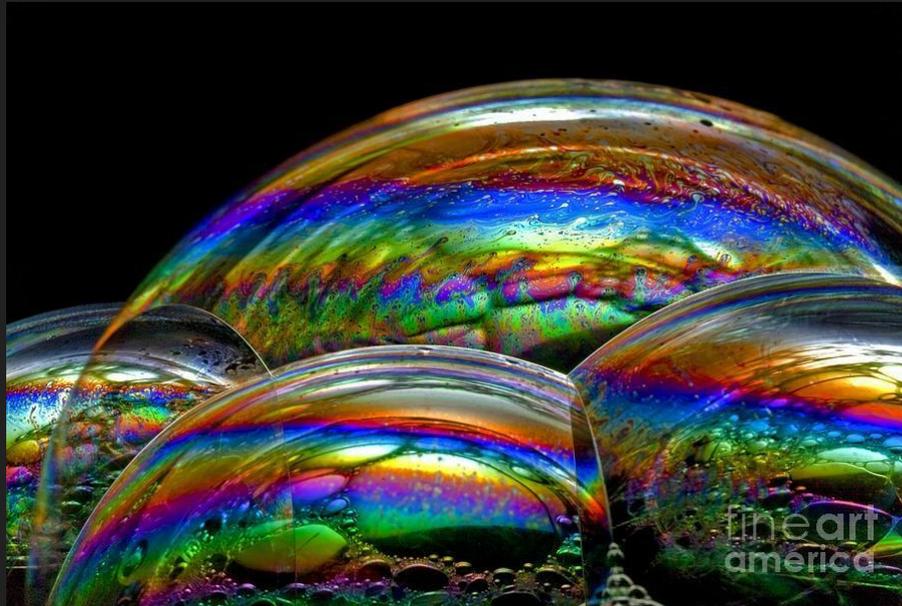


Iridescence



What is iridescence?

Iridescence is what occurs when a surface appears to gradually change color when seen from different angles.





The word *iridescence* comes from the Greek word “rainbow” and the Latin suffix “having a tendency towards.”

Examples in nature
include...

