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The first question refers to the *Introduction to Theme* activity from the first day of class in which you calculated the cost for the design, *Sunset Border*. Note: if you were not in class you will need to get this activity from the instructor's website. You need information from it to do this assignment.

1. Unfortunately, the cost of the tiles changes several times a year and this calculation has to be repeated. Find the cost of a single unit based on each set of prices in the table below:

Cost of $\text{Rhombus}_{\text{Blue}}$ ($)	Cost of Trapezoid ($)	Cost of Hexagon ($)	Total cost of unit ($)
.27	.39	.49	
.29	.40	.52	
.24	.33	.46	

Repeating calculations over and over can be tedious, especially when you have to write out work so that others can see what you are doing. Suppose you had a partner in your business who needs to make sure your calculations are correct. You would have to write out the calculation each time.

This is one of the reasons that algebra is so useful. Algebra gives us a way to *generalize* calculations and to write them using symbols.

> Do you know what *OMG* and *LOL* mean? If you use texting, you have probably learned a whole new language of symbols that take the place of words. If you see a new symbol, you are probably good at figuring out its meaning because you understand the structure of the texting language.
>
> Algebra is very similar in that it uses symbols to represent words and concepts and there is a structure to the way the symbols are used. When you become very familiar with algebra, it becomes easy to make meaning of the symbols, but at first it can be challenging just as the language of texting is confusing to someone who doesn't know it.

Think about the parts of the calculations above that were repeated and the parts that changed. We could write the *general* rule like this:

Total cost of unit = 2 · *price of* $\text{Rhombus}_{\text{Blue}}$ + 2 · *price of Trapezoid* + 1 · *price of Hexagon*

This is convenient because now we can write the rule once and use it for all situations. However, writing the words to describe each value is still time consuming so we use symbols instead. In algebra, these symbols are called variables. Any symbol can be used as a variable, but we commonly use letters that help us remember what the symbol stands for. For the rest of the assignment, you will use the following variables.

R_b = price of blue rhombus ($)
R_w = price of white rhombus ($)
Z = price of trapezoid ($)
T = price of triangle ($)
H = price of hexagon ($)
S = price of square ($)
N = number of units used
C = Total cost of one unit

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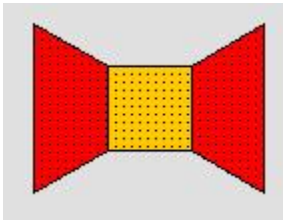
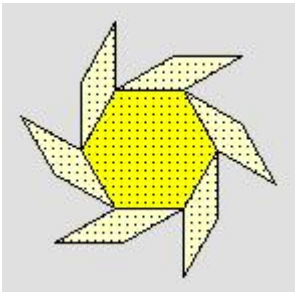
2. Write the expression for the cost of one unit of Sunset Border using the variables above. Write the expression for the cost of *N* units of Sunset Border. Hint: Refer to #3 on the *Introduction to Theme* activity from class.

3. Several other designs are shown below. For each one, write the expression for the total cost of one unit using the variables above.



Butterfly Border



Daisy

4. Make a design of your own and sketch it below. You may use the sample blocks from class or you may use the virtual manipulatives at the website below. The basic unit of your design must use at **least three colors** and have **at least 5 tiles.**

http://nlvm.usu.edu/en/nav/frames_asid_169_g_1_t_3.html?open=activities&from=topic_t_3.html.

Sketch of your design:

Expression for your design:

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The following questions refer to your reading on **Brain-Based Learning**. Your responses should reference information from the reading.

5. What is one thing from the reading that was new information to you and that you found interesting?

6. Based on the reading, why did we include the information in the text box on the previous page?

7. Based on the reading, why are we using the tiles to teach algebra relate to the readng?

8. The reading refers to "multiple stimulations". What are two things you could do while studying for this course that would stimulate different regions of your brain?

9. How long is information stored in working memory?

10. Which would be a more efficient use of study time to learn difficult material? (Circle the letter of the best answer.)
    a) 2 hours as soon after the class as possible
    b) 2 hours the night before the next class
    c) 1 hours as soon after the class as possible and 1 hour the night before the next class

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11. Read the textbook pages 3-5 (from my website), and answer the following order of operation problems:

$6 + 3^2$	$2 + 18 \div 3(9 - 7)$	$\frac{4^2 + 8}{9 - 3}$