Day 4

Highly symmetric aliens

Spend 2 minutes drawing a two-dimensional alien that has at least 3 symmetries. Make sure you think about how your alien experiences or interacts with its world (eyes? limbs?).

Highly symmetric aliens

Spend 2 minutes drawing a two-dimensional alien that has at least 3 symmetries. Make sure you think about how your alien experiences or interacts with its world (eyes? limbs?).

Turn to someone sitting next to you. Spend 2 minutes discussing your aliens and work together to decide which of your aliens has a larger symmetry group. Then spend 2 minutes working together to draw another alien that has an even larger symmetry group than either of the ones you drew individually (if possible).

Dihedral Groups

1. How many symmetries does a non-square rectangle have?

(A) 1

(B) 4

(C) 8

(D) None of the above

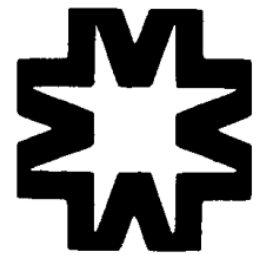
Follow-up. Construct a Cayley table for these symmetries!

2. Which of the following has a different symmetry group than the other three?

(A)

(B)

(C)



(D)

3. Which of the following has at least one reflectional symmetry?

(A)

(B)

(C)

(D)

4. Suppose F is a reflection in a dihedral group D_n. Consider the following two statements:

I "There exists $X \in D_n$ such that $X^2 = F$."

II "There exists $X \in D_n$ such that $X^3 = F$."

Then...

(A) Both I and II are true.

(B) I is true, II is false.

(C) I is false, II is true.

(D) Both I and II are false.