

Rounding

Round 39.2746 to the nearest hundredth. That is the same as saying “Round 39.2746 to two decimal places.” One way to look at this is to think about the list of values we would generate if we were listing consecutive two decimal digit values, then ask ourselves, where would our value, 39.2746, fit in that list, and then select the number in the list that is closest to our value. If we were listing two decimal digit values we would have:

39.26

39.27

39.28

39.29

Clearly, our value fits between 39.27 and 39.28. Which of those two values is closest to our value? To answer that we look at the next digit in our value, in this case that is the 4 in the thousandths place. Because that digit is a 0, 1, 2, 3, or 4 we are closer to the lower value, the 39.27, than we are to the higher value, 39.28. Therefore, rounding 39.2746 to two decimal places yields 39.27.

Consider another problem: Round 39.2746 to the nearest tenth, that is, to 1 decimal place. A list of one decimal place numbers would be

39.1

39.2

39.3

39.4

Our value, 39.2746, falls between 39.2 and 39.3. Of those two, we want to select the one that is closest to our value. Again, we look at the next digit, in this case the hundredths digit, or 7. Because that digit is a 5, 6, 7, 8, or 9 the higher value, 39.3, is the value that is closer to our original value. Thus, rounding 39.2746 to 1 decimal place yields 39.3.

In all cases, to round a value to a given place, we look at the digit to the right of that place. If that next digit is a 0, 1, 2, 3, or 4, then we round down (actually, we round toward 0). If that digit is a 5, 6, 7, 8, or 9, then we round up (actually, we round away from 0). For the value 9154.8276:

rounding to 3 decimal places means looking at the fourth place, the 6, and deciding that we must round up to get 9154.828;

rounding to 1 decimal place means looking at the second decimal place, the 2, and deciding that we must round down to 9154.8;

rounding to the tens place means looking at the units place, the 4, and deciding to round down to 9150; and

rounding to the hundreds place means looking at the tens place, the 5, and deciding to round up to 9200.