

REMINDER: The first draft of your term paper is due on October 29. You're expected to hand in at least 10 pages (double spaced) and they should be polished enough so one of your peers can give you meaningful feedback.

(1) Compute the following products by sketching a picture that helps you get the answer.

(a)  $36 \times 25$

(b)  $\heartsuit\Delta \times \square\zeta$

(2) (a) Fill in the happy multiplication table below.

	☺	⚡	♥	Δ	□	*	☺
☺							
⚡							
♥							
Δ							
□							
*							
☺							

(b) Find four different patterns in your table. Find at least one that isn't a pattern in the Arabic numbers multiplication table. Indicate which patterns aren't like Arabic patterns.

(3) Give a clear explanation as to why two of the four patterns occur in the happy multiplication table. (Remember, I should be able to tell from your description what the happy pattern is. I should also be able to see a mathematical reason *why* the pattern happens. This is different from convincing me the pattern is real.)

(4) One of your students makes the following mistake in a multiplication computation:

$$\begin{array}{r}
 43 \\
 \times 56 \\
 \hline
 258 \\
 215 \\
 \hline
 473
 \end{array}$$

State two reasons that you could give to your student to explain why the computation can't be correct.

(5) Make up two different real-life problems that you solve using multiplication. For each one, include a correct answer, if appropriate with units, and show how you would explain the solution to your students.