

# **Math 115: Elementary Algebra** **Working with Summary Phrases** **In Class Exercises**

You are looking over your monthly family finances in an effort to cut costs during hard times. Here is a list of information you've kept track of in the last few months using Quicken. Assume that groceries, entertainment, and clothes represent all the expenses you have direct control over (because things like rent and car insurance can't be "trimmed down" easily, at least immediately).

Variable name	Definition	Units	Value
$C$	Number of <b>children</b> in your household	children	4 children
$A$	Number of <b>adults</b> in your household	adults	3 adults
$G$	Average amount of money spent on <b>groceries</b> each month	dollars/month	\$423 / month
$E$	Average amount spent on <b>entertainment</b> each month	dollars/month	\$220 / month
$P_C$	Average <b>price</b> of a piece of <b>children's</b> clothing	dollars/(child item)	\$12/(child item)
$P_A$	Average <b>price</b> of a piece of <b>adult's</b> clothing	dollars/(adult item)	\$23/(adult item)
$N_C$	Average <b>number</b> of pieces of <b>children's</b> clothing bought each month per child	$\frac{\text{child items}}{\text{month} \cdot \text{child}}$	$\frac{4 \text{ child items}}{\text{month} \cdot \text{child}}$
$N_A$	Average <b>number</b> of pieces of <b>adult</b> clothing bought each month per adult	$\frac{\text{adult items}}{\text{month} \cdot \text{adult}}$	$\frac{3 \text{ adult items}}{\text{month} \cdot \text{adult}}$

1. Give a summary phrase for  $A + C$ . Note in this case the units of  $A$  and  $C$  don't match up, but yet we can still add them to get something that makes sense. Why is this possible? What is the numerical value of  $A + C$ ? What are the units of  $A + C$ ?
2. What are the units of  $\frac{G}{A+C}$ ? Now that you have the units, write a summary phrase for  $\frac{G}{A+C}$ . What is the numerical value of  $\frac{G}{A+C}$ ?
3. What are the units of  $G/E$ ? Given that, what do you think  $G/E$  represents? (Hint: think ratios.) Compute the numerical value of  $G/E$ . In words, what does this tell you?

4. Write an expression representing the average number of pieces of children's clothing bought per a month. Compute the numerical value of your expression.
5. How many months are there in a year? Be sure to give appropriate units! (Yes, it's a silly question, but there's a point to this)
6. What are the units of  $12CN_C$ ? (Be careful here, that 12 has units...) Write a summary phrase for  $12CN_C$ . Compute the numerical value of  $12CN_C$ .
7. Write an expression representing the total amount of money spent of children's clothing this year. Compute the numerical value.
8. Write an expression representing the total amount of money spent on clothing this year. Compute the numerical value. (I hope by now you are really starting to see how units and summary phrases can make complicated expressions manageable)
9. Write an expression representing the total amount of money spent on groceries, clothing, and entertainment this year. Compute the numerical value.
10. Come up with two expressions of your own. Be sure to show how the units work and give a summary phrase and numerical value.