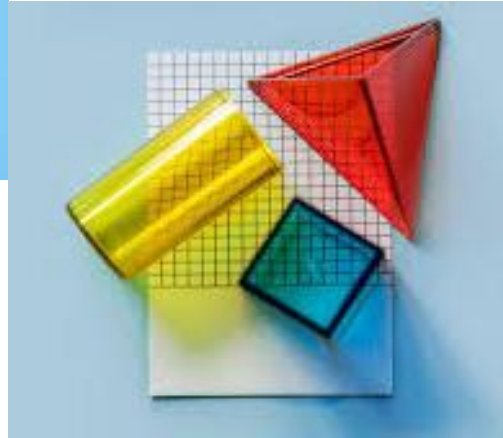




Project code:
2019-1-EL01-KA201-062914

Erasmus+ Call: 2019 - KA2 -



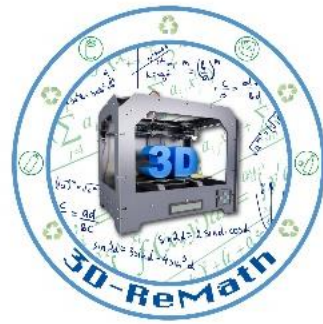
3D printing technology aims students understanding maths and recycling procedure

02_2nd Curricula of Maths: Combinations

Lecture_6 § 7

Outline

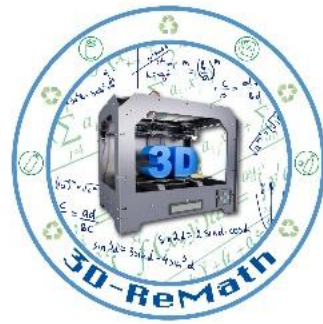
- Combinations ... to get started ...
- To remember
- Activities
- Videos



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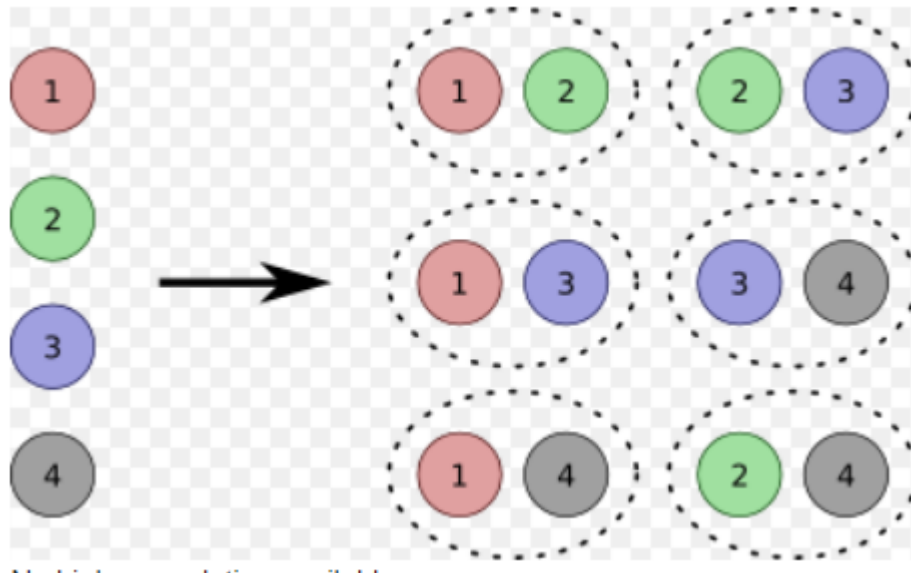




To get started

What is a combination?

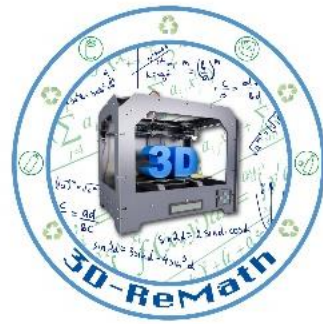
A combination is a grouping or subset of items.



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Remember...

Definition of combination : Any of the ways we can combine things, when the order does not matter.

Example: For a fruit salad, how many different combinations of 2 ingredients can you make with apple, banana and cherry?

Answer: {apple, banana}, {apple, cherry} or {banana, cherry}



Students Print

- ✓ Banana
- ✓ Apple
- ✓ Cherry



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ACTIVITY 1

There are 4 kittens of colors brown, white, black and black & white from which to choose and your mom says that you may choose 2 to take home. In how many different ways can you choose 2 kittens from the 4?



