

EPI : Droits-civiques aux USA

Mathématiques

Partie 1

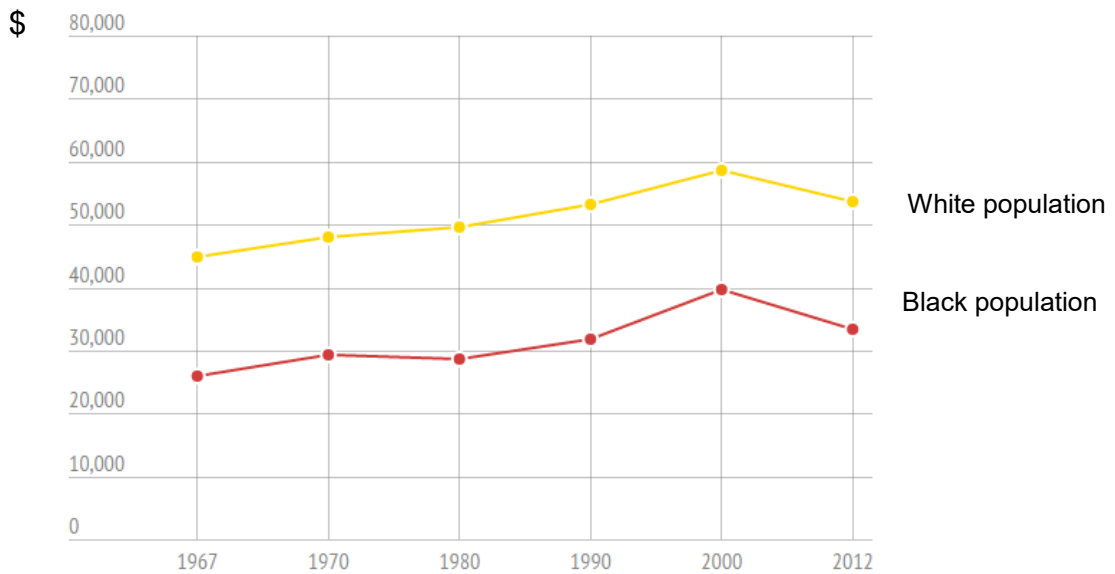


Introduction :

After studying those documents, you must describe the situation of equality in USA between the black and the white community, taking into consideration different aspect of income, unemployment, education,

American population	319 113 000	
White population	246 660 710 %
Black population	45 294 090 %

Document 1 : Median household income by ethnic group (.....)



Analyse :

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Document 2 : Unemployment rates

Complete the following table calculating the percentage related to each community.

	White	Black
Unemployed populaiaon	13 813 000	5 525 880
Percentage		

Analyse :

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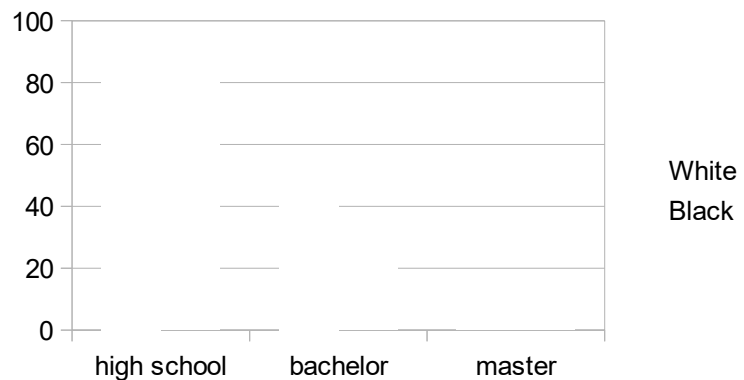
Document 3 : Level of education (.....)

The table below compares the level of education in the 2 communities.

Create the bar graph according to that data.

Bar graph (.....)

	White	Black
High School or more	94,1 %	90,3 %
Bachelor or more	40,4 %	20,5 %
Master or more	8,6 %	3,3 %



Analyse :

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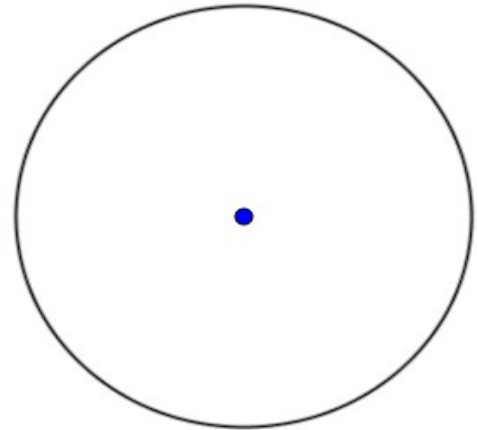
Document 4 : Prison population (.....)

