Part F: Significant Figures

Significant Figure: A digit that, when giving the answer to a question, you claim to *know*.
How many significant figures? COUNT *every* digit after the first nonzero digit on the left. ZEROS *can* be significant figures, if they are to the *right* of the first nonzero.
One Extra Rule In a *whole number*, any zeros at the end are NOT significant, unless the number ends a decimal point.

How many significant figures are there in each number?

A. 42

B. 42.35

C. 042.0

D. 5.97219×10^{24} kg

E. 0.00540

F. 42.3

G. 42.0

H. 2.99×10^{3}

I. 4.560×10^{-3} kg

J. 0.0000004

In physics:
42 inches means….I know it's 42, but it might be 42.0, or 42.1, or 42.2, etc. I don't know the next decimal point.
42.0 inches….I absolutely know that the tenths place is zero. It is 42.0. But I don't know if it is 42.00, 42.01, or 42.02, etc.
42.00 inches means…I absolutely know that there are two zero decimals. I don't know the third decimal.
Zeros are significant because they communicate information you are sure is true.

K. Why are some zeroes significant figures?

In L and M, Round to 2 significant figures:
L. 1.0000000000

M. 3.33333333333

N. Solve this problem and write the answer with only 2 significant figures: 2/9

In O – S: Round every number to 3 significant figures in scientific notation:
Hint: *first* put the number into scientific notation.
THEN round to 3 significant figures

O. 141231

P. 12412090184

Q. 809707042

R. 0.00000141240918

S. 0.0001241241

Part F: Significant Figures ANSWERS

A. 2

B. 4

C. 3

D. 6

E. 3

F. 3

G. 3

H. 3

I. 4

J. 1

K. An extra zero means that you *know* that that digit is precisely zero.

In L and M, Round to 2 significant figures:

L. 1.0

M. 3.3

N. 0.22

In O – S: Round every number to 3 significant figures in scientific notation:
Hint: *first* put the number into scientific notation.
THEN round to 3 significant figures

O. 1.41×10^{5}

P. 1.24×10^{10}

Q. 8.10×10^{8}

R. 1.41×10^{6}

S. 1.24×10^{-4}