Estimate: Solve/show your work:

- 4) Mrs. Burgess bought a 6 pound package of ground beef. She divided it into 0.4 pound patties. How many patties did she make?  
Estimate: Solve/show your work:

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- 5) Jamal spent \$7.70 on wire to build a rabbit hutch. Wire costs \$0.35 per foot. How many feet of wire did Jamal buy?

Estimate:

Solve/show your work:

**Reflection: How does estimating help you place the decimal in your answer?**

**How can you determine where to place the decimal in your final answer?**

**Divide Decimal by Decimal practice**

Problem	Problem
$10.5 \div 1.5$	$20.4 \div 5.1$
$10.81 \div 2.3$	$37.5 \div 2.5$