My experiment is about guessing the age of a person by looking at the picture of a person. I will investigate whether wearing make-up has an effect on the guess of the age. From the information I was given I have found that people wear make-up aimed at making them look very much younger than their real age and making it harder to guess their age. I also found that most women are hardly seen without make-up. From the information/ideas I found out that comparing two photos, one with make-up on and another one without make-up can create a different estimation of a person's age. The photos of a person with make-up and another without make up can lead people toward an answer which is different, because makeup affects the look of a person by covering dark and red spots, wrinkle, discoloration area, breakouts and any other undesirable spots or areas on their face. These things make photos of a person with and without make-up guide people into different estimates of the real age. I'm not sure if wearing make-up will always make people look younger, because often teenagers wear make-up to look older and women wear make-up to look younger, so my problem for this investigation is "Does changing the picture of a person wearing make-up and without make-up have an effect on the estimation of my cousins real age?"

I will investigate this problem by using two photos of my cousin who is aged 32. There are two treatment groups in this experiment: one is the photo of my cousin with her make-up on and another one is the photo of cousin without her make-up, to see if there is a difference of the estimation of her age between the two photos/groups. Both of these photos have a question "How old is she?" underneath.

Each photo will be pasted onto a power point display in colour. (These have been included in the appendix).
The experimental group will be year 13 students a total of 50 students. I have to ensure that the 50 students selected for this experiment both have a maths class at the same because the experiment needs to run at the same time to afford contamination of the data and it would be easier to do at one time. I learnt from my research given to me that I needed to randomize my two groups. Once I have my experimental participants I will ask each person to select from a bag a piece of paper. There are 25 yellow pieces of paper and 25 blue pieces. This will randomize my groups which means I should not end up with all females in one group and all males in another, or all of the people who know something about how make-up can affect the estimate of a person's age in one group and all the people who know nothing about how make-up may affect a person's estimate of age in another, as this could skew the results because females are more likely to understand the effect make-up can have on a person's appearance. I then split the two groups into different rooms because I didn't want the two groups talking to each other before or during the experiment as this could affect the results. I then went into the room of 25 participants and requested silence and then waited till everyone stop talking I then showed them the picture using power point of my cousin with make-up and asked them to write down on the yellow blank piece of paper my cousin's age. Once I had collected all the answers back in I went into the second room where the other group were waiting and repeated the process from the first room, except this time the photo was of my cousin not wearing make-up and the answers were written down on the blue piece of paper. There was no time limit as I felt that a time limit might rush people into making silly estimates. I will record the data from the collected answers on to a spreadsheet. (Which I have attached in the appendix).
The response variable of this experiment will be the estimated age of cousin in years.
The variables we can control in this experiment are:
- Each group will answer the question in the same test condition, same date, same time and are in the same group.
- The power point display the students will see, will have the photos in colour with the same question "How old is she?" underneath.
- The students will get to see the power point display at the same time and the coloured paper once the student has written their answer.
- The photos of my cousin were taken one after another in the same direction with the same facial expression and the same lighting conditions. I did this to ensure that the only difference was the make-up.
- Students were required not to speak or communicate in any way to one another. I did this to ensure that some students who already had previous/current knowledge of how make-up works could not influence those who did not.

The variables that we cannot control are:
- The personal knowledge of the students because some students might know me and have seen my cousin before at my house.
- Some of the students might just guess random answers.

estimated.age by appearance
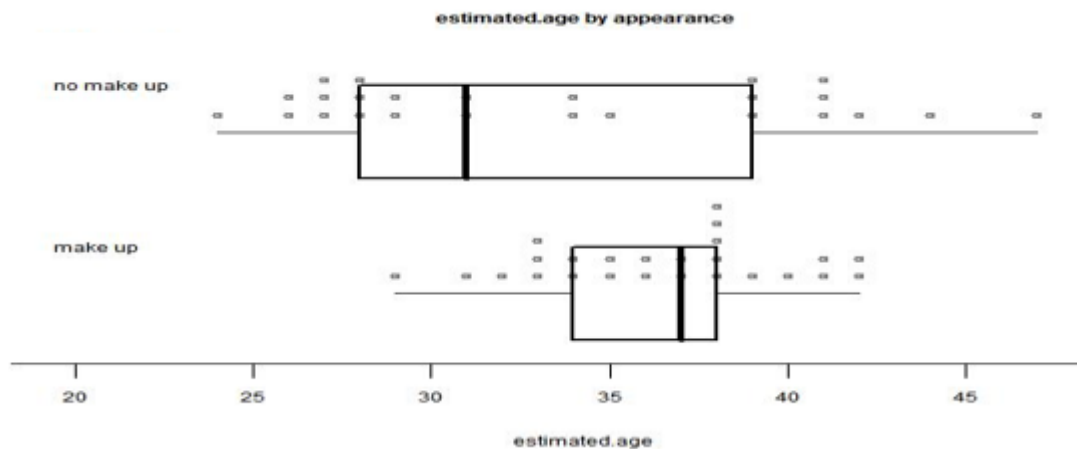
(4)

Summary of estimated age by appearance

	Min.	1st Qu.	Median	Mean	3rd Qu.	Max.	Sample.Size
no make-up	24	28	31	33.48	39	47	25
make-up	29	34	37	36.40	38	42	25

From the graphs of the two sets of data it is obvious that the average estimate of my cousins age when wearing make-up is greater than when not wearing make-up. This is confirmed by the value of the medians. For no make-up the median estimate is 31 years whilst for make-up it is 37 years. This suggests that people are likely to think people are older if they wear make-up. (5) (6)

It is also obvious that there is much more variability in the estimate of ages when there was no make-up than when there is make-up. This is shown by the overall width of the dot plots and the width of the boxes. The box is 4 years wide for make-up and 11 years wide for no make-up.

The graph for the no make-up estimates is skewed to the right. The top half of the age estimates are much more spread out (from 31 years to 47 years) than the bottom half from 24 to 31 years. This is mirrored in the middle 50% because the median estimated age is towards the left of the box. (8)

The graph for make-up is not so skewed as it is quite symmetric. This suggests that wearing make-up hides peoples real age and people estimates of the age of the person are more consistent than without make-up. and equally likely to be an under or over estimate.

I believe my experiment was well-designed, in that I tried to eliminate all factors that influence how old you appear apart from make-up, and executed. The median age estimate for wearing make-up (37) is greater than that for not wearing make-up (31) for the two groups in this experiment and this suggests that wearing make-up can influence the estimation of a person's age. (8)

If I were to repeat this experiment I would give every student only 2 minutes to answer.