EDF2215 MATHEMATICS EDUCATION 2

MATHEMATICAL INVESTIGATION



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INTRODUCTION

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What will I be investigating?

In this mathematical investigation I will decide which how I can decrease the time I spend on social media on my mobile phone. The investigation will help me decide which Social Media application I will delete off my iPhone and no longer use.

I was promoted to conduct this investigation because I spend on average 3 hours per day on my phone. The investigation involves analysing a range of relevant Social Media statistics from publically available data. Further, I will also investigate my personal use of Social Media applications with data available from my iPhone settings.

Once all of the information has been obtained, I will present the findings through a range of tables and graphs. This investigation will help me make a decision as to which Social Media application I will be no longer using to decrease my screentime.

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RATIONALE

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What is the purpose of my investigation?

(Sensis, 2018) reported that "more than a third of people now access social media more than five times per day (35%), which is up from 26% last year". This exemplifies the increasing use of social media in our society, and I feel am contributing to. Therefore, I chose to conduct this mathematical investigation as I am a current an active user of the following social media apps; Facebook, Instagram and Snapchat.

Although I have all three applications downloaded on my phone and use them regularly, I am determined to decrease the amount of time spent on my iPhone. Instead of going on social media apps I would prefer to spend my time participating in more productive activities such as spending time with friends, studying and exercising.

Ultimately, this investigation will guide me as to whether I should discontinue using Facebook, Instagram or Snapchat by analysing and comparing a range of different factors.

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Investigation Questions

To direct my investigation about which social media application I will discontinue using, I will aim to reveal:

- **Question 1:** Which is the most popular social media application worldwide?
- **Question 2:** What are the features of a a Social Media application that I use and value most? How do they compare?
- **Question 3:** How much time do I spend on Facebook, Instagram and Snapchat?
- **Question 4:** How many friends do I have on each application?

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PREDICITONS

- I predict that the findings of this investigation will show that, regarding popularity, Facebook will be the mostly used social media application.

- I predict that the application that I spend the most time on will be Instagram.

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MATHEMATICAL WORKINGS

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Question 1:

Is Facebook, Instagram or Snapchat what the most popular application worldwide ?

To determine which Social Media application is the most popular I will divide my research into two components.

Firstly, I will analyse the number of active users that Facebook, Instagram and Snapchat have worldwide. I will also compare the increase in users since 2013 to 2019.

Secondly, I will compare all three Social Media applications number of active users according to the users age categories. By collecting this data I aim to identify which application not only globally but is most amongst other users my age.

