



Examples

Whole and Decimal Numbers

Based on power point presentations by Pearson Education, Inc.
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Learning Objectives

1. Use the vocabulary and symbols of arithmetic.
2. Define natural and whole numbers.
3. Round whole numbers.
4. Define decimal numbers.
5. Round decimal numbers.

Example 1: Round a Whole Number

Round the number 7,476,254,056 to the following:

1. the nearest hundred million

The digit occupying the rounding place is **4**. The digit to the right of it is **7** which is more than 5. We add 1 to the digit in the rounding place and fill the remaining places with 0s. That is, we are "rounding up".

$$7,476,254,056 \cong 7,500,000,000$$

2. the nearest million

The digit occupying the rounding place is **6**. The digit to the right of it is **2** which is less than 5. We leave the digit in the rounding place unchanged and fill the remaining places with 0s. That is, we are "rounding down".

$$7,476,254,056 \cong 7,476,000,000$$

Example 2: Round a Whole Number

Round the number 7,476,254,056 to the following:

1. the nearest hundred thousand

The digit occupying the rounding place is **2**. The digit to the right of it is **5**. We add 1 to the digit in the rounding place and fill the remaining places with 0s. That is, we are "rounding up".

$$7,476,254,056 \cong 7,476,300,000$$

2. the nearest ten thousand

The digit occupying the rounding place is **5**. The digit to the right of it is **4** which is less than 5. We leave the digit in the rounding place unchanged and fill the remaining places with 0s. That is, we are "rounding down".

$$7,476,254,056 \cong 7,476,250,000$$

Example 3: Round a Decimal Number

Round the number 3.141592 to the following:

1. the nearest tenth (one decimal place)

The digit occupying the rounding place is 1. The digit to the right of it is 4 which is less than 5. We leave the digit in the rounding place unchanged and drop the remaining decimal places. That is, we are "rounding down".

$$3.141592 \cong 3.1$$

2. the nearest hundredth (two decimal places)

The digit occupying the rounding place is 4. The digit to the right of it is 1 which is less than 5. We leave the digit in the rounding place unchanged and drop the remaining decimal places. That is, we are "rounding down".

$$3.141592 \cong 3.14$$

Example 4: Round a Decimal Number

Round the number 3.141592 to the following:

1. the nearest thousandth (three decimal places)

The digit occupying the rounding place is **1**. The digit to the right of it is **5**. We add 1 to the digit in the rounding place and drop the remaining decimal places. That is, we are "rounding up".

$$3.141592 \cong 3.142$$

2. the nearest ten-thousandth (four decimal places)

The digit occupying the rounding place is **5**. The digit to the right of it is **9** which is greater than 5. We add 1 to the digit in the rounding place and drop the remaining decimal places. That is, we are "rounding up".

$$3.141592 \cong 3.1416$$

Example 5: Round a Decimal Number

Round the number 136.92 to a whole number.

The digit occupying the rounding place is 6. The digit to the right of it is 9. We add 1 to the digit in the rounding place and drop the remaining decimal places. That is, we are "rounding up".

$$136.92 \cong 137$$

Example 6: Round a Decimal Number

Round the number 622.87 to the hundreds place.

The digit occupying the rounding place is 6. The digit to the right of it is 2 which is less than 5. We leave the digit in the rounding place unchanged and fill the remaining places with 0s. We drop any decimal places. That is, we are "rounding down".

$$622.92 \cong 600$$

Example 7: Round a Decimal Number

Round the number 197.12 UP to a whole number.

Note on Rounding UP:

Especially when computing a value needed to achieve a financial goal, we often asked to round this value UP ignoring all usual rounding conventions. In this way, we won't fall slightly short of being able to meet this goal.

The digit occupying the rounding place is **7**. The digit to the right of it is **1** which is less than 5. However, we are asked to round up. Therefore, we ignore the usual rounding convention, which would have us round down.

$$197.12 \cong 198$$