the surface of **bubbles**

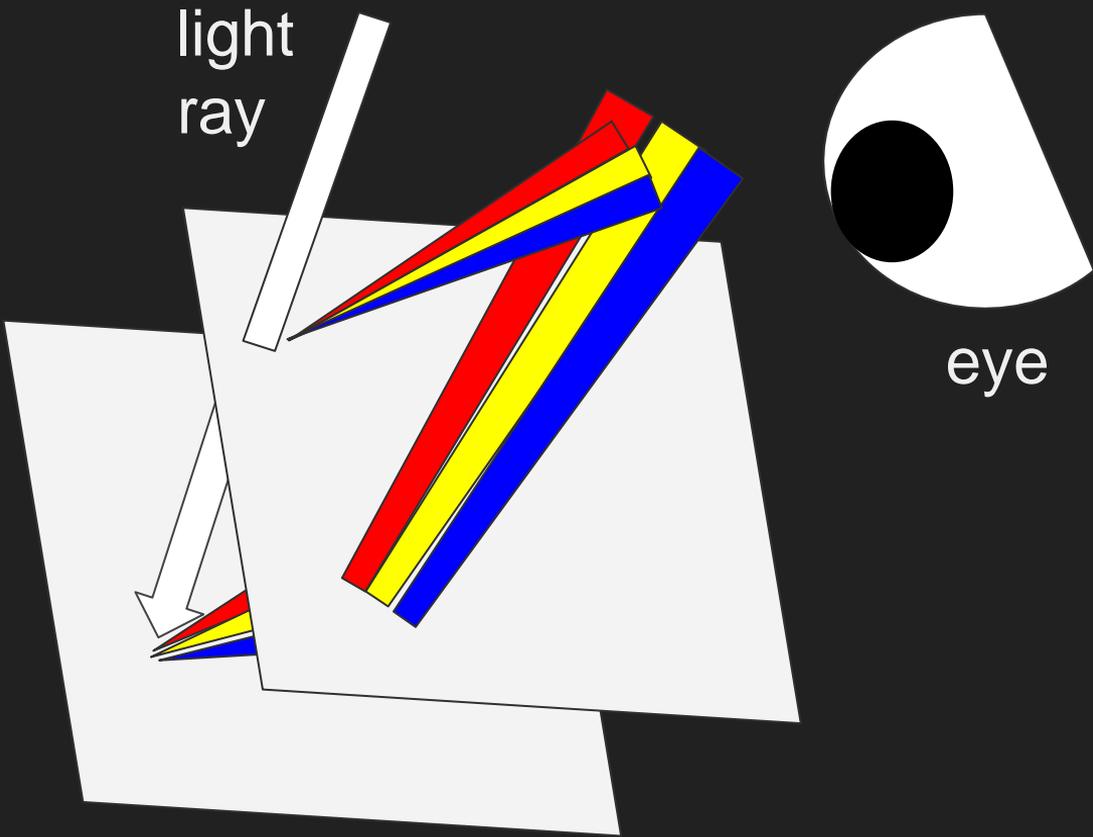




butterfly wings



peacock feathers

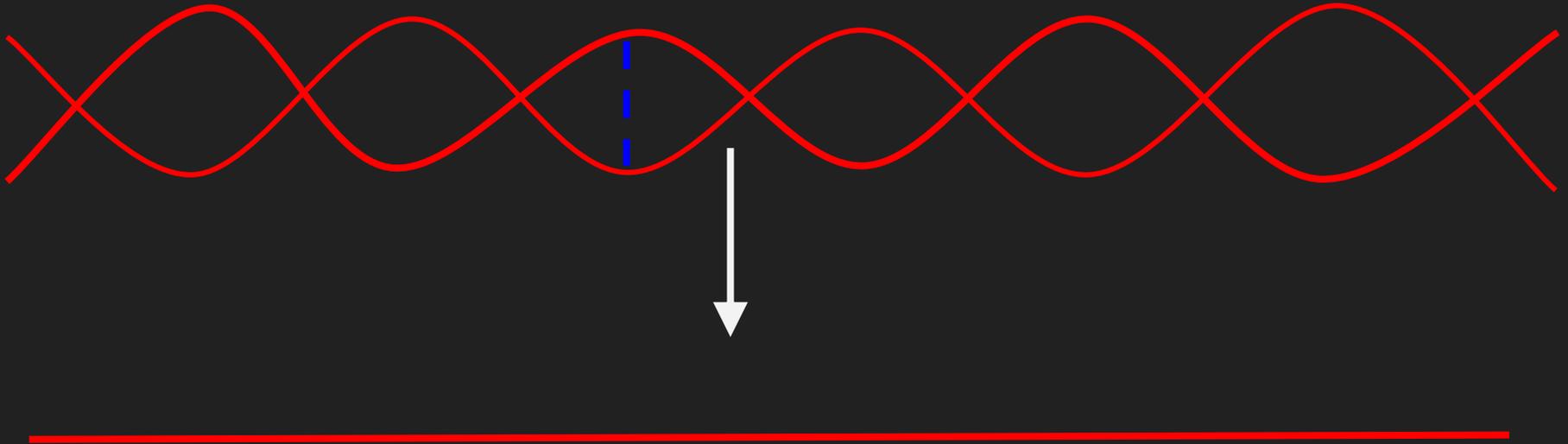


How does it happen?

