

Cubes and nets

June 26th, 2016

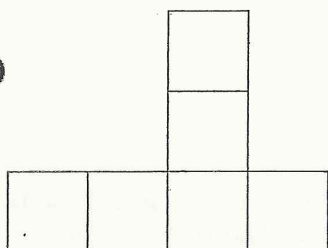
Warm-up problems

1. Alice, Beth and Cindy are playing chess with each other. Alice played 1 game. Beth played 2 games. Cindy played 3 games. How many games did they play in all?
2. David has 9 cookies that he wants to put onto 4 plates in such a way that the number of cookies on each plate is different. Assuming that David does not want to leave any of the plates empty, can he do it?
3. There are red, green and yellow marbles in a bag. Eugene takes out the marbles from the bag without looking. How many marbles should he take out to make sure that he has at least two marbles of the same color?

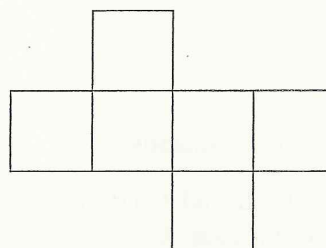
Cubes and Nets

1. Circle all the nets which can be folded into a cube. For the rest of the nets explain why this can not be done.

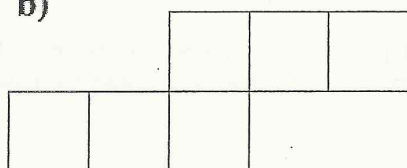
a)



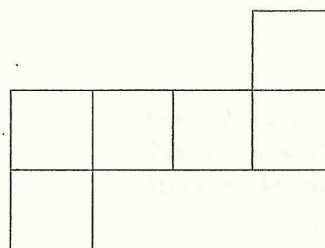
c)



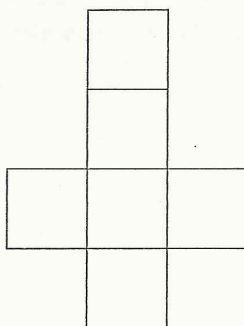
b)



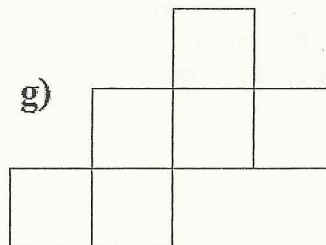
d)



e)

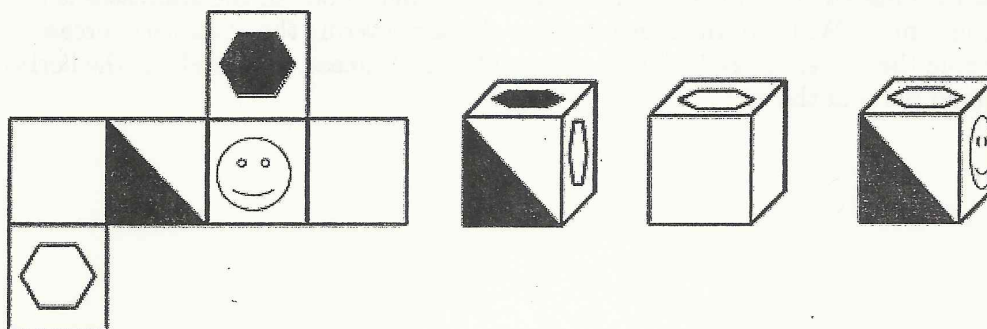


g)



2. Draw another net of the cube (which is not among those pictured above):

3. Below is a wrapper for a piece of candy shaped as a cube. Which of the three wrapped candies does our wrapper correspond to?



4. Insert + or - between the numbers to get a correct equality:

$$5 \quad 4 \quad 3 \quad 2 \quad 1 = 3$$

$$5 \quad 4 \quad 3 \quad 2 \quad 1 = 5.$$

Can you find more than one solution for each of the problems?

Challenge Problem

The entrance staircase of a castle has a height of 5 meters and a base of 12 meters. The exit staircase on the other side of the castle has a height of 7 meters and a base of 10 meters. The first staircase has twice as many stairs as the second one. Each of the staircases is covered with a rug runner. Which of the rugs is longer: the one covering the entrance staircase or the one covering the exit staircase? Make a picture of each staircase. Think about the horizontal and vertical parts of the rugs.

Homework

1. Finish the problems we have started in class.
2. Which of the following nets can be folded to make a parallelepiped (rectangular box)?

