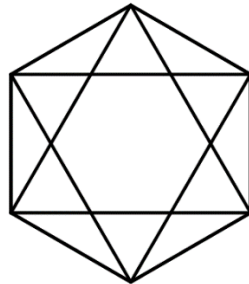




האולימפיאדה הארצית במתמטיקה לכיתות ו'-ז'
שלב ב, שנת תשפ"ד

1. Pictured is a regular hexagon, and inside it inscribed a Star of David. The area of the hexagon is 120. What is the area of the Star of David?



2. Write + or – sign in each of the squares, so the equality would be correct.

$$64 \square 32 \square 16 \square 8 \square 4 \square 2 \square 1 = 73$$

How many of the six signs are minuses?

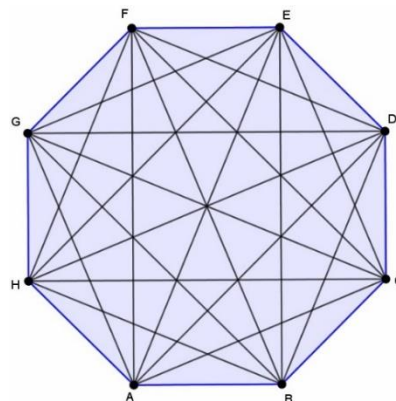
3. Ten cards with the numbers 1,2,3,4,5,6,7,8,9,10 are placed on a table in a row in some order. The sum of the numbers on the first three cards is 6. The sum of the numbers on the first six cards is 21. The sum of the numbers on the first 9 cards is 45. How many possible arrangements are there for the cards under these conditions?

Note: Each number appears exactly once. The cards are always counted from left to right.

4. All the students of 4-^ט class are divided into two groups. Group B has 5 more students than group A. If some students were to move between groups, and the size of group B would decrease by 30%, then the size of group A would increase by 40%. How many students are there in the class?

5. Find the smallest natural number that is divisible by 1001 and all its digits are different from each other. *Note: Natural numbers are positive integer numbers. 0 is not positive.*

6. Pictured is a regular octagon with all its diagonals. How many rectangles are there in the picture? *Note: a square is also a rectangle.*



בהצלחה!