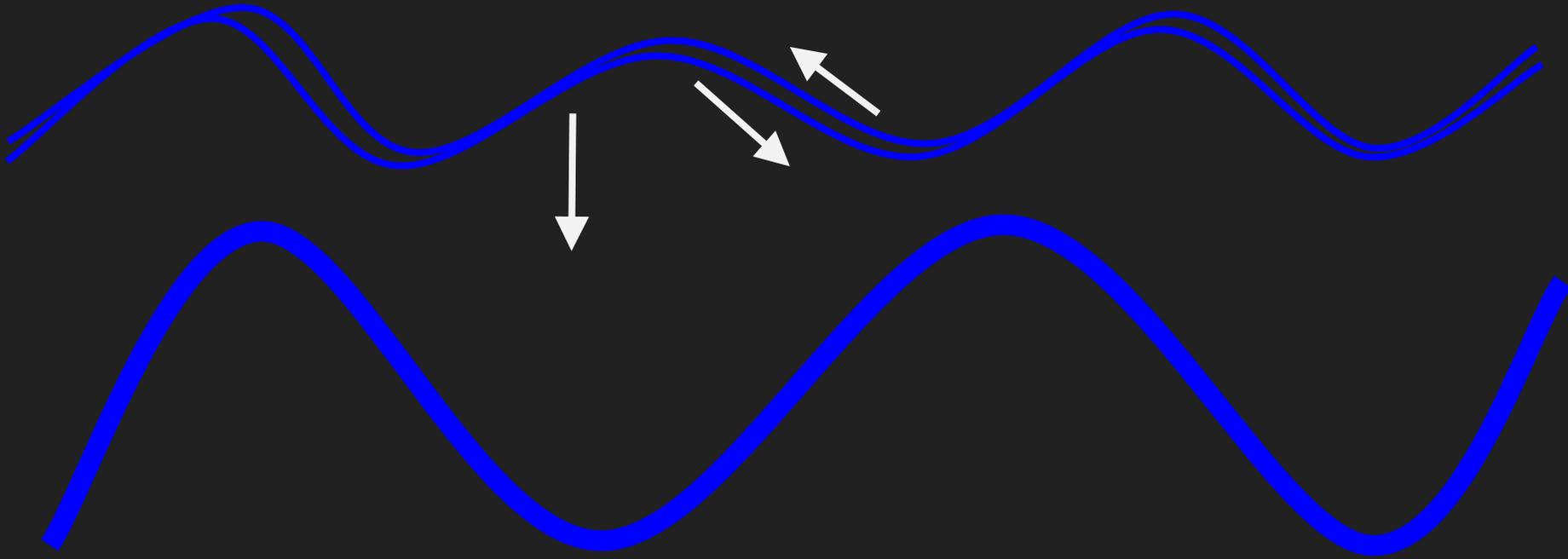


Two or more semi-transparent surfaces arranged together can have reflections that **interfere** with each other.