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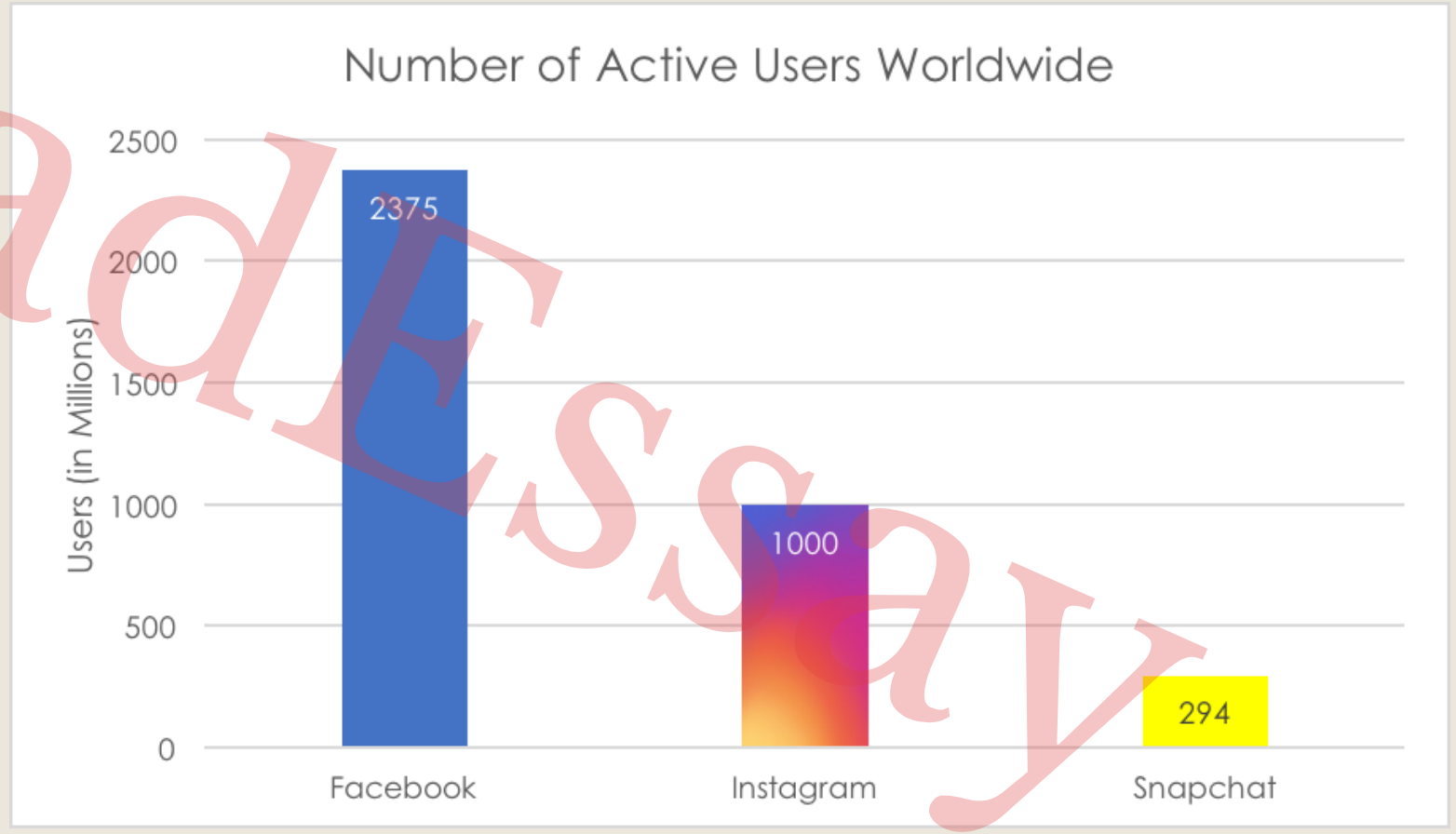
What is the most popular social media application world wide?

To determine if Facebook, Snapchat or Instagram is the most popular social media application in the world, I have chosen compare the number of active users worldwide for each application.

Using the information I gathered regarding the number of active users I have created a bar chart showing the amount of users for each Social Media platform.

Evidently, Facebook has the highest amount of active users and Snapchat has the lowest amount of active users worldwide.



Data from (Statista, 2018)

