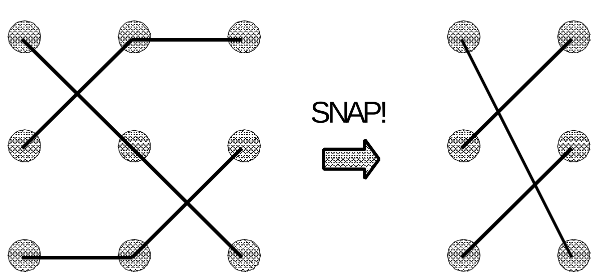
SNNNNNNNNNNNNNNNNNAP!

1. Given a 3 by 2 matrix of dots, how many ways can you connect the first set of dots to the second set? Each dot can only be connected to one dot. _____

2. a. Draw the configurations. Draw more dots if you need.

b. As a group, name the elements. Put the names in above. Call this the set of SNAP.

3. a. An interesting maneuver takes place when these figures are composed together. Watch! Place two elements next to each other. Pull out the middle and SNAP! What do you get?



b. Name the binary operation above with your group. ____

4. Fill in the table using your binary operation and the elements of the set SNAP. Use the SNAP board to help!

5. The language now is very formal.

a. Is the set {______________} closed with respect to ___? ______________________________________
____

*b. We say that ___ is a binary operation because it "works on" two elements of the set. Is * a commutative operation? Can you tell from the table? ______________________*

*c. Is * Associative? (You would have to check every case. How many cases would you have to check? _ ______.) What is your guess by observation? _________*

d. Is there an Identity element for _? Does any element leave you alone?

_ * __ = __ * _ = _

*e. Does each element have an inverse under *? Can you get back to the start? You first have to fill in ◯ with the identity element found in part 5.d.*

_ * __ = __ * _ = ◯

f. The set along with the operation is called a ***Abelian Group****. If we created another operation, we might be able to create a system that is a* ***Field****. We could even look for an order relation and create an* ***Ordered Field****.*