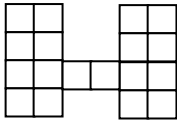


Elementary School Circle. Problem Set 12 (2010-2011).

1. Use five matches to construct 5 equal triangles and one pentagon.
2. Cut the big shape into 3 equal parts (equal means of the same shape and of the same area). Cut along the gridlines only.

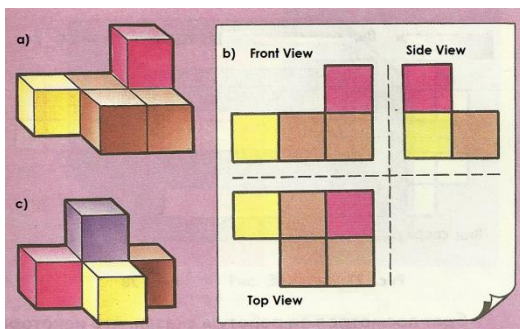
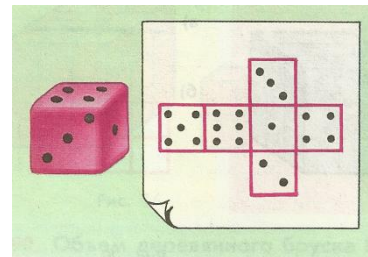


3. At the Santa Claus workshop, a new elf apprentice is learning the art of woodcarving. On the first day of November, the elf made one wooden Nutcracker. On the second day of November, he made two Nutcrackers. On the third day, he made three -- and so on. Santa Claus started to mail out the gifts. On November 3rd, he shipped the first Nutcracker out. Every other day, he shipped one more Nutcracker than on the day before. Both Santa Claus and the elf stopped working on Dec 25th. How many extra Nutcrackers were left at the workshop?



4. The treasure chest contains rubies and sapphires - 10 precious stones total. Whichever seven stones you take out of the chest, you always get at least one ruby. Whichever five stones you take out of the chest, you always get at least one sapphire. How many stones of each kind are there in the chest?

5. On the picture, you can see the gaming die and it's 2D net. Which number is on the:
 - Bottom face of the die?
 - Rear face of the die?
 - Left face of the die?



6. On the picture (a), you see an object that is constructed of 6 cubes. On the picture (b) you see three different 2D views of this object - front view, side view and top view. Draw the same three views for the object (d).

7. Think about all possible cross-sections you can get cutting through a vertical cylinder (make just one straight cut). Draw these cross-sections.