

## DNA topology Activities

Target audience: general public

Ideal setting: UC Davis Picnic Day, science fair, open house

### DNA replication

- Take a strip of construction paper
- Introduce even number of twists
- Cut along middle (unzip)
- Show the linked result

### How not to be Knotty:

- Objective:
  - Hard mode:
    - Take the 6-cat to the unlink
    - Explain recombination move (use pictures! alternate between connecting same color cord and different color cord)
  - Easy mode:
    - Take 4-cat, count the crossings, identify link type
    - Perform one move to trefoil
    - Count crossings, identify link type

### Packaging DNA!

- Objective: Beat the bacteriophage: pack the cord into the box in 30 seconds  
Cord length: 10.5 ft/3500 nm  
Capsid diameter: 2 inches/55nm

### Build-a-backteriophage!

- Objective:
  - Punch hole in icosahedron for viewing purposes
  - Color in and fold icosahedron template
  - Insert DNA
  - tape /glue shut
  - Tape straw to base
  - Make feet with pipe cleaners

## **Materials**

1. Construction paper – different colors

Scissors

tape and/or glue

2. Knot and link table (printouts)

flexible string [michaels Stretch Magic Silkies necklaces](#)

3. Small box, 2” in diameter

wire or cord of fixed length, 10.5ft.

4. Photocopies of an icosahedron model (see next page)

Scissors

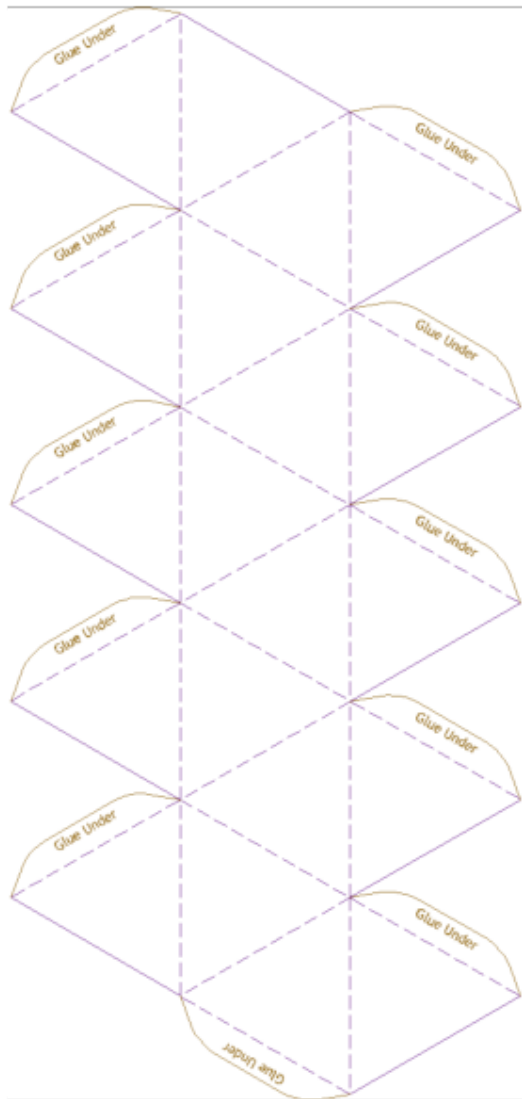
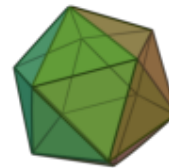
colored pencils

tape and glue

compostable straws

pipe cleaners

# Icosahedron (20 triangles)



Marcel Vazquez

Math Circles - Polyhedra