**Exponents I**
Use your factor tiles to create models of the following problems and find a simplified result.

1.  $(x^2 y^3)(xy^2) =$

2.  $y^2(xyz^3) =$

3.  $(3x^3 y)(2x^3 yz) =$

4.  $(4xy^3 w^2)(3xy^2)(5xw^3) =$

5.  How would you explain a "shortcut" for multiplying expressions with exponents?

6.  Use your shortcut to complete the problem discussed earlier in class:  How far does light travel in one year?

7.  The space shuttle *Endeavor* traveled at a speed of $1.73 \times 10^4$ miles per hour while in space. There are approximately $8.77 \times 10^3$ hours in a year.  Using your shortcut, determine how far the space shuttle could travel in one year.

**Extension – work on these problems if you have time**

   a.  $\left(x^3\right)^2 =$

   b.  $\left(3xy^3\right)^2 =$