Combinations

Next

Combinations *Date:* _____

Sit down with a pen and paper.

Calculator allowed

Literacy

Back Next

Combinations: Any way of combining things when the order does not matter.

Combinations

Back Next

For the following questions you will work out the number of different pairs of people you can make from a group of people.

The group will be increasing in number for each question.

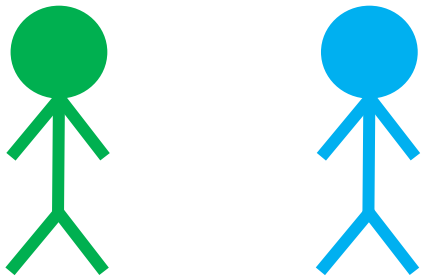
To save you time you should think about a way of quickly getting to an answer.

To help organise your workings you can use the first letter of the colour. **For example red can be R.**

Good luck.

Question 1

Back Next

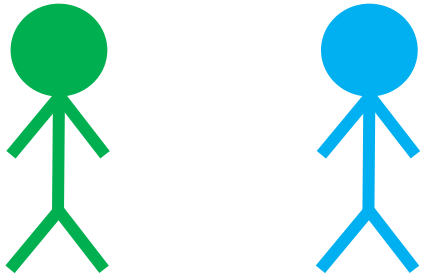


G B

How many different pairs are there with two people?

Answer

Back Next



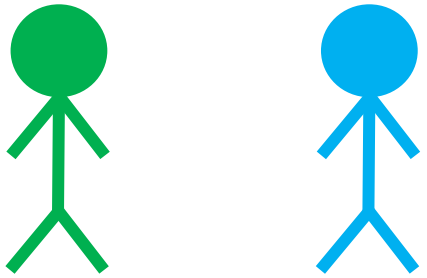
G B

How many different pairs are there with two people?

Outcomes

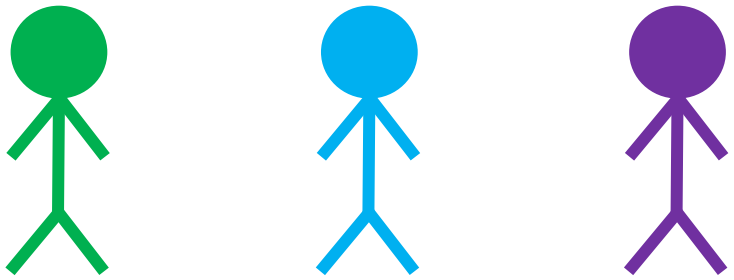
G B

1 combination



Question 2

Back Next

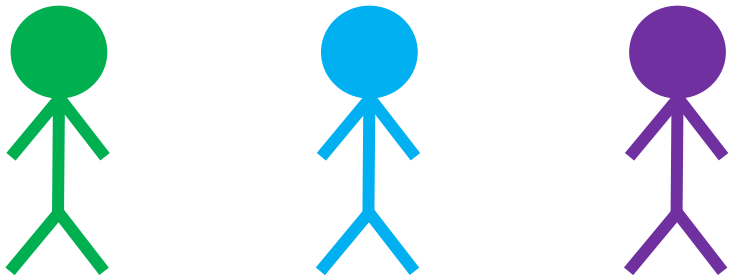


G B P

How many different pairs are there with three people?

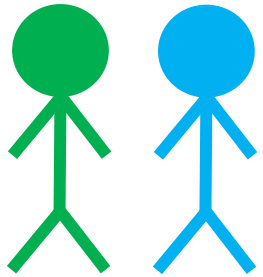
Answer

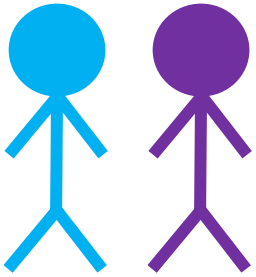
Back Next

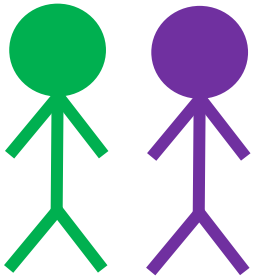


G B P

How many different pairs are there with three people?







