Divide Decimals by Whole Numbers 1

To divide a decimal by a whole number with long division is very easy.

Simply divide normally, as if there were no decimal point. Then, **put the decimal point in the quotient in the same place** as it is in the dividend.

See the example on the right. It is your task to finish checking the division by multiplication. Verify that the multiplication gives you the original dividend, 41.51.

```
     0 5 . 9 3
7 ) 4 1 . 5 1
  - 3 5
      6 5
    - 6 3
        2 1
      - 2 1
          0
```

Check:

```
    5 . 9 3
  ×       7
  _____
```

1. Divide. Check each division result with multiplication.

a. 5) 5.3 0   Check:

b. 6) 2.3 8 8   Check:

c. 19) 2 3.9 4   Check:

d. 23) 5 7.6 3 8   Check:

Decimals 2 (Blue Series)

You know that when dividing whole numbers, there can be a remainder. For example, 24 ÷ 5 = 4 R4.

But, we can continue such divisions into decimal digits. To do that, <u>add decimal zeros to the dividend</u>.

Example 1. This is the division 24 ÷ 5 but with 24 written as 24.0.

It is actually an even division, with a quotient of 4.8.

```
        0 4.8
    5 ) 2 4.0
        2 0
          4 0
        - 4 0
            0
```

Check:

```
       4
     4.8
   ×   5
   2 4.0
```

How do you know how many decimal zeros to add to the dividend, so the division will be even?

You cannot tell that before you divide. Just start with maybe 2-3 zeros, and see how the division goes. You can always add more zeros to the dividend if you need to. Besides, not every decimal division is even! We will see an example of that on the next page.

2. Divide in two ways: first by indicating a remainder, then by long division. Add a decimal point and decimal zeros to the dividend. Lastly, check your answer by multiplying.

a. 31 ÷ 4 = _____ R _____

```
4 ) 3 1
```
Check:

b. 56 ÷ 5 = _____ R _____

```
5 ) 5 6
```
Check:

c. 15 ÷ 8 = _____ R _____

```
)
```
Check:

d. 45 ÷ 20 = _____ R _____

```
)
```
Check:

Decimals 2 (Blue Series)

Sometimes a decimal division is not even, but just keeps on going forever, like the one below!
In that case, **stop the division** at some point, and **give the answer as a rounded number.**

Example 2. Seven people shared evenly the cost of a meal for $99.90.
How much did each person pay?

This has to do with money, so the answer needs to have <u>two</u> decimal
digits. That means we need to calculate the answer to <u>three</u> decimals
(so we can then round it to two decimals).

So, we write 99.90 as 99.900 (with three decimal digits) before dividing.

The answer is then rounded: $14.271 ≈ $14.27. But, if each person pays
$14.27, they would pay a total of 7 × 14.27 = $99.89. That is one cent
short. So in reality, one person would pay $14.28 and the rest $14.27.

```
      1 4.2 7 1
  7 )9 9.9 0 0
    -7
     2 9
    -2 8
       1 9
      - 1 4
          5 0
         -4 9
            1 0
```

3. Divide. Add decimal zeros to the dividend, as necessary.
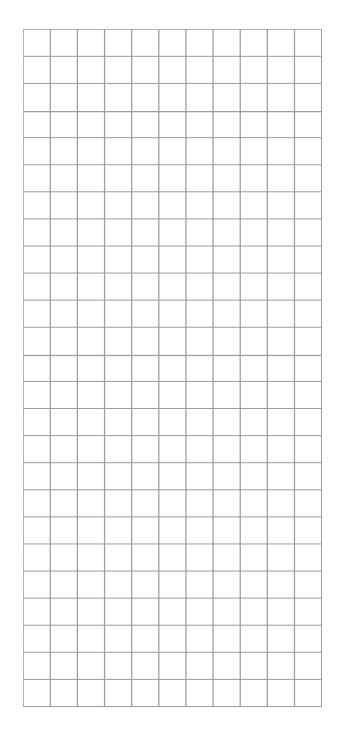
a. Continue the division to 3 decimals, then round your answer to 2 decimals. 7) 2 5 Check:	**b.** Continue the division to 2 decimals, then round your answer to 1 decimal. 6) 7 8 2 Check:
c. Round your answer to 2 decimals. 3) 4. 5 7 Check:	**d.** Round your answer to 3 decimals. 11) 2.3 Check:

Use the grid and extra paper for calculations.

4. Six friends shared the cost of a meal that
   cost $87.50 as equally as they could.
   How much did each one pay?

5. The PE teacher divided a 2-mile track into seven
   equal parts. How long are the parts?
   Give your answer to <u>two</u> decimal digits, in miles.
   Remember to write 2 with <u>three</u> decimal zeros before you divide.

6. A recipe calls for 1.5 kg of beef and it makes six
   servings. How much beef is in one serving?

7. Mary checked the prices of four different hot
   sauces: $2.55, $2.69, $2.95, and $2.75.
   Calculate the average price.
   *Hint: to find the average, add all the items and divide by
   the number of the items*

Puzzle Corner

Figure out where the decimal point has to go when we
multiply a decimal by a decimal! Estimation can help.

a. Now, 3.82 is about 4,
and 7.1 is about 7.
If 382 × 71 = 27122,
then what is 3.82 × 7.1?

b. If 45 × 309 = 13905
what is 4.5 × 30.9?
(Estimate!)

c. If 569 × 271 = 154199
what is 56.9 × 2.71?

Decimals 2 (Blue Series)