

Significant --- Figures

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What are Sig Figs?

Significant Figures are the digits in a measurement that are either **knowns** or **estimates**.

130.56 cm = 5 sig figs.

Digits that are unknowns are not significant. Unknowns are always zeros and are usually used as **placeholders**.

5,600,000 L = 2 sig figs.

What is Significant in a measurement?

- Non Zero digits (4.23 mL)
- Zeros between significant figures (209 km)
- The LAST digit after a decimal point (0.230 m)
- Zeros used in Sci. Notation before the x sign
(6.00 x 10⁴m)
- All the above have 3 significant figures

What is not significant?

- Zeros used as placeholders.
Examples: 0.0002 cm and 1000 km - the zeros are not significant.
- Zeros used to draw attention to the decimal point. Examples: 0.12 mL and 0.243 cm - the zeros are not significant.

Significant Figures in Addition & Subtraction

When adding or subtracting, do your calculation first then round your answer to the same precision as the LEAST precise measurement in your work. (Usually the least number of decimal places.)

Example: $2.3 \text{ cm} + 1.2356 \text{ cm} = 3.5356 \text{ cm} = 3.5 \text{ cm}$

Precise		Precise to		Unrounded	Correct
to the		the		answer	answer
tenths		ten -			rounded to the
place		thousandths			tenths place
		place			

Significant Figures in Multiplication & Division

- When multiplying and dividing, do your calculation then round your answer to the same number of sig figs as the LEAST number of sig figs in the measurements in your work.

Example: $5.7 \text{ cm} \times 456.345 \text{ cm} = 2601.1665 \text{ cm}^2 = 2600 \text{ cm}^2$

Two	Six	Unrounded	Correct
sig figs	sig figs	answer	answer
			rounded to
			2 sig figs

Things to Remember:

1. Zeros used as placeholders are not significant.
2. Addition & Subtraction:
Round to least precise
3. Multiplication & Division:
Round to least # of sig figs.
4. Don't round until you have finished your calculations.

To show that zeros are significant:

1. Place a line over the zero.

$8,0\bar{0}0$ L has 3 sig figs.

2. Use scientific notation.

8.0×10^3 L has 2 sig figs.

3. Use a decimal after the zero.

(only when it's in the ones place)

$8,000.$ L has 4 sig figs.

Answers to the back of the Sig Fig Program Sheet



Answers to # 1

All involve rule # 1

- a. 4 sig figs, rule # 2
- b. 2 sig figs, rule # 3
- c. 3 sig figs, rule # 1
- d. 1 sig figs, rule # 4
- e. 4 sig figs, rule # 5
- f. 5 sig figs, rule # 4,2
- g. 7 sig figs, rule # 2
- h. 3 sig figs, rule # 3

Answers to # 2

f. 35 mL

g. 0.2 g

h. 7.1 mm

i. 2.3×10^8 m

Answers to # 3

j. 23 g

k. 0.30 mL

l. $8.7 \times 10^8 \text{ m}$

m. 9 L

Answers to # 4

n. 20. cm²

o. 30 g

p. 50 km²

q. 800 L

Answers to # 5

r. 0.55

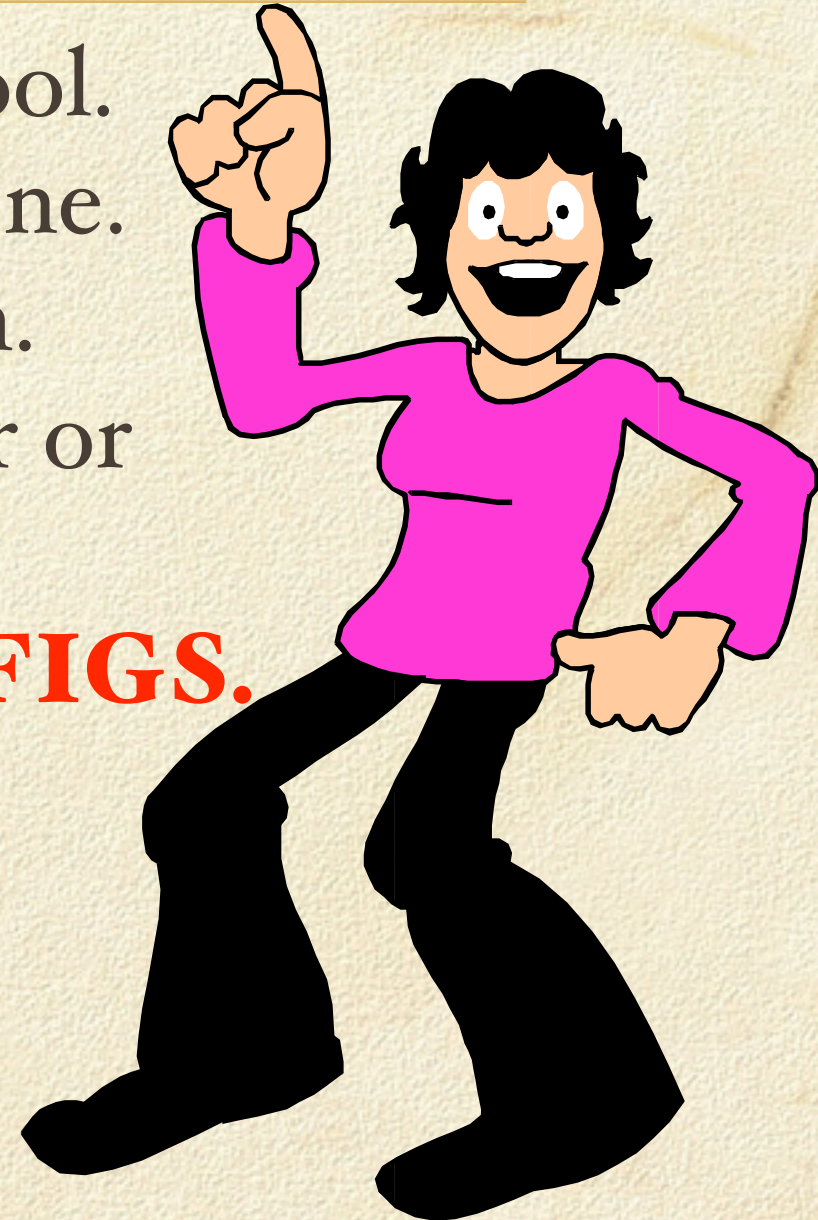
s. 2

t. 575

u. 1 g/mL

If you need more help with Significant Figures:

1. Come in before or after school.
2. Check NetTutor, Chapter One.
3. Review your Sig Fig Program.
4. Have your computer partner or HPS friend help you.



**YOU MUST LEARN SIG FIGS.
WE USE THEM IN HPS
AND IN ALL SCIENCE
CLASSES YOU WILL
TAKE IN THE FUTURE.**