Estimating and Rounding

To round a decimal:

1. Locate the digit in the place value being rounded and circle it.
2. Reference the digit to the right.
   - If it is less than 5, keep the circled digit and discard all the digits to the right.
   - If it is greater than 5, increase the circled digit by 1 and discard all the digits to the right.

Example 1

Round 36.52 to the nearest tenth.

Explanation

Step 1: Locate the digit being rounded and circle it.

3 6 . (5) 2

Step 2: Reference the digit to the right.

3 6 . (5) 2

Step 3: Since 2 is less than 5, keep the circled digit and discard all the digits to the right.

Result: 36.5

Example 2

Round 45.48 to the nearest tenth.

Explanation

Step 1: Locate the digit being rounded and circle it.

4 5 . (4) 8

Step 2: Reference the digit to the right.

4 5 . (4) 8

Step 3: Since 8 is greater than 5, increase the circled digit by 1 and discard all the digits to the right.

Result: 45.5

Example 3

Round 18.496 to the nearest hundredths.

Explanation

Step 1: Locate the digit being rounded and circle it.

18. 4(9)6

Step 2: Reference the digit to the right.

18. 4(9)6

Step 3: Since 6 is greater than 5, increase the circled digit by 1 and discard all the digits to the right. Since 9 + 1 = 10, we need to carry 1 to the tenth place.

Result: 18.50 (Note: Do not remove the zero here since it is a place holder for hundredths.)

Example 4

(1) Round each decimal to the nearest thousandth and then calculate. 8.5123 – 3.2568 ≈

(2) Calculate and round the result to the nearest thousandth: 8.5123 – 3.2568 ≈

(3) Are the results from step 1 and 2 the same?

Explanation

(1) Round each decimal to the nearest thousandth.

8.5123 ≈ 8.512

3.2568 ≈ 3.257

Calculate: 8.512 – 3.257 = 5.255

(2) Calculate: 8.5123 – 3.2568 = 5.2555

Round the result to the nearest thousandth. 5.2555 ≈ 5.256

(3) Since 5.255 ≠ 5.256, they are not the same.

From this example, we know that the result could be different when we round and calculate OR calculate first and round later.