The table below sum up the composition of the prison population according to their ethnic group.

Pie chart (.....)

Create the pie chart relating to those datas.

Ethnicity	White	Black	Hispanic
Percentage %	39.00%	40.00%	19.00%
Angle			



Analyse :

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Document 5 : Entertainment : NBA and ethnicity (.....)

NBA is one of the most influential sport league in the world. The following tables show that his composition of race and ethnic group has changed a lot throughout its history.

Players

	1966	2014
White	63 -->%	93 -->%
Colored	57 --> %	357 --> %

Coachs

	1966	2014
White	19 -->%	20 -->%
Colored	1 -->%	10 -->%

Analyse :

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Conclusion :

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EPI : Droits-civiques aux USA

Mathématiques Partie 2



Mathematic and election

The United States is a federal republic. On a national level, the President, is elected indirectly by the people of each state, through an Electoral College.

What is an « Electoral College » ?

In the presidential election, the citizens of the USA vote in each state to choose "electors" pledged to vote for a party's candidate.

The electors typically promise in advance to vote for the candidates of their party (whose names of the presidential candidates usually appear on the ballot rather than those of the individual « electors »).

Each state have as many « electoral votes » as the total number of its Senators and Representatives in Congress .



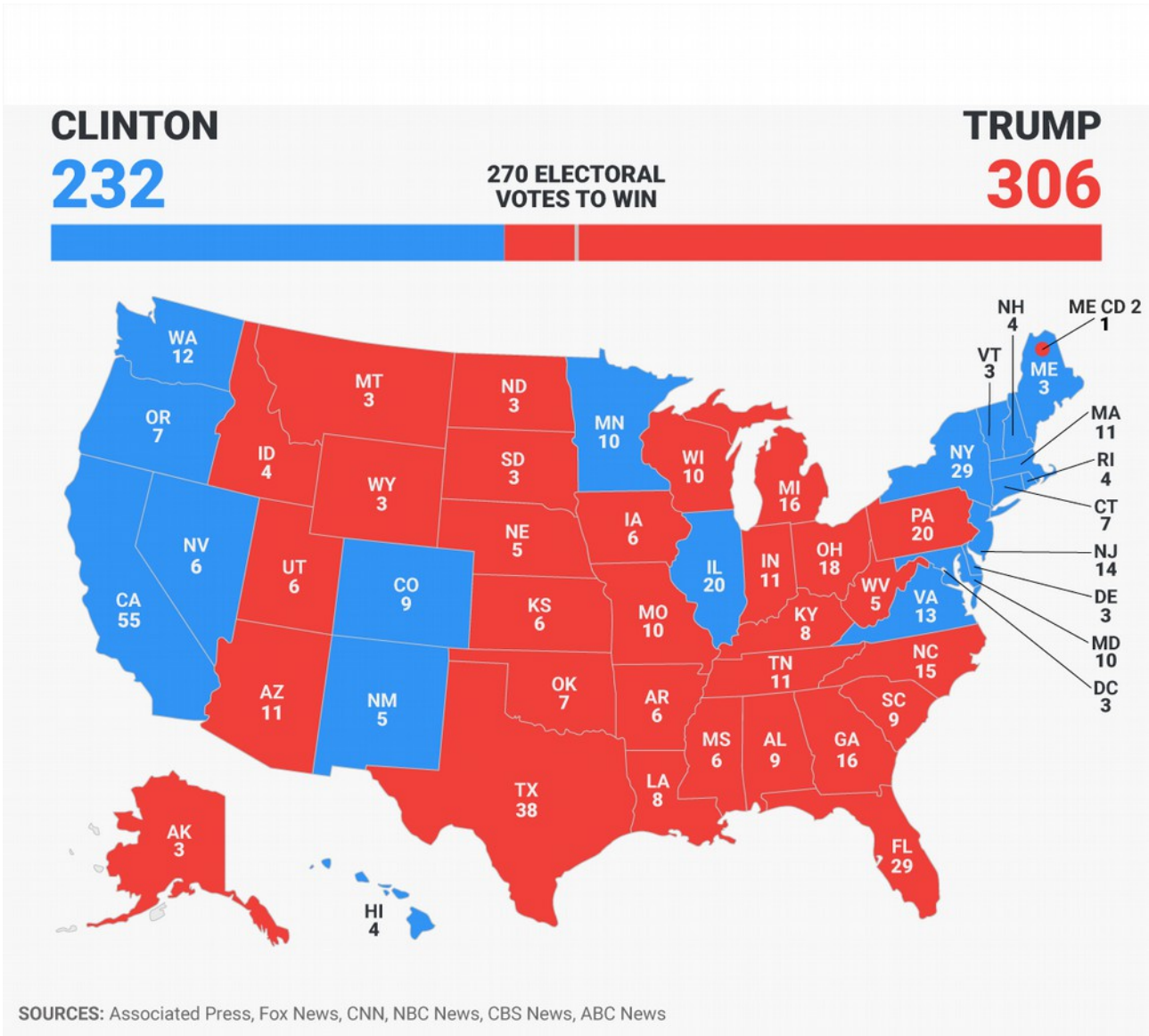
ELECTORAL COLLEGE MAP



All states except Maine and Nebraska have chosen electors on a "winner-take-all" basis , so the state's electors are awarded to the candidate with the most votes in that state.

The candidate who receive the majority of electoral votes among the states is elected President of the United States .There are a total of 538 electors so the winner of the election is the candidate with at least 270 Electoral College votes.

It is possible for a candidate to win the electoral vote, and lose the (nationwide) popular vote (basically the vote system that we are using in France). Since the mid-19th century , the Electoral College has elected the candidate who received the most popular votes, except in four elections: 1876, 1888, 2000, and **2016 !!**



So as we have just seen the voting system can have a great impact on the outcome of an election.

Let's dicover the different types of voting systems and analyse their impact on the results.

Different voting systems

We are during the presidential election of the USA. The results of the election of California have just come out, the 55 electors have been chosen, here are the results :

- 22 of them committed to vote for Hilary Clinton
- 17 of them committed to vote for Donald Trump
- 16 of them committed to vote for Gary Johnson