Students Print

4 different cats

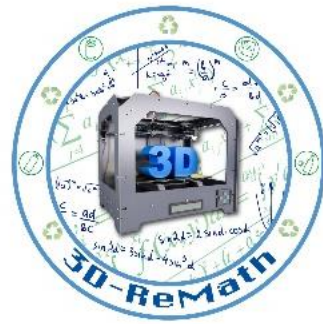
- ✓ 1 brown cat
- ✓ 1 white cat
- ✓ 1 black cat
- ✓ 1 black and white cat



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ACTIVITY_key

There are 4 kittens from which to choose and your mom says that you may choose 2 to take home. In how many different ways can you choose 2 kittens from the 4?



Students choose

Black cat and white cat
Black cat and brown cat
Black cat and black and white cat

White Cat and Brown Cat
White Cat and Black & white cat

Brown Cat and Black and White Cat



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ACTIVITY 2

Six friends want to play enough games of chess to be sure every one plays everyone else. How many games will they have to play?



Students Print

6 names that refer to 6 friends

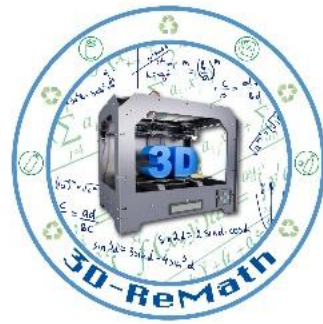
- ✓ Claudia
- ✓ Peter
- ✓ Mary
- ✓ John
- ✓ Sebastian
- ✓ George



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ACTIVITY 2_Key

Six friends want to play enough games of chess to be sure every one plays everyone else. How many games will they have to play?



There are 6 players and from them 2 at a time will be chosen:

Claudia and Peter
Claudia and Mary
Claudia and John
Claudia and Sebastian
Claudia and George

Mary and John
Mary and Sebastian
Mary and George

John and Sebastian
John and George

Peter and Mary
Peter and John
Peter and Sebastian
Peter and George

Sebastian and George



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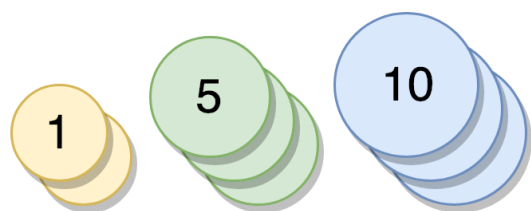




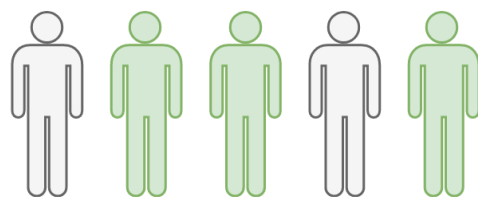
Remember...

There are two types of combinations:

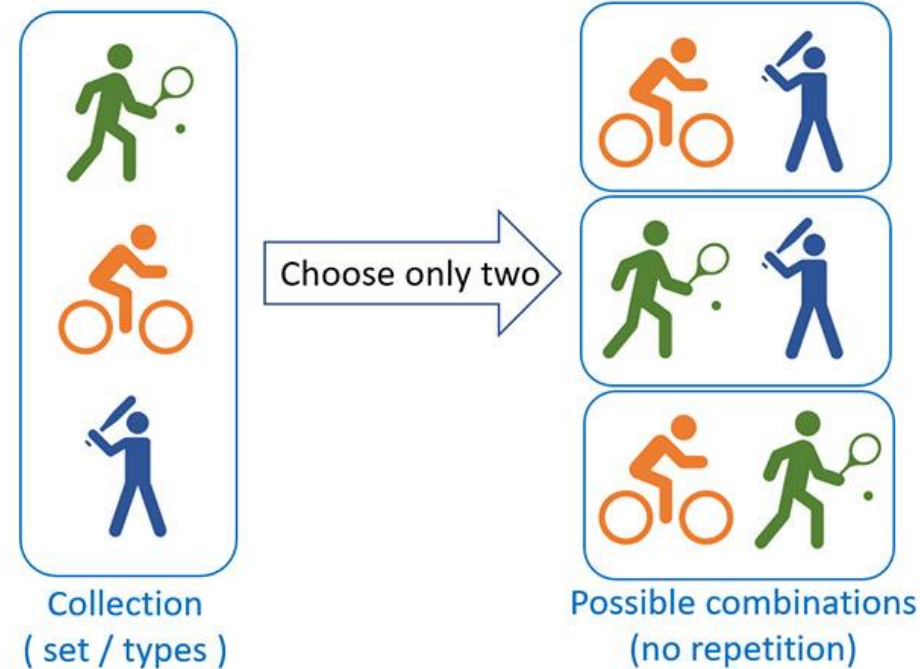
- ✓ Repetition is Allowed: such as coins in your pocket (5,5,5,10,10)
- ✓ No Repetition: such as lottery numbers (2,14,15,27,30,33)



Coins in your pocket
(combination **WITH** repetition)



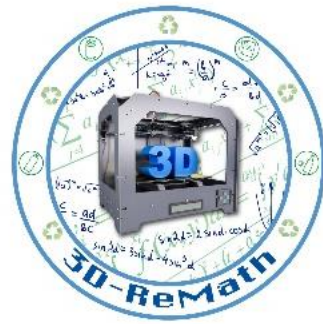
Selecting 3 developers for the Project
(combination **WITHOUT** repetition)



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ACTIVITY 3

You are going to summer camp. You have 5 swimming suits. Your mom says that you may only take 3 of them with you. In how many different ways can you do this?



