

Table 1: Number of Significant Digits

Value	How many significant digits does each value have?
a. 36.33 minutes	4
b. 100 miles	1
c. 120.2 milliliters	4
d. 0.0074 kilometers	2
e. 0.010 kilograms	2
f. 300. grams	3
g. 42 students	infinite

What are significant digits?

Significant digits are the *meaningful* digits in a measured quantity. Scientists have agreed upon a number of rules to determine which numbers in a measurement are significant. The rules are:

- Non-zero digits in a measurement are always significant.** This means that the distance measured by the car odometer, 7.2 miles, has two significant digits. Ex: 1, 2, 3... 9
- Zeros between two significant digits in a measurement are significant.** This means that the measurement of kilometers per mile, 1.609 kilometers, has four significant digits. zeros in a sandwich
- All final zeros to the right of a decimal point in a measurement are significant.** This means that the measurement 1.000 miles, has four significant digits. If they follow a non-zero digit. non-zero → those zeros count
- If there is no decimal point, final zeros in a measurement are NOT significant.** This means that the number 20 in the phrase "20-liter water cooler" has one significant digit. The water cooler isn't marked off in 1-liter increments, so no measurement decision was made regarding the ones place.
- A decimal point is used after a whole number ending in zero to indicate that a final zero IS significant.** If you measure 100 grams of lemonade powder to the nearest whole gram, write the number as 100. grams. This shows that your measurement has three significant digits.
- In a measurement, zeros that exist only to put the decimal point in the right place are NOT significant.** This means that the number 0.0008 in the phrase "0.0008 kilometer" has one significant digit. place holders - zeros are not significant
- A number that is found by counting rather than measuring is said to have an infinite number of significant digits.** For example, the race officials count 386 runners at the starting line. The number 386, in this case, has an infinite number of significant digits.

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