

Rounding numbers

Rounding to the nearest whole number

It is not always necessary to give the exact number. For example, if there were 54,785 inhabitants in a town, you could say that its population was approximately 55,000.

By doing this we have rounded 54,785 to the nearest thousand to give 55,000.

Rounding to the nearest thousand

What is 1,485 to the nearest thousand?

It is between 1,000 and 2,000 but it is closer to 1,000, so round down.

1,485 rounded to the nearest thousand is 1,000.

Rounding to the nearest hundred

What is 1,485 to the nearest **100**?

1,485 is between 1,400 and 1,500, but it is closer to 1,500, so round up.

1,485 rounded to the nearest hundred is 1,500.

Rounding to the nearest ten

1,485 lies between 1,480 and 1,490, but it is closer to 1,480, so round down.

1,485 rounded to the nearest ten is 1,480.

Rounding to the nearest whole number

1,485.5 lies between 1,484 and 1,485 and it is exactly halfway between them. In this situation round up.

1,484.5 rounded to the nearest whole number is 1,485.

Making estimates

Imagine that you are buying a T-shirt for €9.99, a pair of socks for €1.49 and a belt for €8.99. The cashier charges you €23.47. You feel that this is too much - but how do you know?

One way of finding out whether you have been over-charged is to estimate what the total amount should be. Round the different prices into easier numbers - €9.99 is approximately €10, €1.49 is approximately €1.50 and €8.99 is approximately €9 - and you can do the calculation quickly in your head.

€9.99 + €1.49 + €8.99 is approximately €10 + €1.50 + €9 = €20.50

This is almost €3 less than the cashier asked for, so obviously you have been over-charged.

By rounding the actual values to more manageable numbers, you can estimate the answers to many problems:

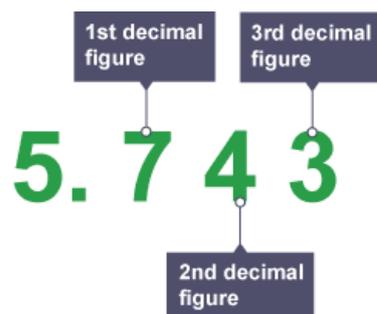
29×9 is approximately $30 \times 10 = 300$

$61 \div 6$ is approximately $60 \div 6 = 10$

Rounding to a given number of places

Counting decimal places

Decimal places are counted from the decimal point:



So, the number 5.1492 has four decimal places, while 4.34 has two decimal places.

To round a number to a given number of decimal places, look at the number in the next decimal place:

- If it's less than 5, round down
- If it's 5 or more, round up

Example

Round 9.6371 to 2 decimal places

This means we need 2 digits after the decimal point.

9. 6 3 7 1
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Because the next digit 7, is more than 5, we round the 3 up.

9.6371 = 9.64 (2 decimal places)

Question

Q1. Round 7.2648 to 2 decimal places.

7. 2 6 4 8
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To round to two decimal places, look at the number in the third decimal place. It's a {4}, so round down.

Therefore, 7.2648 = 7.26 (2 decimal places)

Q2. Round 8.352 to 1 decimal place.

8. 3 5 2
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To round to one decimal place, look at the number in the second decimal place. It's a {5}, so round up.

Therefore, 8.352 = 8.4 (1 decimal place)

To round a number to a given number of decimal places, the answer must have that number of decimal places - even if you have to add some zeros.

For example, rounding 3.40021 to two decimal places gives 3.40.

You need to write both decimal places, even though the second number is a zero, to show that you rounded to two decimal places.

Remember to look at the number after the one you're interested in. If it's less than 5, round down. If it's 5 or more, round up.