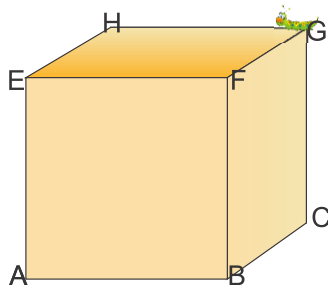
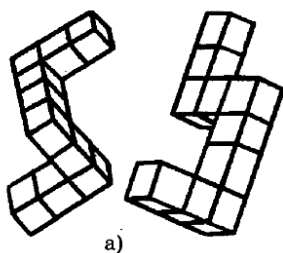


Lesson 5

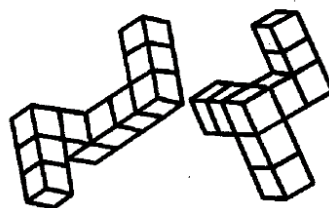
- On a on the right the caterpillar wants to go from vertex G to vertex E on the cube. Draw the shortest way for it to go. What will be the shortest way to go from the vertex G to vertex A? Find all possible solutions.



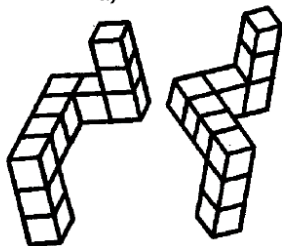
- Are the shapes on the picture identical in each pair?



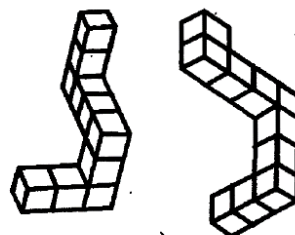
a)



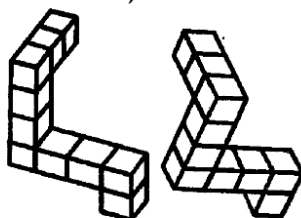
б)



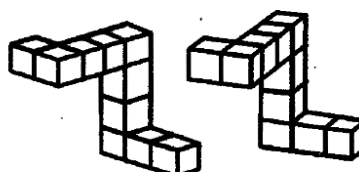
в)



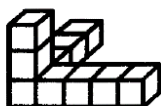
г)



д)

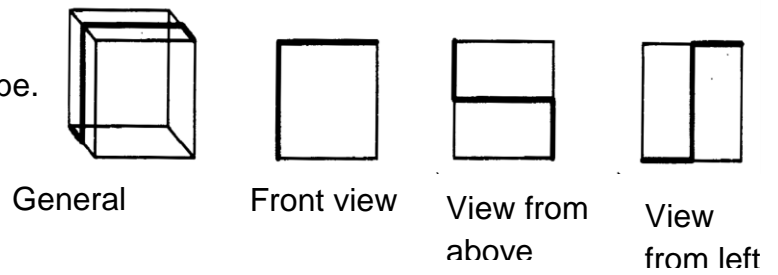


е)

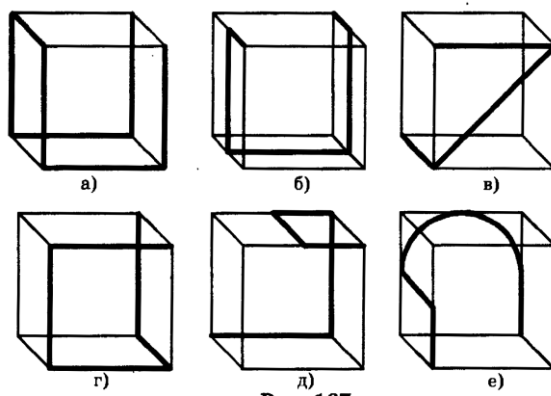


ж)

3. Thick wire placed on a glass cube.



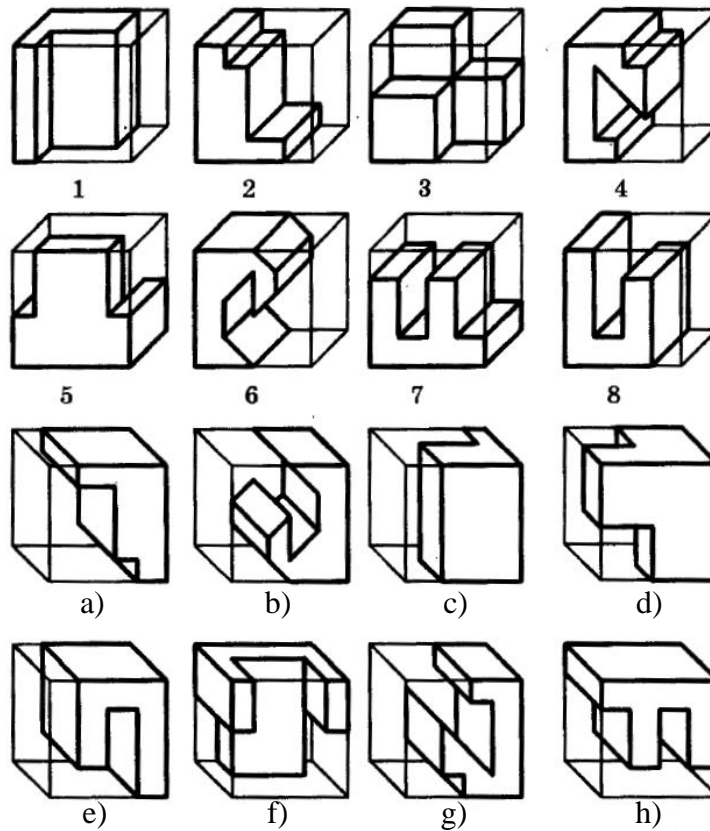
Draw all three views for these cubes:



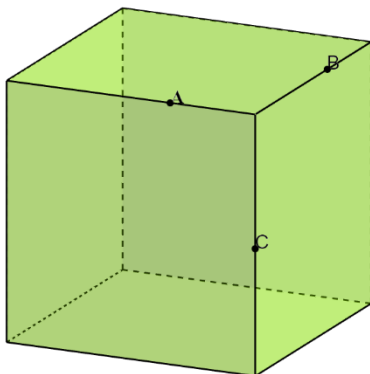
4. Draw the wire on the cube from these views:

	Front view	View from above	View from left side
1			
2			
3			

5. On the picture there are pairs which can form a cube. Find the right ones.



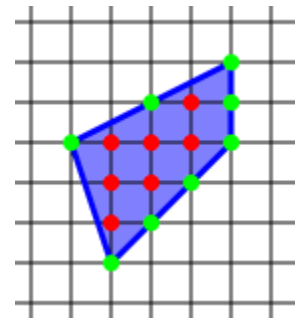
6. On a picture below there are three points on a cube's edges. What shape will be produced if we cut the cube with a plane passing through these three points? (imaging that you are cutting a loaf of bread). How we have to cut a cube to get a square as a cross-section? A rectangle? What other shapes you can get cutting the cube?



7. What is the intersection of two lines?
8. What is the intersection of two planes?
9. On a graph paper draw a right triangle. Draw equal triangle, but turned 90°. What will be the angle between their longest sides?
10. On a graph paper draw a perpendicular to a segment with the ends in the nodes.
11. A farmer has a square field. He decided to divide his field between his four sons so that the parts of the field should be equal, but a quarter of the field he wants to keep for himself. How he can do it? If the field is an equilateral triangle?
12. On a graph paper mark points A and B in the nodes. Mark a point C outside of the line AB. Draw a line parallel to AB passing through the point C.
13. Draw two different right triangles with the area equal 2 squares, 3 squares, 5 squares.

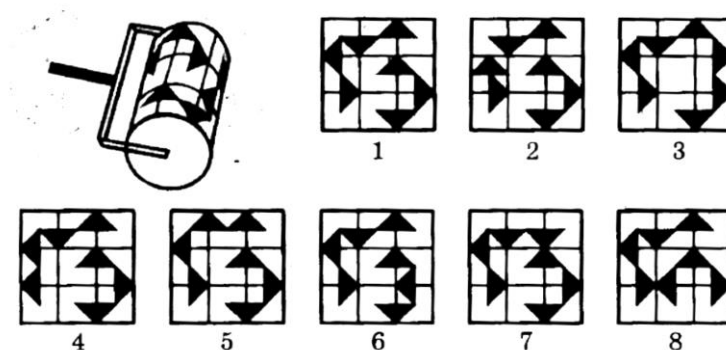
14. Draw an arbitrary polygon with the vertices in nodes of graph paper. Its area (in squares) will be the number of nodes inside the polygon (a) plus half of the number of nodes on the edge (including vertices) minus 1.

$$a + \frac{b}{2} - 1 = 7 + \frac{8}{2} - 1 = 10$$

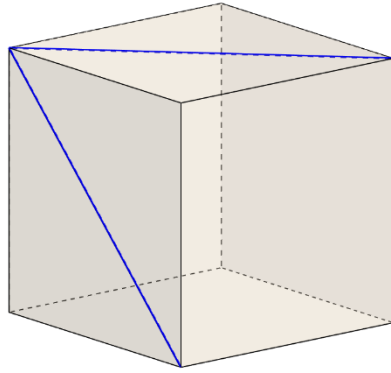


Check it for your polygon. (it's called a Pick's theorem for simple polygons)

15. A painter painted walls in the room using roller as shown on the picture. What did he paint?



16. What is the angle between two diagonals of the cube?



17. In the right triangle with the angle 30° , the longest side is twice as long as a short one. Draw a triangle, measure the sides. Explain why.