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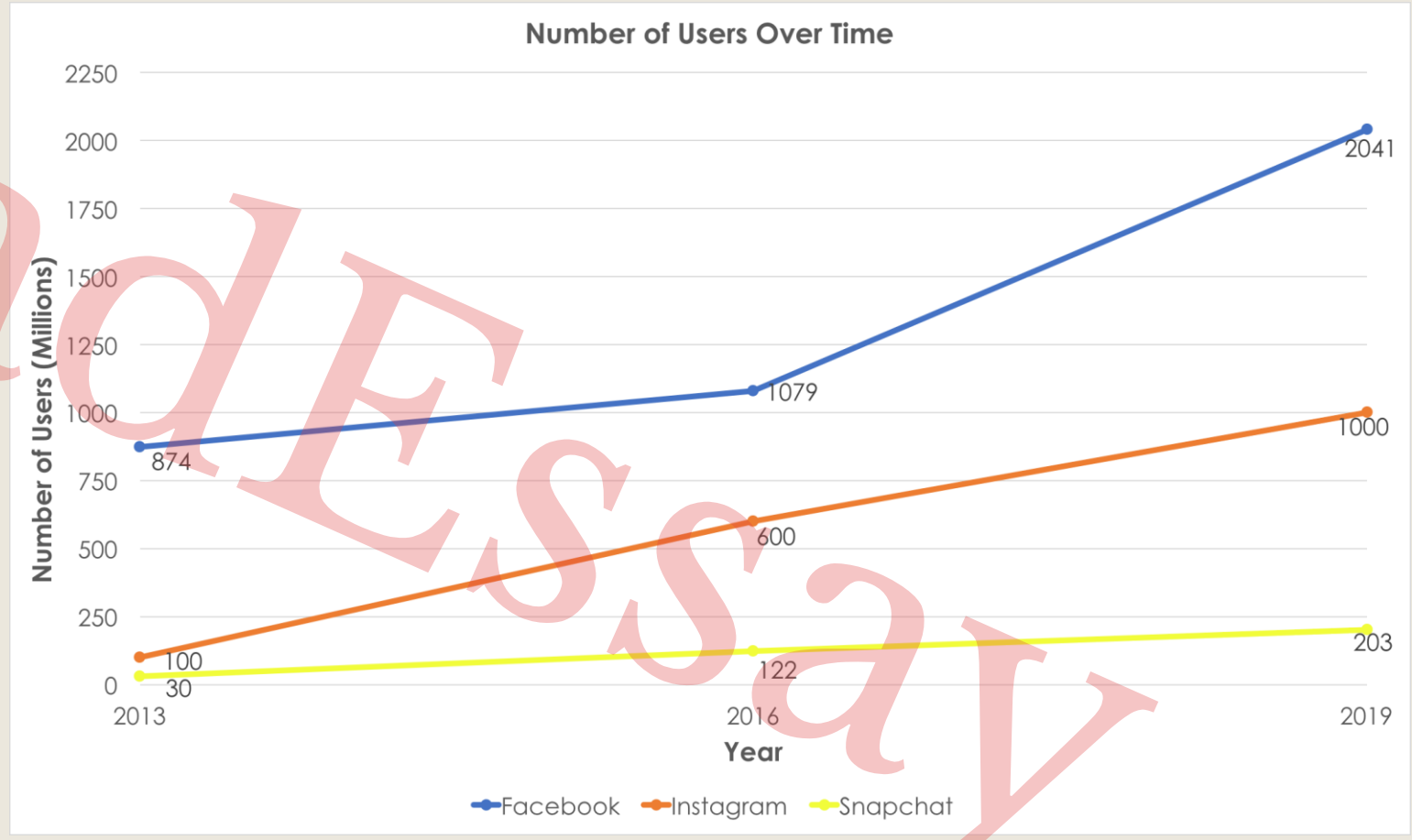
Which application has increased most in popularity?

Further, I also wanted to see which of the three Social Media applications I use has had the highest increase in users.

To determine this I collected data every three years from 2013 until 2019. By doing this I aim to show the changes in active users over an extended period of time.

By using this data as depicted in the line graph it is evident that all three platforms have experienced different changes. Using this information, I found that between 2013 and 2019 Facebook increased with regard to the most number of users. For Facebook the number of active users between 2013 and 2019 have more than doubled.



