

Popcorn Counting Unit (PCU)

(Answer all questions and copy all data tables in the lab section of your notebook)

1. Weigh out 5.0 grams of popcorn kernels on the balance.
2. How many popcorn kernels are there in 5.0 grams of popcorn kernels? **This number is 1 PCU (popcorn counting unit).** Complete the following equation in your data record:

$$1 \text{ PCU} = \underline{\hspace{2cm}} \text{ particles} = 5.0 \text{ grams of popcorn kernels}$$

3. Count out 1 PCU of pinto beans. Use the analytical balance to determine the mass of 1 PCU of pinto beans.
4. Complete the following table in your data record:

Type of particle	Number of particles in 1 PCU	Mass of 1 PCU
Pinto beans		
Kidney beans		
Lima beans		
Lentils		
Blackeye peas		

5. How does the number of kidney beans in 1 PCU compare to the number of lima beans in 1 PCU? (Answer with a complete statement: a sentence or an equation in your data record.)
6. How does the mass of 1PCU of kidney beans compare to the mass of 1PCU of blackeye peas? (Answer with a complete statement: a sentence or an equation in your data record.)
7. How can you account for any differences in mass that you observed?
8. Would 5.0 grams of kidney beans be more than, less than or equal to the mass of 1 PCU of kidney beans?
9. Would 10.5 grams of lentils be more than, less than or equal to the mass of 1 PCU of lentils?
10. Name three other substances whose particles you could easily count using PCU's.
11. How many popcorn kernels would be in 1 mole?
12. Why is **mole** a better unit than a PCU for counting atoms? How many particles are in a **mole**?
13. How would the mass of one mole of titanium atoms compare to the mass of one mole of aluminum? Explain.