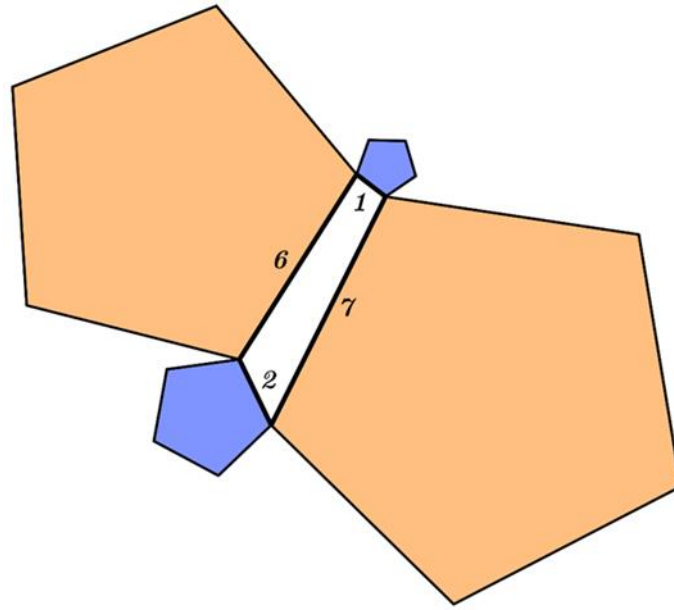
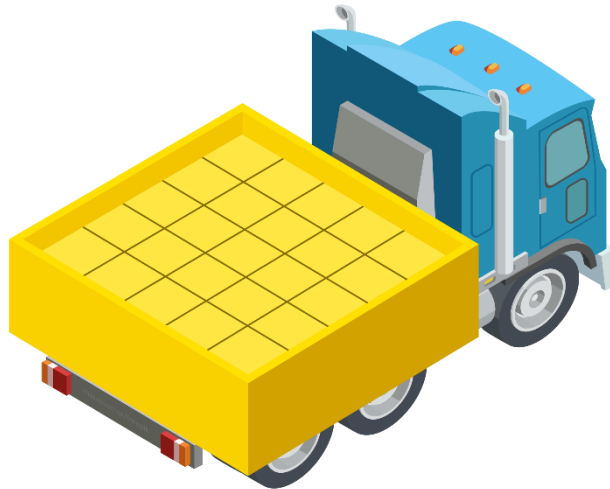


1. A positive integer is called **magical** if it consists of 4 digits and includes all of the digits from 1 to 4 exactly once. How many magical numbers are divisible by 11?
2. In the image there is a quadrilateral with side lengths 1, 2, 6 and 7. A regular pentagon is built upon each side of the quadrilateral. Compute the ratio between the total orange area and the total blue area.



3. At a summer party, apple juice and carrot juice had been served. Every participant drank a total of 200 milliliters of juice. Yossi drank $\frac{1}{10}$ of the apple juice and $\frac{1}{12}$ of the carrot juice. How many participants were in the party?
4. A king has sent 5 servants to count the number of sheep in his kingdom. The reports he received back from his servants were:
 - The number of sheep in the kingdom is divisible by **12**.
 - The number of sheep in the kingdom is divisible by **30**.
 - The number of sheep in the kingdom is divisible by **42**.
 - The number of sheep in the kingdom is divisible by **105**.
 - The number of sheep in the kingdom is divisible by **210**.
 It is known that exactly 3 of the reports were false and that there are fewer than 1000 sheep in the kingdom. What is the largest possible number of sheep in the kingdom?

5. Gabby has a truck with a 5×5 shaped hull (see image).



He wants to transfer several pieces of furniture from his office to his house:

300 benches shaped 5×1 (that is, each bench takes up a 5×1 rectangle within the hull of the truck),

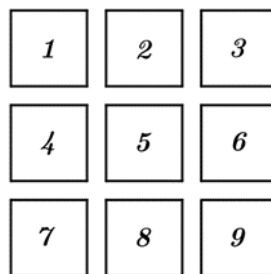
200 closets shaped 2×4 ,

and 100 tables shaped 3×3 .

What is the minimal number of round trips he needs to perform in order to move all pieces of furniture?

Note: the furniture must be placed in the hull according to the lines – that is, they cannot partially cover any of the 1×1 squares.

6. In the picture, a code lock at the entrance of a building.



The correct code consists of the digits 1,2,3,4,5,6,7,8,9 , each digit occurring exactly once in the code. The criminals discovered that while tapping the code, every digit is followed by a digit that is adjacent to it by an edge (for example after the digit 4, the digits 1,5,7 could come next while the other digits couldn't). How many tries do the criminals need to certainly succeed in tapping the right code?