Data from (Protalinski, 2013), (Mansfield, 2016), (Statista, 2019), (Constine, 2017), (Mediakix, (2019), (Moshin, 2019), (Shontell, 2013), (Statista, 2019)

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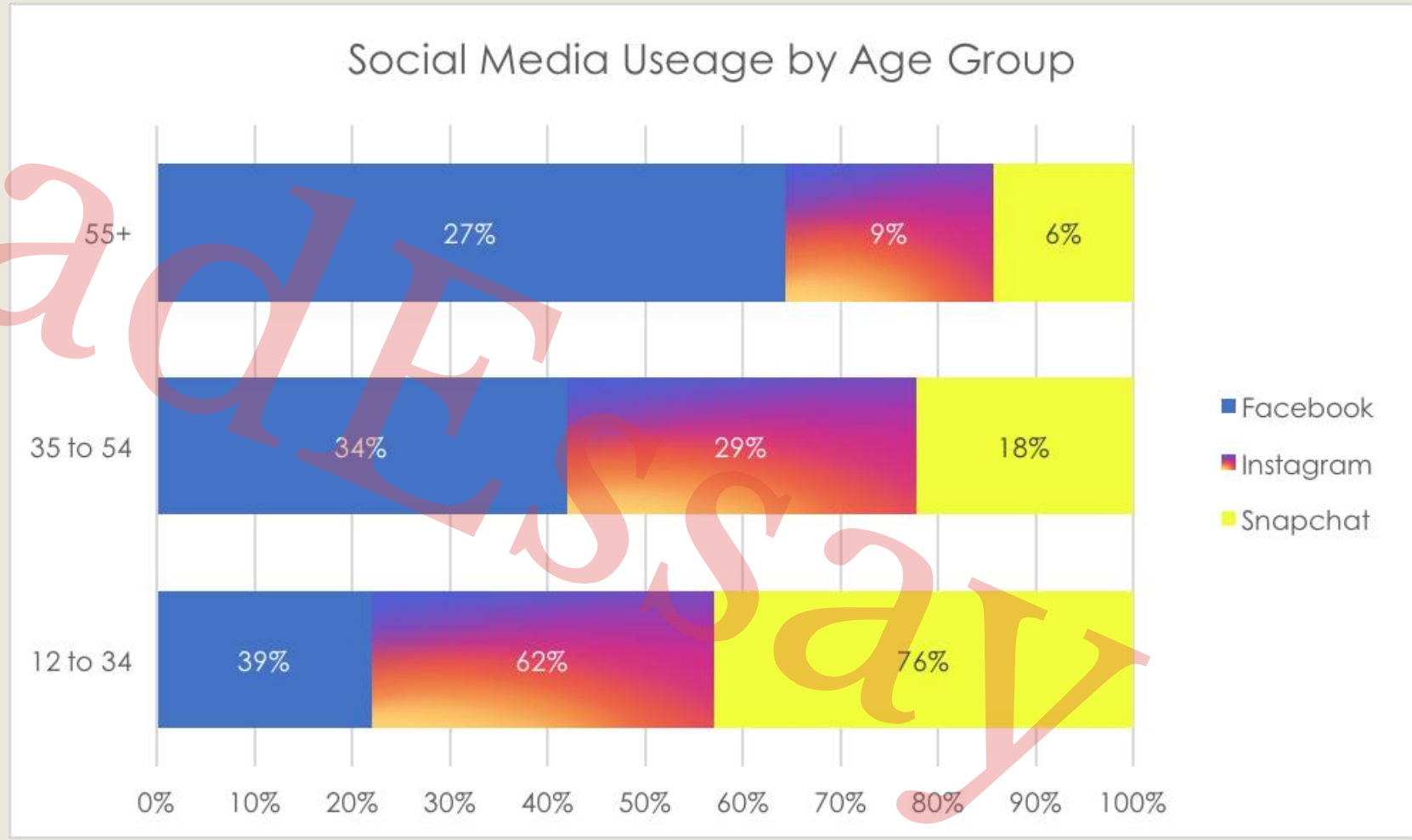
What is the most popular social media application according to age groups?

I was also interested to investigate the usage of Social Media applications amongst different age groups. This would allow me to see which social media platform is most popular amongst users my age (12-34 years).

To display my findings I have presented it in a divided bar graph, as it allows for easy comparison to be made.

