

## Bài Tập Chương N°1.2: Bài toán đếm, Hệ thức truy hồi

## Bài tập 1

Xác định hệ thức truy hồi và công thức nghiệm của dãy số sau đây:

- 1, 3, 5, 7,...
- 1, 2, 4, 7, 11,...

## Bài tập 2

Suppose you wanted to draw a quadrilateral using the dots below as vertices (corners). The dots are spaced one unit apart horizontally and two units apart vertically.

1. How many quadrilaterals are possible?
2. How many are squares?
3. How many are rectangles?
4. How many are parallelograms?
5. How many are trapezoids? (Here, as in calculus, a trapezoid is defined as a quadrilateral with at least one pair of parallel sides. In particular, parallelograms are trapezoids.)
6. How many are trapezoids that are not parallelograms?



## Bài tập 3

How many integer solutions are there to the equation  $x + y + z = 8$  for which

1.  $x$ ,  $y$ , and  $z$  are all positive?
2.  $x$ ,  $y$ , and  $z$  are all non-negative?
3.  $x$ ,  $y$ , and  $z$  are all greater than or equal to -3.

## Bài tập 4

After gym class you are tasked with putting the 14 identical dodgeballs away into 5 bins.

1. How many ways can you do this if there are no restrictions?
2. How many ways can you do this if each bin must contain at least one dodgeball?

## Bài tập 5

Conic, your favorite math themed fast food drive-in offers 20 flavors which can be added to your soda. You have enough money to buy a large soda with 4 added flavors. How many different soda concoctions can you order if:

1. You refuse to use any of the flavors more than once?

2. You refuse repeats but care about the order the flavors are added?
3. You allow yourself multiple shots of the same flavor?
4. You allow yourself multiple shots, and care about the order the flavors are added?

## Bài tập 6

Consider all 5 letter “words” made from the letters  $a$  through  $h$ . (Recall, words are just strings of letters, not necessarily actual English words.)

1. How many of these words are there total?
2. How many of these words contain no repeated letters?
3. How many of these words start with the sub-word “aha”?
4. How many of these words either start with “aha” or end with “bah” or both?
5. How many of the words containing no repeats also do not contain the sub-word “bad”?

## Bài tập 7

A group of college students were asked about their TV watching habits. Of those surveyed, 28 students watch House of The Dragon, 19 watch The Blacklist, and 24 watch Game of Thrones. Additionally, 16 watch House of The Dragon and The Blacklist, 14 watch House of The Dragon and Game of Thrones, and 10 watch The Blacklist and Game of Thrones. There are 8 students who watch all three shows. How many students surveyed watched at least one of the shows?

HẾT

Lưu ý: SV nộp bài tập về nhà ở <https://elearning.ntu.edu.vn/>. Nếu SV sao chép bài thì các bài giống nhau sẽ là 0 điểm.