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 <u>as if there were</u> <u>no decimal point</u>.

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

			5		3
7)	4	1	. 5	1
		3	5		
			6	5	5
		=	6	3	3
				2	1
			_	2	1
					0

Check:

5.9 3 × 7

1. Divide. Check each division result with multiplication.

		Check:		Check:
a.	5) 5.3 0		b. 3) 0.7 2	
		Check:		Check:
c.	7) 6.2 3	Check:	d. 6) 2.3 8 8	Check:
c.	7) 6.2 3	Check:	d. 6) 2.3 8 8	Check:
c.	7) 6.2 3	Check:	d. 6) 2.3 8 8	Check:
c.	7) 6.2 3	Check:	d. 6)2.388	Check:
c.	7) 6.2 3	Check:	d. 6) 2.3 8 8	Check:
c.	7) 6.2 3	Check:	d. 6) 2.3 8 8	Check:
c.	7) 6.2 3	Check:	d. 6)2.388	Check:

2. Divide. Check each division result with multiplication.

Check:

a. 19) 2 3.9 4

- **b.** 23) 5 7.6 3 8

Check:

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

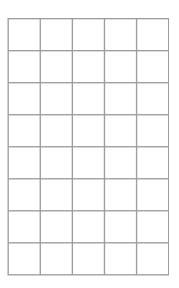
Twenty-four wheat rolls and one loaf of rye bread cost \$10.70. If the bread costs \$2.30, find the cost of one roll.

First subtract \$_____ from \$_____.

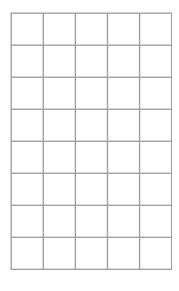
Then _____ that result by _____.

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.



You are used to dividing *whole numbers* with long division, and sometimes getting a remainder. For example, $24 \div 5 = 4$ R4.

If we add decimal zeros (.0 or .00 or .000) to the dividend, we do not change its value, but sometimes the quotient comes out even!

For example, if we use long division to divide 24.0 by 5, the quotient is exactly 4.8! Multiplying $5 \times 4.8 = 24$ verifies this.

		4	.8
5)2	4	.0
	2	0	
		4	0
	_	4	0
			0

Check:
$$\frac{4}{4.8} \times \frac{5}{24.0}$$

5. Divide in two ways: first by indicating a remainder, then by long division. Check by multiplying.

a.
$$31 \div 4 =$$
______ R _____

Check:

Check:

c.
$$15 \div 8 =$$
_____R ____

d.
$$45 \div 20 =$$
______ R _____

Check:

Check:

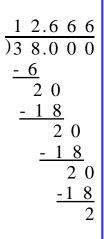
Sometimes a decimal division is not even. In that case, **stop the division** at some point, and **give the answer as a rounded number.**

Round to the digit <u>just before</u> the last digit you found for the quotient. That way, the last digit will tell you whether to round up or down.

Example. Three girls evenly shared the cost of a meal for \$38.00. How much did each girl pay?

We calculate the answer to <u>three</u> decimal digits so that we can <u>round it to two</u> decimal digits: $$12.666 \approx 12.67 .

Of course, if each girl paid \$12.67, they would have paid 1 cent too much. So, in reality, two girls paid \$12.67 and one girl paid \$12.66.



Use the grid below and your notebook for calculations.

6. The PE teacher divided a 2-mile track into seven equal parts. How long are the parts? Give your answer to two decimal digits, in miles.

Hint: Remember to write 2 as 2.000 before you divide.

- 7. A recipe calls for 1.5 kg of beef and it makes six servings. How much beef is in one serving?
- 8. Mary checked the prices of four different hot sauces: \$2.55, \$2.69, \$2.95, and \$2.75. Calculate the average price.
- 9. Now you will need both division and multiplication.
 - **a.** Find 3/4 of 0.130 kg.
 - **b.** Find 3/5 of 23 seconds.