The results show that 76% of Snapchat users were between the ages of 12 to 34. Interestingly, only 39% of Facebook users are between the ages of 19 to 34.



Data from (Baer, 2019)

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The Results of Question One

It is evident that Facebook has the highest amount of active users worldwide. The data showed that Facebook has also increased the most from 2013 through to 2019 in regards to the number of active users world wide as it started at 874 000 000 and increased to 2041 000 000.

Although for my age category (12-34 years) Facebook had the least amount of users at 39%, it was found to have the most users in the (35-54) and (55+) age category. Therefore, as I get older it is logical to assume that I will be more likely to want to use Facebook and connect with other friends my age.

Given the information given from the following data, I have chosen that I will continue to use Facebook as it has the most global users and fastest growth. Continuing to use Facebook will allow me to communicate and connect easily with the majority of people that I meet and therefore be a helpful application to have.

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Question 2:

What features of a social media application do I consider most important?

Prior to conducting the mathematical workings for question two, I outlines which features of the three applications are most important and useful for me. This will help me investigate which Social Media application offers the least important features, which I can therefore stop using to decrease my screen time.

When using a social media application the following features are both important and useful for me:
(Not in order of importance)

- Sharing photos
- Profile Customisation
- Following
- Privacy & Security
- News Feed
- Direct Messaging

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Question 2:

What features of a social media application do I consider most important?

For the next part of my investigation I decided to outline six different features of social media applications that are most important to me in a table.

To represent my findings I presented a table, whereby a point system was used. Depending whether the feature was evident in the application or not the application scored one point.

This allowed me to clearly distinguish which out of the three social media applications I use contains the least amount of features I believe are important.

By presenting the data in a table and adding the total number of points it was evident that Snapchat only contains three of the six features, whilst Instagram contains all six of them.

Features of each Application

	Facebook	Instagram	Snapchat
Sharing Photos	1	1	1
Profile Customisation	1	1	0
Following	1	1	0
Privacy & Security	1	1	1
News Feed	1	1	0
Direct Messaging	0	1	1
Total:	5	6	3

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The results of Question 2

By investigating the various features of each Social Media application I was able to compare whether Instagram, Facebook or Snapchat fit my criteria.

I saw that Instagram obtained a perfect score with all six of the features that I value the most. On the other hand, Facebook scored five out of six and Snapchat only three of the six features I value.

Therefore from conducting an investigation on the number of features offered by Instagram, Facebook and Snapchat, it is evident that the application with the most features I consider important is Instagram.

