

TOPIC A: ROUNDING/ESTIMATING NUMBERS

Rounding Numbers

Using the practice of rounding numbers is often helpful because it simplifies numbers and makes them easier to work with. Rounding numbers often makes mental math much easier and is often key to estimating which will be discussed next.



At some point in our mathematics education in school or in a previous job, we have completed the mental math activities such as rounding numerals to the nearest ten, hundred, thousand, and so on. We use this skill in real life, such as when shopping to figure out if we have enough money to buy something or when trying to divide a large amount of items among a few people. Additionally, rounding can assist you in calculating amounts of money, lengths of time, distances, and many other physical quantities. Rounded numbers are only approximate. You cannot get an exact answer with rounded numbers. Rounding can be accomplished with both whole and decimal number.

General Rules for Rounding

- If the number you are rounding to is followed by 5, 6, 7, 8, or 9 round the number up. For example 38 rounded to the nearest ten is 40
- If the number you are rounding to is followed by 0, 1, 2, 3, or 4 round the number down. For example 33 rounded to the nearest ten is 30
- When rounding, you first need to ask what number you are rounding to. Number can be rounded to the nearest ten, hundred, thousand, and so on. For example, take the number 4827
 - 4827 rounded to the nearest 10 is 4830
 - 4827 rounded to the nearest 100 is 4800
 - 4827 rounded to the nearest 1000 is 5000
- Rounding decimals works the same way as with whole numbers with the only difference being that instead of rounding tens hundreds, thousand, and such, you round tenths, hundredths, thousands, etc. For example:
 - 7.829 rounded to the nearest tenth is 7.8
 - 1.0621 rounded to the nearest hundredth is 1.06
 - 3.8797 rounded to the nearest thousandth is 3.880
- One way to avoid confusion in rounding decimals is to only look at the number in the place you are rounding to and the number that follows it. For example, to round 5.3824791401 to the nearest hundredth, just look at the number in the hundredths place—8—and the number that follows it—2. Then you can easily round it to 5.38

1 through 4,
stay on the
floor...5
through 9 climb
the vine!

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Example:

You are responsible for ordering supplies for your team this month. You have a budget of \$500.00. Each person needs 2 legal pads, 2 pens, 2 pencils, and 10 folders. You are ordering for 25 people.

Legal pads, box of 50 =	\$135.59ea	Folders, box of 300 =	\$186.19ea
Pens, box of 100 =	\$75.06ea	Pencils, box of 100 =	\$8.74ea

Using your rounding rules above to simplify the amounts first to the **nearest tenth** and then to the **nearest whole number**

Let's take a look.....



Rounding these figures first to the nearest tenth:

Legal pads, box of 50 =	\$135.60ea	Folders, box of 300 =	\$186.20ea
Pens, box of 100 =	\$75.00ea	Pencils, box of 100 =	\$ 8.70ea

Rounding these figures first to the nearest dollar (whole number):

Legal pads, box of 50 =	\$136.00ea	Folders, box of 300 =	\$187.00ea
Pens, box of 100 =	\$75.00ea	Pencils, box of 100 =	\$ 9.00ea

Estimating Totals

Practicing estimation is more involved than rounding numbers because it also involves the often mental calculation of a total or sum. For example, using the above same problem, let's see how estimating will work:

You are responsible for ordering supplies for your team this month. You have a budget of \$500.00. Each person needs 2 legal pads, 2 pens, 2 pencils, and 10 folders. You are ordering for 25 people. What will be the estimated cost of the supplies?

Legal pads, box of 50 =	\$135.59ea	Folders, box of 300 =	\$186.19ea
Pens, box of 100 =	\$ 75.06ea	Pencils, box of 100 =	\$ 8.74ea

Estimating the costs...

Legal pads, box of 50 =	\$136.00ea	Folders, box of 300 =	\$186.00ea
Pens, box of 100 =	\$ 75.00ea	Pencils, box of 100 =	\$ 9.00ea

$136.00 + 186.00 + 75.00 + 9.00 = 406.00$

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