

Significant Digits  
Integrated Science Physics/Design

Name: \_\_\_\_\_

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:

1. 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.
2. 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.
3. 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.
4. 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.
5. 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.
6. 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.
7. 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 digit

Find the number of significant digits for each value below.

Example	Number of Significant Digits
a. 36.33 minutes	
b. 100 miles	
c. 120.2 mL	
d. 0.0074 km	
e. 0.010 kg	
f. 300. g	
g. 39 students	

In the table below, write two of your own examples of significant digits for each of the 7 rules. The first one has been done for you. (The 7 rules are listed at the top of this worksheet.)

Rule	Example	# of Significant Digits	Example	# of Significant Digits
1	45 minutes	2	143.98 dL	5
2				
3				
4				
5				
6				
7				