

3. Corey and Tony are friends on the same basketball team. There are eight players on the team. How many starting groups of five players include Corey, Tony, or both?

4. A fair coin is flipped ten times. How many ways are there to flip more heads than tails?

5. A “word” is any sequence of letters. How many different “words” can be obtained by rearranging the letters in the word “MATHEMATICIAN”?

6. Six boxes are numbered 1 through 6. How many ways are there to distribute 10 identical balls among these boxes so that none of them is empty?

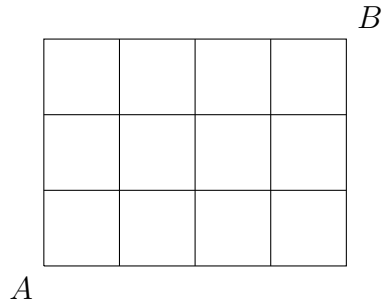
6. (a) How many 4-digit numbers have the product of their digits equal to 15?

(b) How many 5-digit numbers have the product of their digits equal to 50?

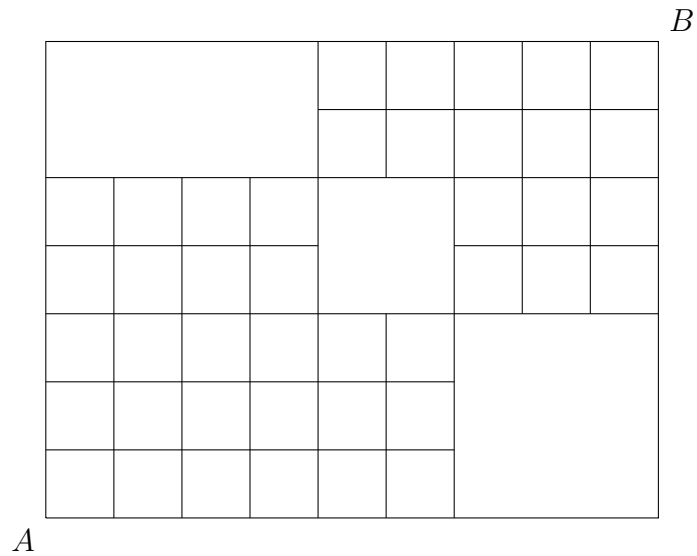
(c) How many 6-digit numbers have the product of their digits equal to 210?

(d) How many 7-digit numbers have the product of their digits equal to 300?

7. (a) We want to join points A and B by a path that goes along the lines and has the shortest possible length (which is 7). How many ways are there to do this?



- (b) How many ways are there to join points A and B by a path that goes along the lines and has the shortest possible length for the picture below?



- (c) How many ways are there to join points A and B by a path that goes along the lines and has the shortest possible length for the picture below?

