FIRST ACTIVITY

At first, you have to choose a list of the latest songs. Your pupils probably know a lot of modern songs so they can help you while they enter in the didactical proposal.
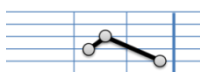
An example would be the next one:

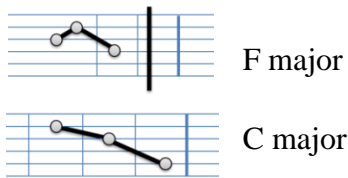| Song	Singer
Despacito	Luis fonsi
Madre tierra	Chayanne
Chantaje	Shakira
Reggaeton lento	CNCO
El amante	Nicki Jam
Duele el corazón	Enrique Iglesias
Traicionera	Sebastian Yatra
Súbeme la radio	Enrique Iglesias
Vente pa' ca	Ricky Martin
El perdón	Nicky Jam
Sofía	Álvaro Soler
Bajo el mismo sol	Álvaro Soler
Nota de amor	Carlos Vives
Me emborracharé	Grupo extra
La bicicleta	Carlos Vives y Shakira
Para enamorarte	CNCO

We have sixteen songs whose chorus we are going to analyse. We will pay attention to the chords.

What does it mean? Two or more musical notes sounding at the same time. If you observe someone playing the guitar, each chord corresponds to the left hand position.
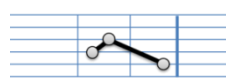
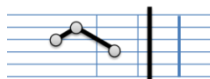We are going to learn only 4 chords or hand position:

 A minor

F major

C major

G major

The songs will be classified in four groups:
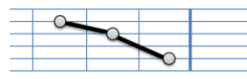
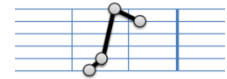La m   FA   DO   SOL

I.

A minor   **F major**   **C major**   **G major**

First kind. Here there are the songs whose chords follow the next sequence

For example: _____

II. In the second kind we can find songs with these chords in that order but starting with the second, third or fourth chord

For example: _____

III. Third kind. These songs have our known chords but disordered. They can't be classified in the other two groups
For example: _____

IV. In the last kind, the fourth one, there will be the remaining songs. That means that these songs have one different chord at least.
For example: _____

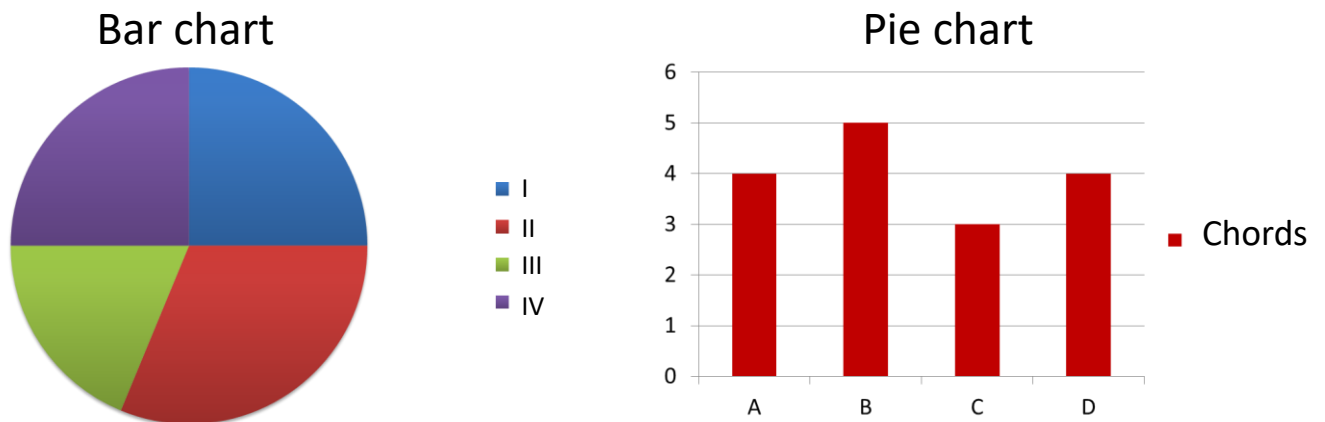Ok. Now we can classify the songs and we make this chart

Song	Singer	Kind
Despacito	Luis fonsi	I
Madre tierra	Chayanne	II
Chantaje	Shakira	IV
Reggaeton lento	CNCO	III
El amante	Nicki Jam	II
Duele el corazón	Enrique Iglesias	I
Traicionera	Sebastian Yatra	IV
Súbeme la radio	Enrique Iglesias	I
Vente pa' ca	Ricky Martin	IV
El perdón	Nicky Jam	I
Sofía	Álvaro Soler	IV
Bajo el mismo sol	Álvaro Soler	III
Nota de amor	Carlos Vives	II
Me emborracharé	Grupo extra	II
La bicicleta	Carlos Vives y Shakira	III
Para enamorarte	CNCO	II

We have sixteen songs: four of the first kind, five of the second kind, three of the third kind and four of the fourth kind.