Ex: oil film on water

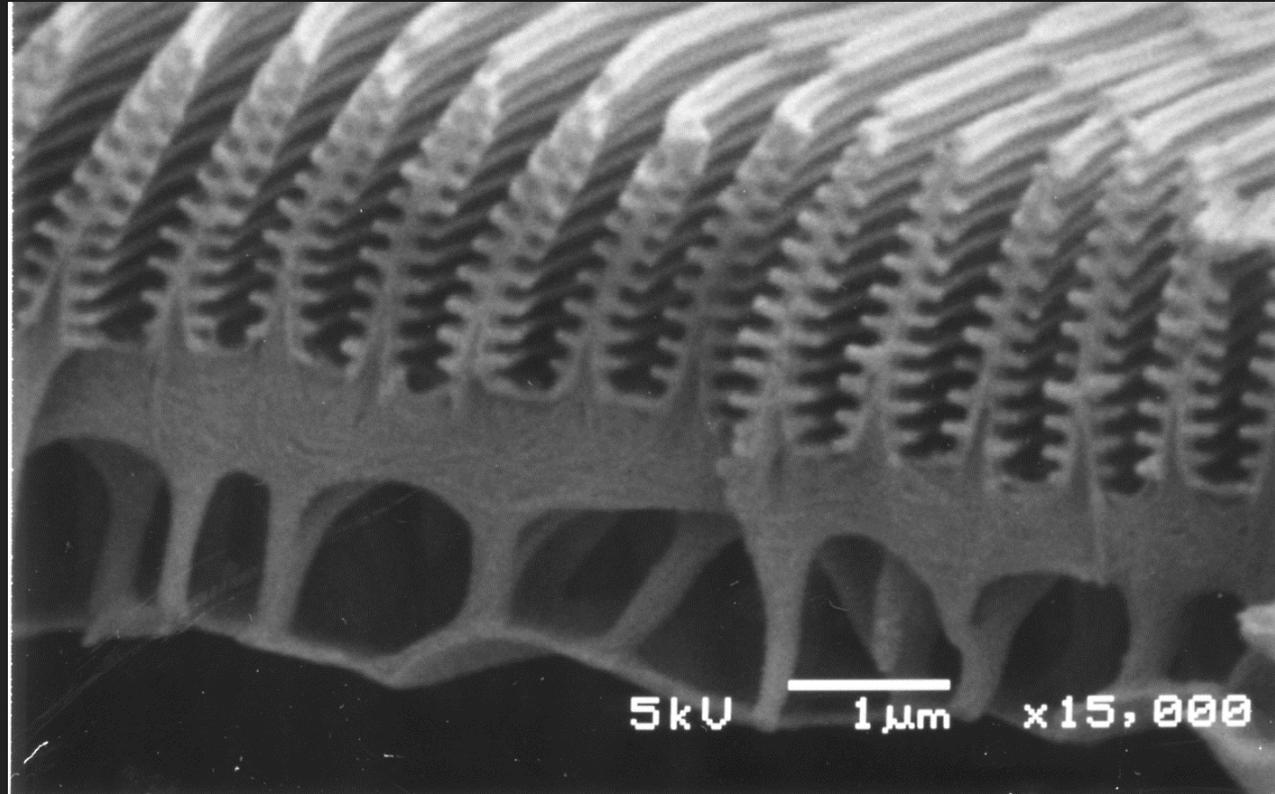


When reflections meet each other **“out of phase”**, crest to trough, the interference is **destructive** and the light wave is cancelled.

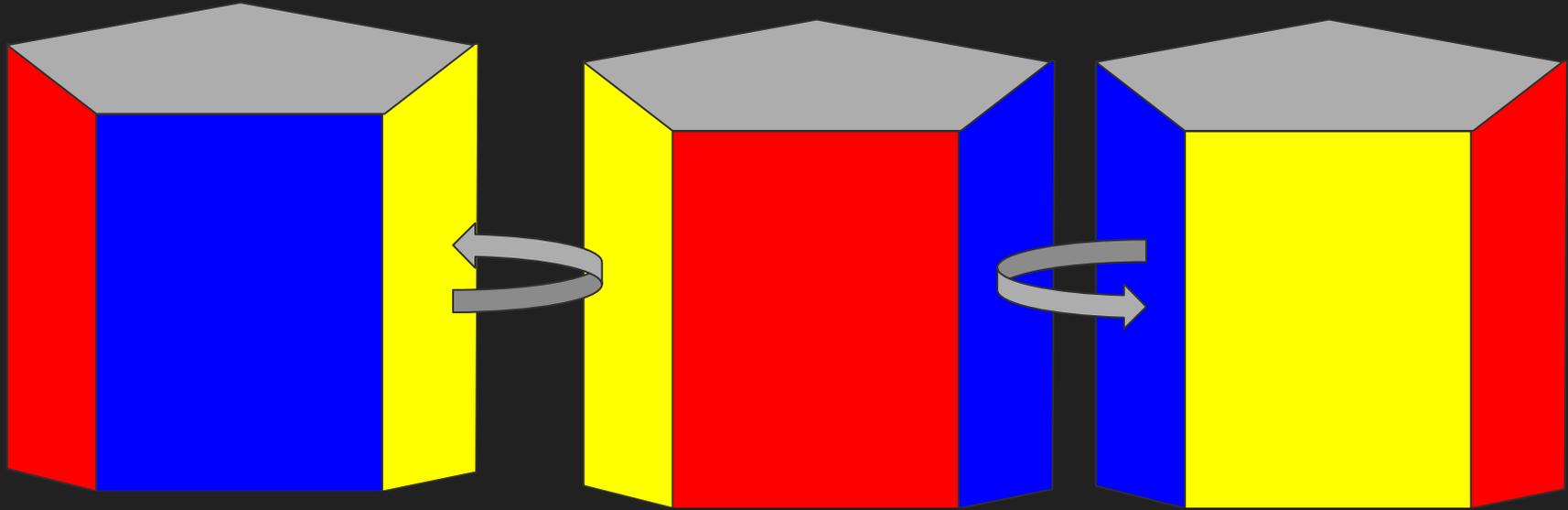


When reflections meet **“in phase”**, crest to crest, the interference is **constructive**, and the light and color is amplified. This contributes to **iridescence**.

