

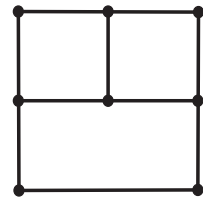
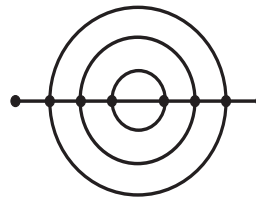
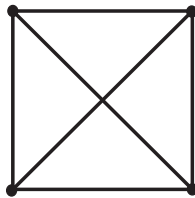
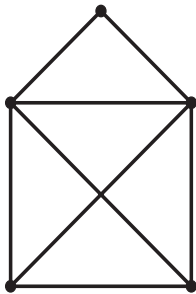
# Playsheet 1

## Puzzles!

20 points  
MATH 130

**Directions:** Groups should consist of three or four people. Work together on each problem; do not delegate different problems to different people. Submit one **neatly written** write-up per group on the due date, and make sure all group members' names appear on the submission. Use complete sentences and explain your reasoning.

1. How many pennies would it take to fill our classroom?
2. Suppose you have ten blue socks and ten red socks mixed up in a drawer. You pull them out at random.
  - (a) How many would you have to take to be certain of having a matched pair?
  - (b) How many would you have to take to be certain of having two red socks?
  - (c) Now suppose you dump in ten green socks. How many would you have to take to be certain of having a matched pair?
3. People have an average of about 1000 hairs per square inch of body surface. Just to be safe, let's say they could have as many as 10000 hairs per square inch. Are there necessarily two people on Earth who have exactly the same number of hairs on their bodies?
4. Determine which of the following figures you can draw by following the rules below.
  - (a) You may not draw over any line more than once.
  - (b) You may not pick up your pencil.
  - (c) You may not draw any extra lines.



Label the starting vertex  $S$  and the ending vertex  $E$ , and number the edges in the order you draw them.

5. Generalize your results from problem 4: what properties does the figure need to have so that it can be drawn according to the rules? Be sure to explain your reasoning in complete sentences.
6. Come up with three questions about this Playsheet that you are interested in finding the answers to. Feel free to include some of this in your PSJ, as well.