Chords	Absolute frequency	Relative frequency
A	4	$\frac{4}{16} = \frac{1}{4} = 0{,}25$
B	5	$\frac{5}{16} = 0{,}3125$
C	3	$\frac{3}{16} = 0{,}1875$
D	4	$\frac{4}{16} = \frac{1}{4} = 0{,}25$
	16	1

With this activity we introduce concepts like absolute and relative frequency by basing on a topic of interest to most teenagers.

After that we can draw the corresponding bar or pie chart.

Bar chart

- I
- II
- III
- IV

Pie chart

- Chords

SECOND ACTIVITY

Now we open Youtube and we search the studied songs. We write the number of visitors and we explain the class average, because we are working with very different amounts.

Song	Visits
Despacito	305.060.600
Shape of you	146.821.842
Chantaje	700.054.258
Reggaeton lento	285.290.950
El amante	139.882.717
Duele el corazón	564.088.066
Traicionera	161.322.294
Safari	439.309.620
Vente pa' ca	543.921.161
El perdón	792.102.171
Sofía	298.026.658

We draw up the table practising the basic statistical concepts.

Visits (in millions)	Average class	Number of
[100,200)	150	3
[200,300)	250	2
[300,400)	350	1
[400,500)	450	1
[500,600)	550	2
[600,700)	650	0
[700,800)	750	2

THIRD ACTIVITY

In probability area we can work on Laplace's Law. We only have to divide the number of favourable cases by the number of all the cases to know which the probability of happening the favourable case is.
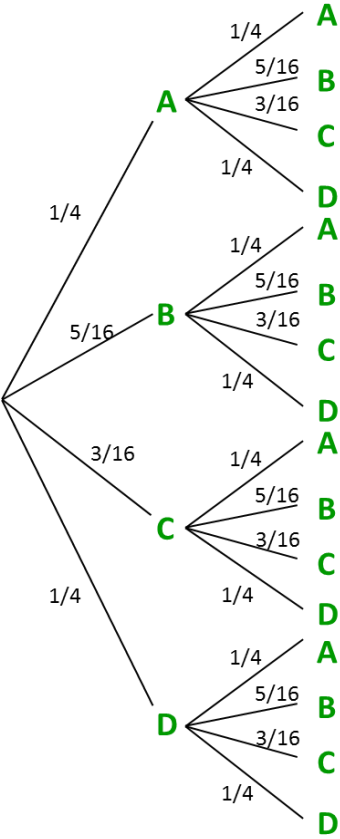
Using our data, we can ask pupils about the likelihood of being in a situation after choosing one random song from the list. Which is the likelihood of choosing a first kind song? And what about not being third kind? Which is the likelihood of choosing "Despacito" song?

This activity is useful in order to avoid the typical problems in which someone extracts a ball from a box.

In the same activity we can introduce the tree diagram with and without replacement. In the first case the collected song would be returned to the list to select another song. In the second one the first song would be deleted and we can choose another random song.

TREE DIAGRAM

With replacement

- A
  - 1/4 → A
  - 5/16 → B
  - 3/16 → C
  - 1/4 → D
- 1/4 (to A)
- B
  - 1/4 → A
  - 5/16 → B
  - 3/16 → C
  - 1/4 → D
- 5/16 (to B)
- C
  - 1/4 → A
  - 5/16 → B
  - 3/16 → C
  - 1/4 → D
- 3/16 (to C)
- D
  - 1/4 → A
  - 5/16 → B
  - 3/16 → C
  - 1/4 → D
- 1/4 (to D)

Without replacement

- A
  - 3/15 → A
  - 5/15 → B
  - 3/15 → C
  - 4/15 → D
- 1/4 (to A)
- B
  - 4/15 → A
  - 4/15 → B
  - 3/15 → C
  - 4/15 → D
- 5/16 (to B)
- C
  - 4/15 → A
  - 5/15 → B
  - 2/15 → C
  - 4/15 → D
- 3/16 (to C)
- D
  - 4/15 → A
  - 5/15 → B
  - 3/15 → C
  - 3/15 → D
- 1/4 (to D)

Activity designed by Sofía Cendán