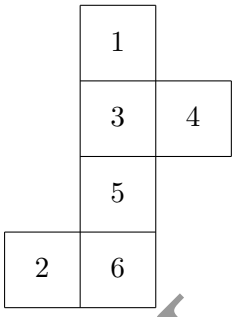
2.2 3-D vision (part 2)

1. A net of six squares in the figure shown below is folded into a cube. When the cube is rolled, the lateral product is the product of the numbers on the four lateral faces. The numbers on the top and bottom faces are not included in the product. What is the greatest possible lateral product for this cube?

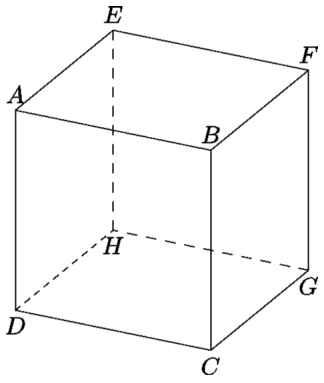


2. How many different pairs of edges are there in a cube? How many pairs of parallel edges are there?

3. (Continuation) Through each edge of a cube draw a line. How many pairs of intersecting lines are there? How many pairs of skew lines are there?

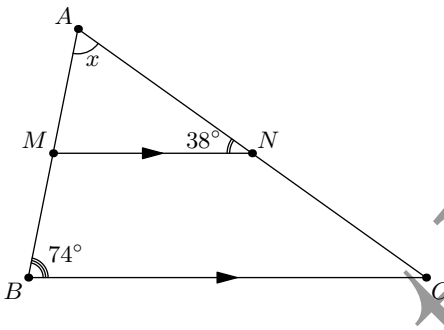
4. Find a plane that passes through exactly three vertices of a cube. How many such planes are there? List them.

5. (Continuation) Find the number of distinct planes passing through at least three vertices of a given cube. List all of them.

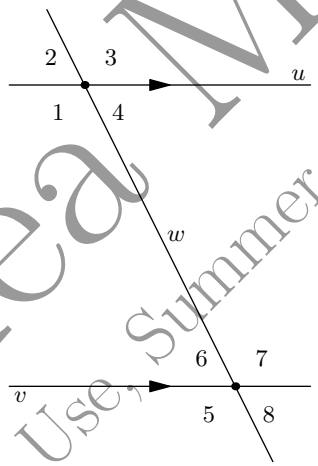


2.6 Parallel lines (part 3)

1. Points M and N are lying on the sides AB and AC of triangle ABC such that MN is parallel to BC. Given that $\angle B = 74^\circ$ and $\angle ANM = 38^\circ$, find $\angle A$.



2. **Corresponding Angles Postulate.** If two lines are cut by a transversal and corresponding angles are congruent, then the lines are parallel.



What condition must be true about alternate interior angles to show that two lines are parallel?

What condition must be true about same-side interior angles to show that two lines are parallel?

3. Points A_1, B_1, C_1 lie on ray OX, while points A_2, B_2, C_2 lie on ray OY. Given that $A_1A_2 \parallel B_1B_2$ and $A_1A_2 \parallel C_1C_2$, explain how we can use Corresponding Angles Postulate to show that $B_1B_2 \parallel C_1C_2$.

In general, after we solve this problem, we can say that if two lines are parallel to a third line, then they are parallel to each other.

4. In a quadrilateral all angles are equal. Explain why the opposite sides of the quadrilateral are parallel to each other. What is name of the equiangular quadrilateral?

5. Find unknown angle x in the diagram below: