# Dimensional Analysis Pizza

*Chemistry*

Name _____

Date _____ Hour _____

What is dimensional analysis?

What is a conversion factor? Provide a few examples.

- A tool in dimensional analysis used to **convert** from one **unit** to **another unit**.

- These are **constant** values - They **never** change.

- They have an infinite number of sig figs. (rule 5)

What does S.U.C.S. stand for?

**S**tart → What **number** and **unit** are you starting with?

**U**nknown → What **unit** are you trying to get to?

**C**onversion Factor(s) → How are you going to get there?

- Select a conversion factor that **cancels** out the unit on top.
- If needed, select another conversion factor. Continue to cancel units until you have the ending unit.

**Conversion Factors:**
1 box = 1 pizza
1 pizza = 12 slices
1 human = 4 slices
1 slice = 5 pieces of pepperoni
1 pizza = $18.78

**S**etup & **S**olve → Math! Make sure all units **cancel** !

- Multiply across the top. Multiply across the bottom. Divide the top and bottom.
- NO **CROSS MULTIPLICATION!**!

**Practice!**

1) If you have 4 pizzas, how many boxes would you need?

S: **4 pizzas**　　　　　　　　　U: **# boxes**　　　　　　　　　C: **1 box = 1 pizza**

S: $\frac{4\ pizzas}{1}(\frac{1\ box}{1\ pizza}) = \frac{4\ boxes}{1} =$ **4 boxes**

*4 pizzas*

2) If you invite 14 humans over for your super awesome party, how many slices of pizza would you need?

S: **14 humans**　　　　　　　U: **# slices**　　　　　C: **1 human = 4 slices**

S: $\frac{14\ humans}{1}(\frac{4\ slices}{1\ human}) = \frac{56\ slices}{1} =$ **56 slices**

*56 slices*

3) If you invite 15 humans over for your super awesome party, how many pizzas would you need? <u>VIDEO</u>

S: **15 humans**　　　U: **# pizzas**　　　C: **1 human = 4 slices　&　1 pizza = 12 slices**

S: $\dfrac{15\ humans}{1}\left(\dfrac{4\ slices}{1\ human}\right)\left(\dfrac{1\ pizza}{12\ slices}\right)=\dfrac{60\ pizzas}{12}=$ **5 pizzas**

*5 pizzas*

4) If you have a budget of $150 for pizza, how many pizzas could you get?

S: **$150**　　　　U: **# pizzas**　　　　C: **1 pizza = $18.78**

S: $\dfrac{\$150}{1}\left(\dfrac{1\ pizza}{\$18.78}\right)=\dfrac{150\ pizzas}{18.78}=$ **7.98722 pizzas!** Round down, you can't get a portion of a pizza!

*7 pizzas*

5) If you have a budget of $150 for pizza, how many slices could you get? <u>VIDEO</u>

S: **$150**　　　　U: **# slices**　　　C: **1 pizza = $18.78　&　1 pizza = 12 slices**

S: $\dfrac{\$150}{1}\left(\dfrac{1\ pizza}{\$18.78}\right)\left(\dfrac{12\ slices}{1\ pizza}\right)\dfrac{1,800\ slices}{18.78}=$ **95.8466** → **96** *(but round down b/c you won't get more pizza if you are short money)*

*95 slices*

6) If you ordered 23 pizzas, how many pieces of pepperoni would you have?

S: **23 pizzas**　　　U: **# pepperoni**　　　C: **1 pizza = 12 slices　&　1 slice = 5 pieces of pepperoni**

S: $\dfrac{23\ pizzas}{1}\left(\dfrac{12\ slices}{1\ pizza}\right)\left(\dfrac{5\ pepperoni}{1\ slice}\right)\dfrac{1,380\ pepperoni}{1}=$ **1,380 → 1,400 pepperoni**

*1,380 pepperoni*

7) CHALLENGE! If I have $80.00, how many pieces of pepperoni would come on top of my pizza(s)? *Hint: this is a 3-stepper!*

S: **$80.00** U: **# pepperoni** C: **1 pizza= $18.78　&　1 pizza=12 slices　&　1 slice=5 pieces of pepperoni**

S: $\dfrac{\$80.00}{1}\left(\dfrac{1\ pizza}{\$18.78}\right)\left(\dfrac{12\ slices}{1\ pizza}\right)\left(\dfrac{5\ pepperoni}{1\ slice}\right)\dfrac{4,800\ pepperoni}{18.78}=$ **255.5910 → 255.6**
**(round down b/c you can't have a partial piece of pepperoni.)**

*255.0 pepperoni*