As we just said, the state of California (like almost every other state) is using a « winner-take-all » system : the candidate who wins the most votes from the electors take it all , in this case 55 electors !

Let's try different voting methods to choose who will win this state !

The first past the post (Popular vote) :

Voters have to indicate on the ballot the candidate of their choice, and the candidate who receives more votes than any other candidate wins .

The method is widely used in the United Kingdom, United States, Canada, ...

Result : _____

The two-round voting system :

Voters have to indicate on the ballot the candidate of their choice.

If no candidate receives the absolute majority, a second round of voting is held with the two candidates that received the most votes.

The method is widely used around the world, notably in France.

In that case, Gary Johnson is eliminated. But in the second round, Donald Trump wins Johnson's votes for himself .

Result : _____

Condorcet voting method /system:

It is named from the 18th century French mathematician and philosopher Marie Jean Antoine Nicolas Caritat, the Marquis de Condorcet .

Condorcet method has a single round of voting, in which each voter ranks the candidates from top to bottom according to his order of preference .

Then all possible pairings of candidates are considered in one-one contests. If one candidate beats every other candidate in these contests then he is declared the winner

With 3 candidates , there are 6 possible combinaisons :

Clinton > Trump > Jonhson
Clinton > Jonhson > Trump
Trump > Clinton > Jonhson
Trump > Jonhson > Clinton
Jonhson > Trump > Clinton
Jonhson > Clinton > Trump

Trump > Clinton mean that Trump is preferred to Clinton.

Situation n°1 : Condorcet winner

Clinton > Trump > Jonhson :
Clinton > Jonhson > Trump :
Trump > Clinton > Jonhson :
Trump > Jonhson > Clinton :
Jonhson > Clinton > Trump :
Jonhson > Trump > Clinton :

One-one contests results :

Clinton > Trump :	Clinton > Johnson :	Trump > Johnson :
Trump > Clinton :	Johnson > Clinton :	Johnson > Trump :
..... is preferred to is preferred to is preferred to
..... > > >

Conclusion : > > **wins the state**

Analyse :

Situation n°2 : Condorcet paradox

- Clinton > Trump > Johnson :
- Clinton > Johnson > Trump :
- Trump > Clinton > Johnson :
- Trump > Johnson > Clinton :
- Johnson > Clinton > Trump :
- Johnson > Trump > Clinton :

One-one contests results :

Clinton > Trump :	Clinton > Johnson :	Trump > Johnson :
Trump > Clinton :	Johnson > Clinton :	Johnson > Trump :
..... is preferred to is preferred to is preferred to
..... > > >

What's the problem : _____

If there is no Condorcet winner a further method must be used to find the winner of the election .

For example, in that situation, Condorcet suggests eliminating the winner with the smallest difference :

_____ is eliminated

And now we do a one-one contest between _____ and _____ .

_____ **win the state**

Analyse :
