Rounding Numbers

Many times when using decimals or even whole numbers, you have to do some rounding up or down, since the answer needs to be to a certain number of decimal places. One good example of this is money, where we only need two decimal places for the cents.

Rounding off isn't difficult; you just need to follow the rules:

Rule 1

If the first digit to be dropped is less than 5, that digit and all the digits that follow it are simply dropped.

Example: Round one decimal place

This is the first digit to be dropped which is less than 5

6.4~~22~~ ← *Drop all digits after the first decimal place*

Answer: 6.4

Rule 2

If the first digit to be dropped is a digit greater than 5, or if it is a 5 followed by digits other than zero, the excess digits are all dropped and the last retained digit is increased in value by one unit.

Example 1: Round two decimal places

This is the first digit to be dropped which is greater than 5 and followed by non-zero digits

6.48~~72~~ ← *The excess digits are dropped*

Answer: 6.49 ← *The last retained digit is increased in value by one unit*

Example 2: Round to one decimal place

This is the first digit to be dropped which is a 5 and followed by non-zero digits

6.6~~501~~ ← *The excess digits are dropped*

Answer: 6.7 ← *The last retained digit is increased in value by one unit*

Rule 3

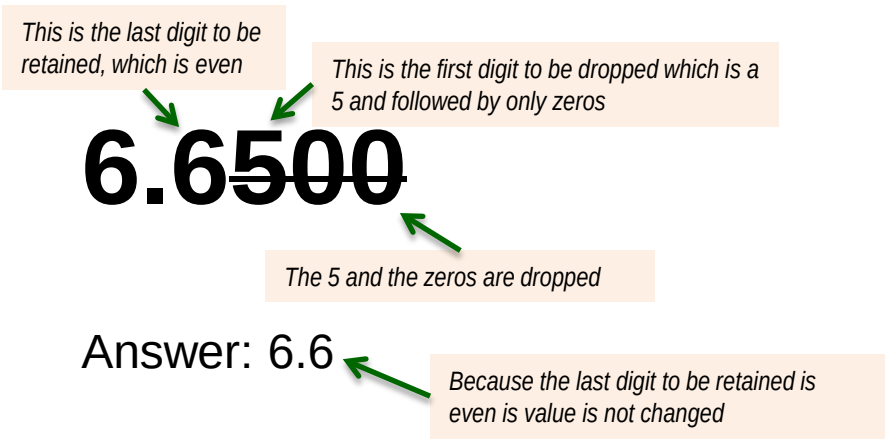
If the first digit to be dropped is a 5 and is not followed by any other digit, or if it is a 5 followed only by zeros, an odds and even rule is applied. The intention of the odd-even rule is to average the effects of rounding off.

Odds and evens rule

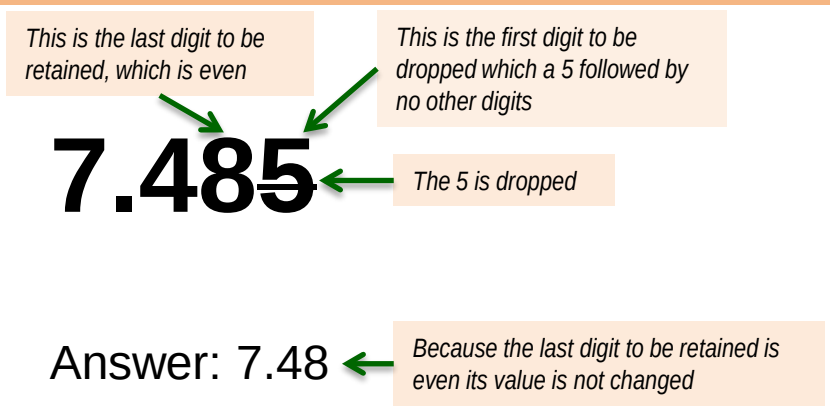
EVEN: If the last retained digit is <u>even</u>, its value is not changed, the 5 and any zeros that follow are dropped.

ODD: if the last digit is <u>odd</u>, its value is increased by one.

Evens Rule Example 1: Round to one decimal place

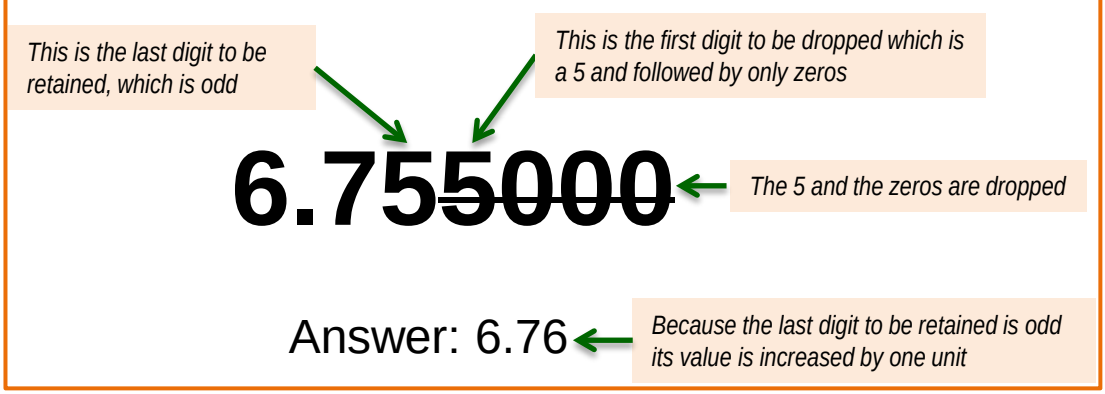


Evens Rule Example 2: Round to two decimal places



Odds Rule Example 3: Round to two decimal places

Answer: 7.48



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