Outcomes

G B

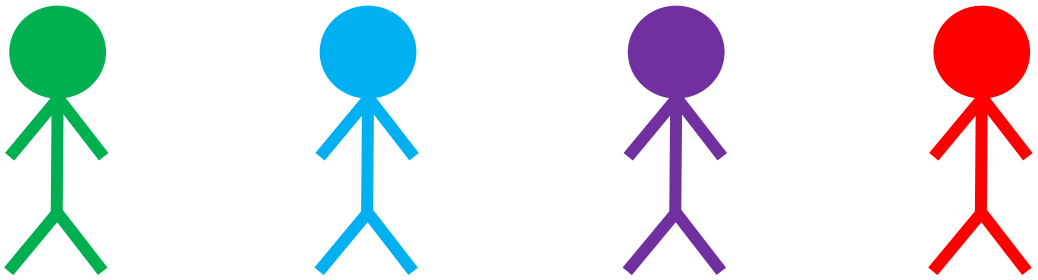
P G

P B

3 combinations

Question 3

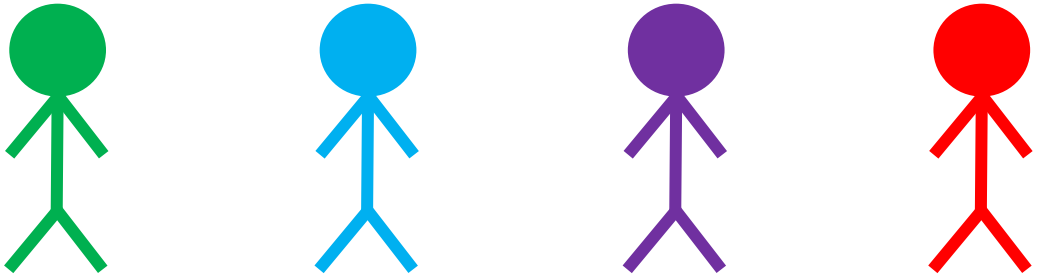
Back Next



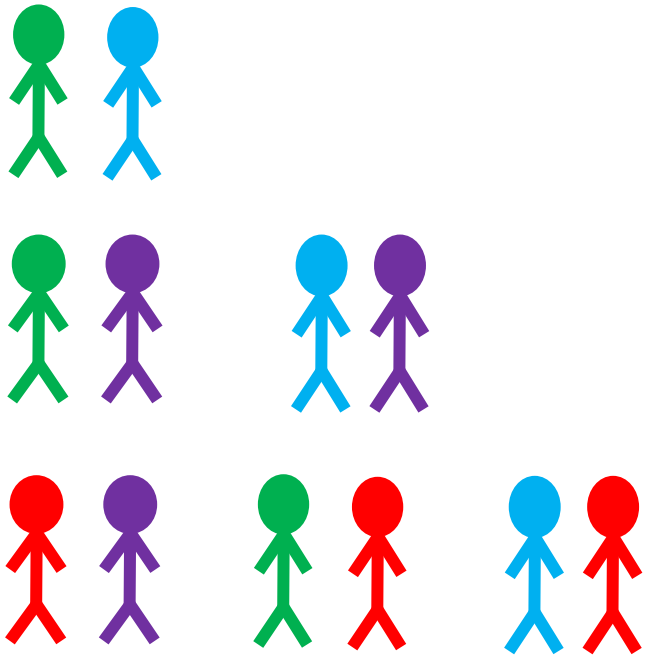
How many different pairs are there with four people?

Answer

Back Next



How many different pairs are there with four people?



Outcomes

G B

P G

P B

R B

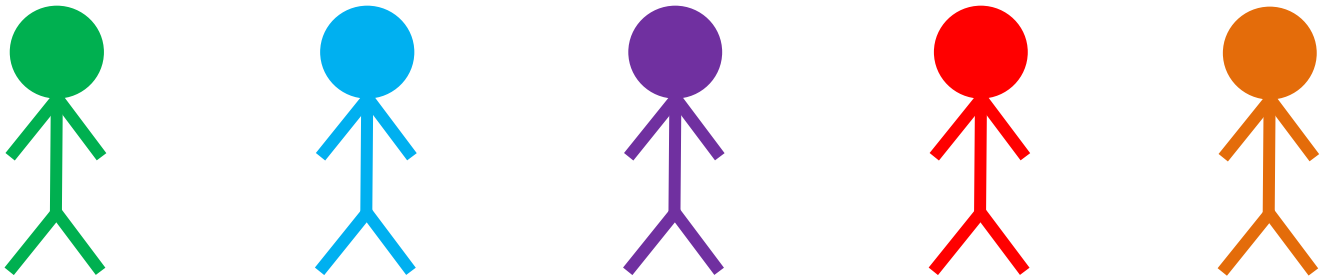
R G

R P

6 combinations

Question 4

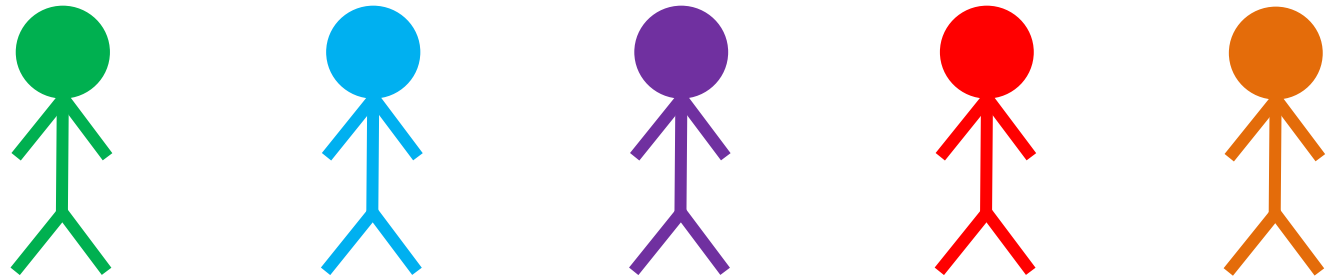
Back Next



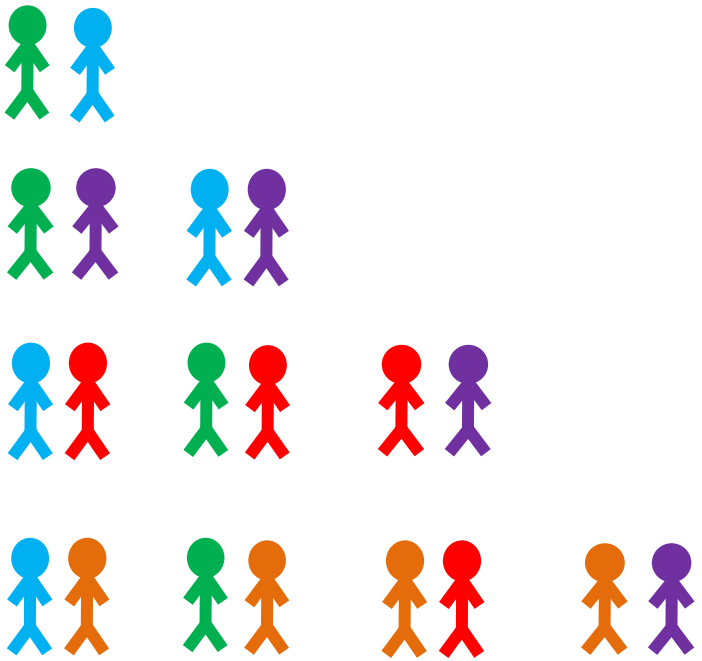
How many different pairs are there with five people?

Answers

Back Next



How many different pairs are there with five people?



Outcomes

G	B
P	G
P	B
R	B
R	G
R	P
O	R
O	B
O	G
O	P

10 combinations

Questions

Back Next

1 How many different pairs can you make with 6 people?

2 How many different pairs can you make with 7 people?

3 Write a sentence describing how you would work out the number of different pairs for a group of 10 people.

You are in a **work group of 5 people**. One of the group is a really good friend of yours. Two people are being chosen at random to move to another work group.