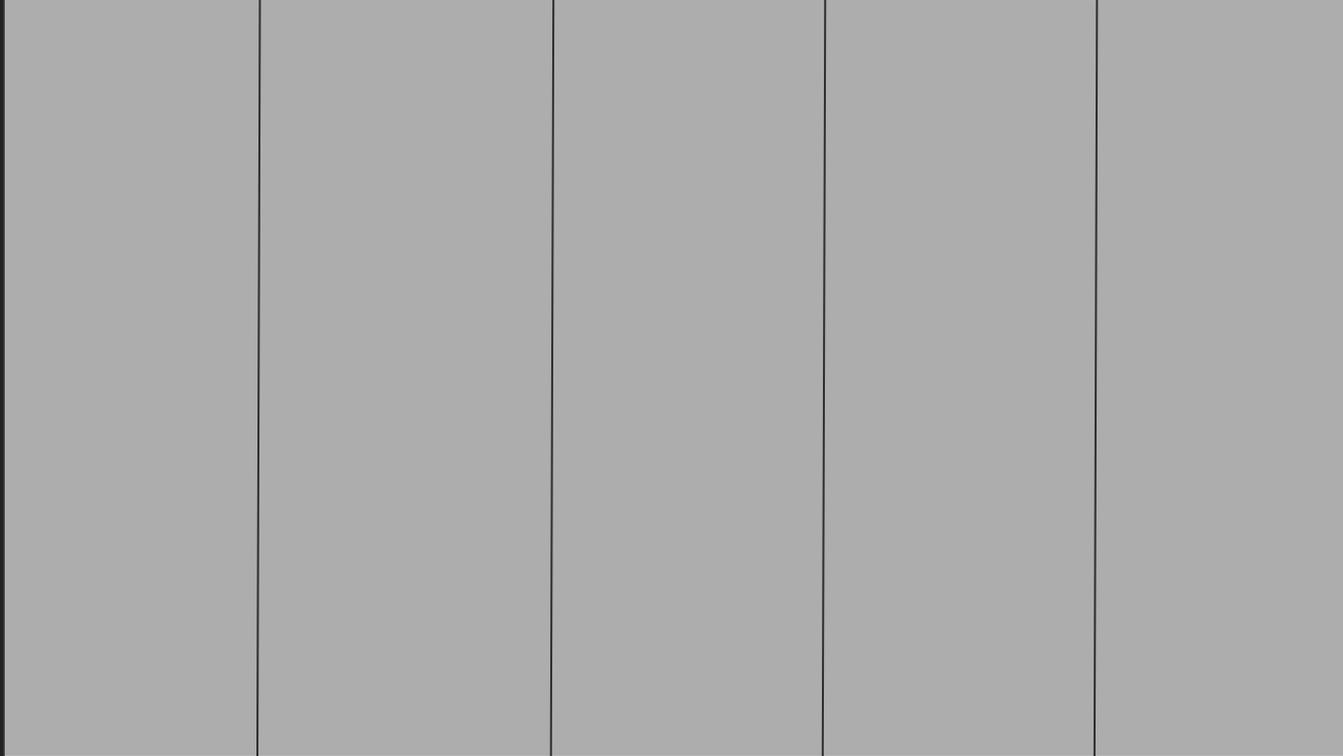
Biomimetic iridescent art can be made by creating **microstructures** that interfere with light reflection patterns.



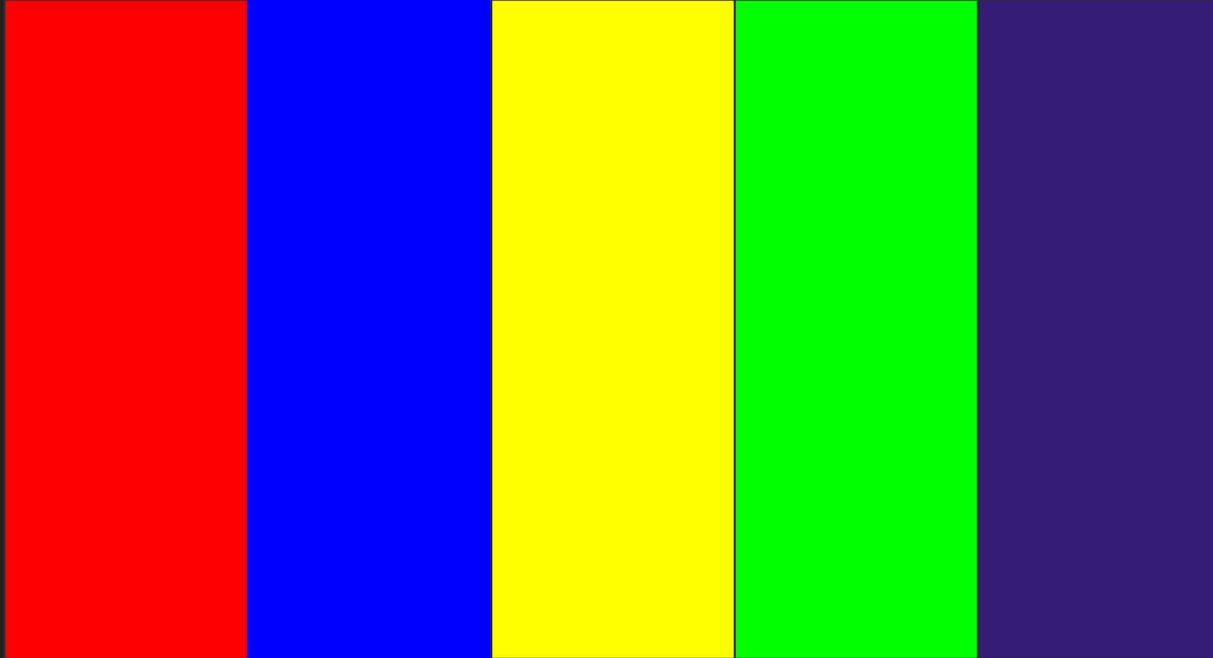
Today, we will make biomimetic art and create **iridescent columns.**