Students Print

5 cards that refer to 5 swimming suits

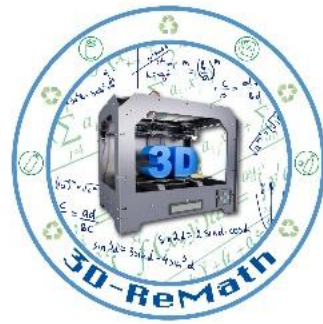
- ✓ Red
- ✓ Blue
- ✓ Black
- ✓ Purple
- ✓ Pink



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ACTIVITY 3_Key

You are going to summer camp. You have 5 swimming suits. Your mom says that you may only take 3 of them with you. In how many different ways can you do this?



There are 5 cards and from them students pick 3:

Red and Blue

Black and Purple

Red and Black

Black and Pink

Red and Purple

Purple and Pink

Red and Pink

Blue and Black

Blue and Purple

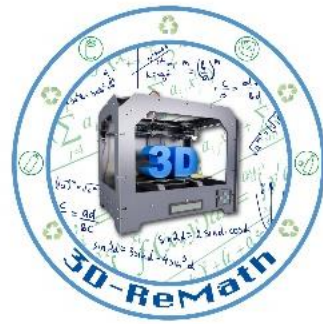
Blue and Pink



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ACTIVITY 4

There are 3 boys and 2 girls in Paul's Class. The teacher wants to select 2 pupils from this group to participate in a math's competition.

- How many 2-person teams can be formed from the group of 5 pupils?
- In how many ways can one boy and one girl be chosen to participate in the math's competition?



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Students Print

3 blue cards with the names of the boys

- ✓ Peter
- ✓ John
- ✓ George

2 red cards with the names of the girls

- ✓ Mary
- ✓ Anna



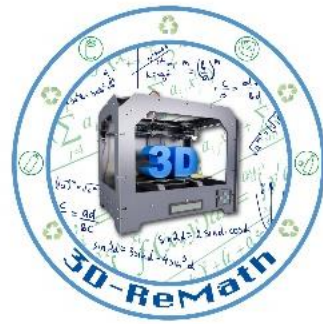
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Ι Δ Ρ Υ Μ Α
Κ Ρ Α Τ Ι Κ Ω Ν
Υ Π Ο Τ Ρ Ο Φ Ι Ω Ν

IKY



ACTIVITY 4_Key

There are 3 boys and 2 girls in Paul's Class. The teacher wants to select 2 pupils from this group to participate in a math's competition.

- How many 2-person teams can be formed from the group of 5 pupils?
- In how many ways can one boy and one girl be chosen to participate in the math's competition?



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a. There are 5 cards (blue and pink) and students will choose 2:

Peter and John
Peter and George
Peter and Mary
Peter and Anna

George and Mary
George and Anna

John and George
John and Mary
John and Anna

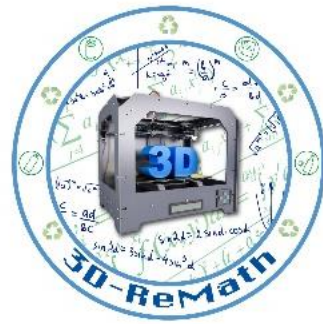
Mary and Anna



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ACTIVITY 4_Key

There are 3 boys and 2 girls in Paul's Class. The teacher wants to select 2 pupils from this group to participate in a math's competition.

- How many 2-person teams can be formed from the group of 5 pupils?
- In how many ways can one boy and one girl be chosen to participate in the math's competition?

b. There are 3 blue cards and students will choose 1:

Peter

John

George

And there are 2 red cards and students will choose 1

Mary

Anna



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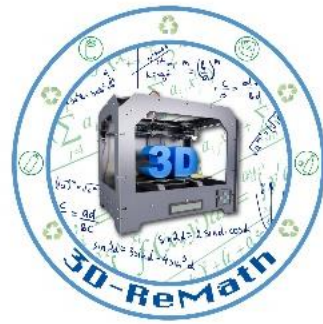


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Videos



COMBINATION FORMULA

$$\frac{8!}{2! \cdot 6!} = \frac{8 \cdot 7 \cdot 6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1}{2 \cdot 1 \cdot 6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1}$$



Study.com

Understanding combinations

<https://www.onlinemathlearning.com/combinations-probability-2.html>

<https://www.turtlediary.com/video/combinations.html>



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