4 What is the probability you get picked?

5 What is the probability you both get picked?

6 What is the probability neither of you get picked?

7 What is the probability you and your friend stay together?

Answers

Back Next

1 How many different pairs can you make with 6 people?

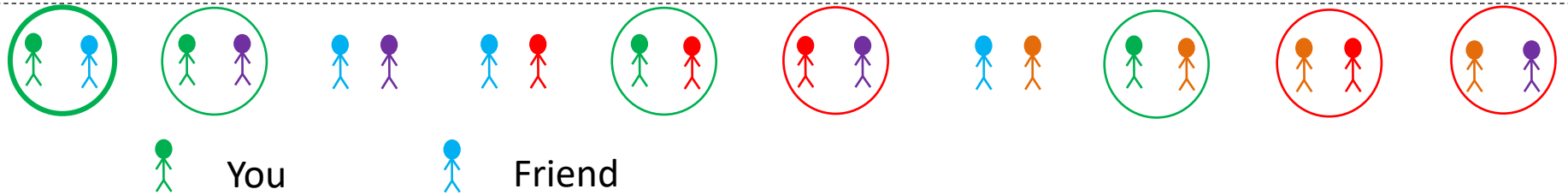
$5 + 4 + 3 + 2 + 1 = \mathbf{15}$

2 How many different pairs can you make with 7 people?

$6 + 5 + 4 + 3 + 2 + 1 = \mathbf{21}$

3 Write a sentence describing how you would work out the number of different pairs for a group of 10 people.

Add all the numbers before it.



4 What is the probability you get picked?

$\frac{4}{10}$

5 What is the probability you both get picked?

$\frac{1}{10}$

6 What is the probability neither of you get picked?

$\frac{3}{10}$

7 What is the probability you and your friend stay together?

$\frac{4}{10}$

Neither get picked or both get picked.

Problem solving

Back Next

In a game a team scores

2 points for a **win**

1 point for a **draw**

0 points for **a loss**

A team plays **four games**.

1 What is the total score for a win, lose, draw and win?

2 If the total score is 3, list a set of possible results.

3 How many different results give a total score of 4?

– Don't worry about order of results.

4 How many different combination of results give a total score above 5?

Permutations The different ways you can arrange a set of items.

How many different ways can you win 2 games, draw one and lose the other?

Answers

Back Next

In a game a team scores

2 points for a **win**

1 point for a **draw**

0 points for **a loss**

A team plays **four games**.

1 What is the total score for a win, lose, draw and win?

2 + 0 + 1 + 2 = **5**

2 If the total score is 3, list a set of possible results.

WDLL, DDDL

3 How many different results give a total score of 4?

– Don't worry about order of results.

WWLL, DDDD, WDDL

4 How many different combination of results give a total score above 5?

WWWW, WWWD, WWWL, WWDD

Permutations The different ways you can arrange a set of items.

How many different ways can you win 2 games, draw one and lose the other?

WWDL, WWLD, WDLW, WLDW, WDWL, WLWD

LWDW, LWWD, LDWW DWLW, DWWL, DLWW

12

Problem solving

Back Next

A lunchbox contains **one** sandwich and **one** drink from this list.

Sandwiches	**Drinks**
Tomato (T)	Blackcurrant (B)
Falafel (F)	Lemonade (L)
Avocado (A)	Water (W)

1 List **all** possible combinations.

2 One combination is chosen at random.

What is the probability that it is Falafel and lemonade?

Answers

Back Next

A lunchbox contains **one** sandwich and **one** drink from this list.

Sandwiches	Drinks
Tomato (T)	Blackcurrant (B)
Falafel (F)	Lemonade (L)
Avocado (A)	Water (W)

1 List **all** possible combinations.

TB **FB** **AB**
TL **FL** **AL**
TW **FW** **AW**

2 One combination is chosen at random.

What is the probability that it is Falafel and lemonade? $\frac{1}{9}$

End of the lesson

Back

Well done for completing the lesson.

Reflections