

Lesson 6

SHORT DIVISION (second half)

In this Lesson, we will answer the following:

4. HOW DO WE ROUND OFF, OR APPROXIMATE, A DECIMAL TO A GIVEN NUMBER OF DECIMAL PLACES?
5. HOW DO WE EXPRESS THE QUOTIENT AS A DECIMAL?

4. How do we *round off*, or approximate, a decimal to a given number of decimal places?

$$\$6.738 \approx \$6.74$$

Look at the digit to the *right* of the given place. If it is a 5 or greater, add 1 to the given place. If it is less than 5, leave the given place unchanged. In either case, drop all the remaining digits.

Example 1. Round off this decimal 7.253896 to three decimal places.

Answer. $7.253896 \approx 7.254$

(The wavy equal sign \approx means "is approximately equal to.")

To round off to *three* decimal places, we must look at the digit in the fourth place. The digit in the fourth place is 8 (greater than 5). Therefore, we add 1 to the previous digit 3.

Example 2. Round off 7.253896 to two decimal places.

Answer. $7.253896 \approx 7.25$

The digit in the third decimal place is 3 (less than 5). Therefore, we leave the digit in the second place (5) unchanged.

Example 3. Round off 7.253896 to the nearest tenth.

Answer. $7.253896 \approx 7.3$

To round off to the nearest tenth, means to keep one decimal place. (To round off to the nearest hundredth would mean to keep two places; to the nearest thousandth, three; and so on. Lesson 2, Question 6.)

Now, the digit in the second decimal place is 5. Therefore add 1 to the previous digit 2.

Example 4. Round off \$6.497014

Answer. This is money. Therefore we must round off to two decimal places:

$$\$6.497014 \approx \$6.50$$

The digit in the third decimal place is 7 (greater than 5). Therefore, when we add 1 to 9 of 6.49, we get 6.50

To round off whole numbers, see Lesson 1.

5. How do we express the quotient as a decimal?

$$\begin{array}{r} 3 \text{ R } 1 \\ 5 \overline{) 16} \end{array} \rightarrow \begin{array}{r} 3.2 \\ 5 \overline{) 16.10} \end{array}$$

When there are no more digits in the dividend:

- 1) Place a decimal point and bring it up to the quotient.
- 2) Add a 0 onto the remainder.
- 3) Continue dividing. Add a 0 onto each remainder until the division is exact. If the division will never be exact, round off the quotient to the required number of decimal places.