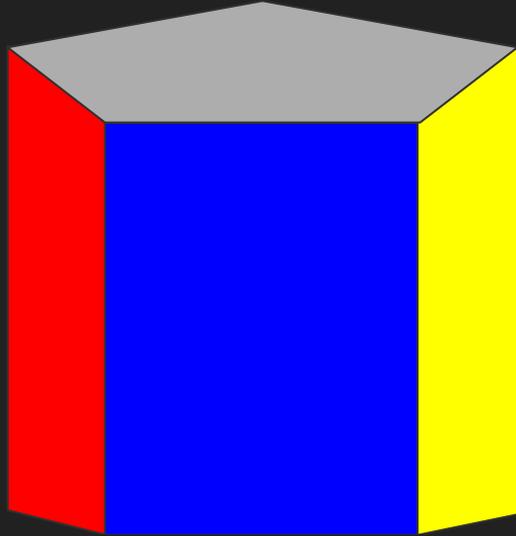
1. Each person will receive a large, strong piece of paper. Fold the paper into fifths, hamburger style, to create clear separation.



2. Paint each section with red, blue, yellow, green, then purple from left to right.

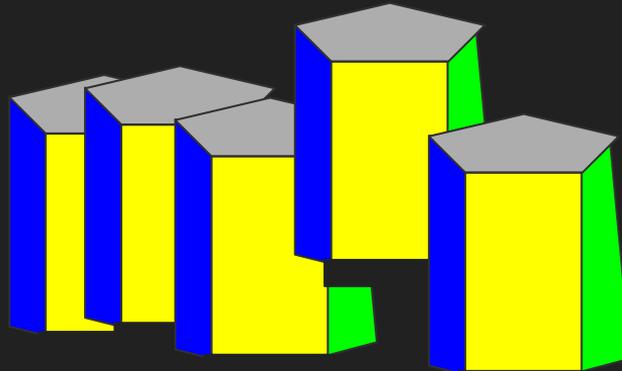
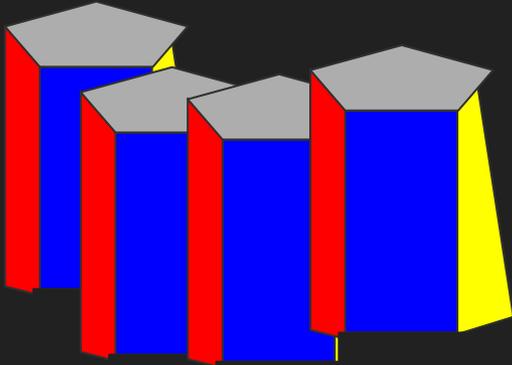


3. Fold along the creases into a five sided structure.



Everyone will work together to create an iridescent structure.

- Ensure all colors are facing the same way.
- Create a natural form.



Walk around the structure to observe the different colors you see.

Pick one angle. Note the colors you can see and how well you can see them. How might this structure look if there were thousands of columns, all the size of one hair on your head?

Observe the natural form of the structure. If it were much smaller, would it appear flat? But, is it flat? How might this affect how you see reflections from the surface?

Next time you're in a parking lot, pay close attention to the puddles of oil. Look at the color pattern, and try to visualize how the reflections of the oil and the water are interfering with each other!