

## Sig. Fig. POGIL

### Significant Digit Process Oriented Guided Inquiry Learning: Sig. Fig. POGIL for Short

(What is a significant digit and how do you determine if a digit is significant?)

**Why?** This POGIL explores the concept of significant digits, also known as significant figures or sig. figs. for short. You have already learned how to read a scale and report your number so that it shows the correct uncertainty. You learned that some digits are certain and one digit is uncertain or estimated. In this POGIL, you will learn how to write and read numbers with the correct uncertainty even though you do not know the scale that was used.

#### Success Criteria:

- Students will be able to determine the number of significant digits in a written number.
- Students will be able to write a number using the specified number of significant digits.

#### Given Information:

**Decimal is present: #'s  $\geq 1$**

9 000.	870.0	65.04	3.210	These numbers have 4 significant digits
900.	87.0	6.05	4.30	These numbers have 3 significant digits
20.	1.0	90.	8.0	These numbers have 2 significant digits
7.	6.	5.	4.	These numbers have 1 significant digit

**Decimal is present: #'s  $\leq 1$**

0.9000	0.8700	0.6540	0.3002	These numbers have 4 significant digits
0.100	0.980	0.706	0.0540	These numbers have 3 significant digits
0.30	0.21	0.098	0.00076	These numbers have 2 significant digits
0.5	0.04	0.003	0.0002	These numbers have 1 significant digit

**Decimal is absent:**

9 876	5 403	2 001	90 870	These numbers have 4 significant digits
654	302	1 090	87 600	These numbers have 3 significant digits
54	320	1 900	87 000	These numbers have 2 significant digits
6 000	500	40	3	These numbers have 1 significant digit

#### Questions:

- 1.) How many significant digits does the number 870.0 have?
- 2.) How many significant digits does the number 0.8700 have?
- 3.) How many significant digits does 5 280 feet have? Explain.

- 4.) How many significant digits does 602 200 000 000 000 000 000 000 molecules have? Explain.
- 5.) How many significant digits does 0.08206 Latm/moleK have? Explain.
- 6.) How many significant digits does 1.01325 kPa have? Explain.
- 7.) In a clear, grammatically-correct sentence, explain how you determine the number of significant digits in a written number.
- 8.) When are zeros significant, and when are zeros insignificant?
- 9.) The number, **123 000**, has 5 significant digits. How many significant digits does 1 000 000 have? How many significant digits does 1 000 000. have? Give at least 2 different ways you can write 1 000 000 with 3 significant digits? (Hint: Think about some creative ways you have written numbers in a past math class.)