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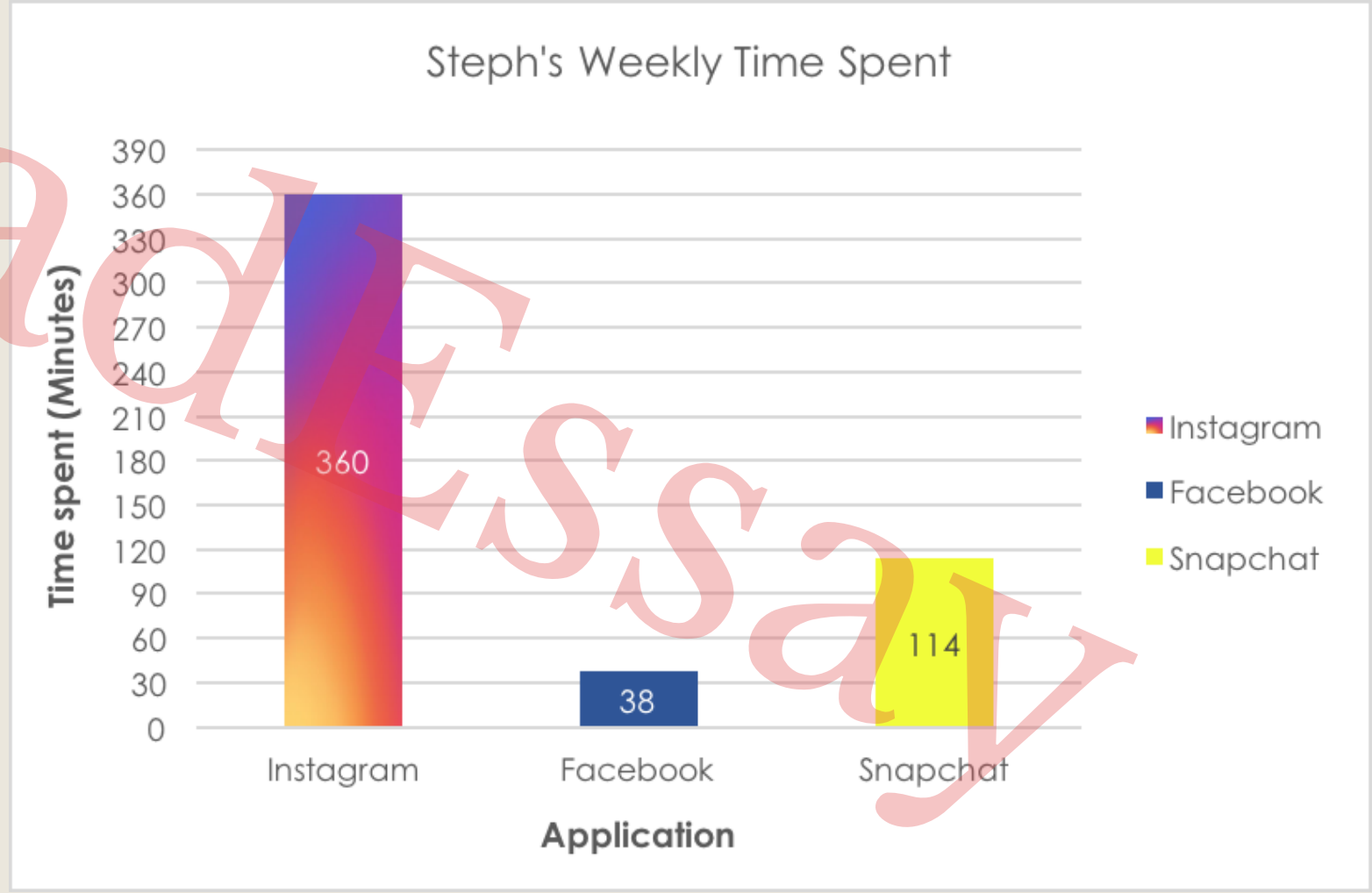
Question 3:

Which application do I spend the most time using?

By using my personal data collected from my iPhone settings under 'Screen Time' between Friday 25th October to Friday 1st November I created the following bar graph.

I converted the data from hours to minutes so that the bar graph shows how many minutes I spent on Facebook, Instagram and Snapchat within the given week.

These findings show that over the given week I spent the most time (360 minutes) going on Instagram.



Data from (Appendix a)

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Which application do I spend the most time using?

Alternatively, the amount of time spent on Facebook, Instagram and Snapchat can be depicted in a pie chart.

To find the percentage of my time spent on each of these three applications over one week, the total time spent on each application is given in the table I created.

I then used this information to figure out the percentage of time spent using Instagram, Facebook and Snapchat accordingly.

	Facebook	Instagram	Snapchat
Weekly total	38 minutes	360 minutes	114 minutes

Therefore, to find the amount of time in percentages I found the total time spent on all 3 of them which was 512 minutes.

Percentage = Time Spent / 512 x 100
Then rounded the percentage to two decimal places.

For example: Percentage of time spent on Facebook

38 / 512 x 100 = 7.421875

∴ 7.42% of my time on my phone between these three applications was spent on Facebook during that week.

	Facebook	Instagram	Snapchat
Percentage of time spent	7.42%	70.31%	22.27%

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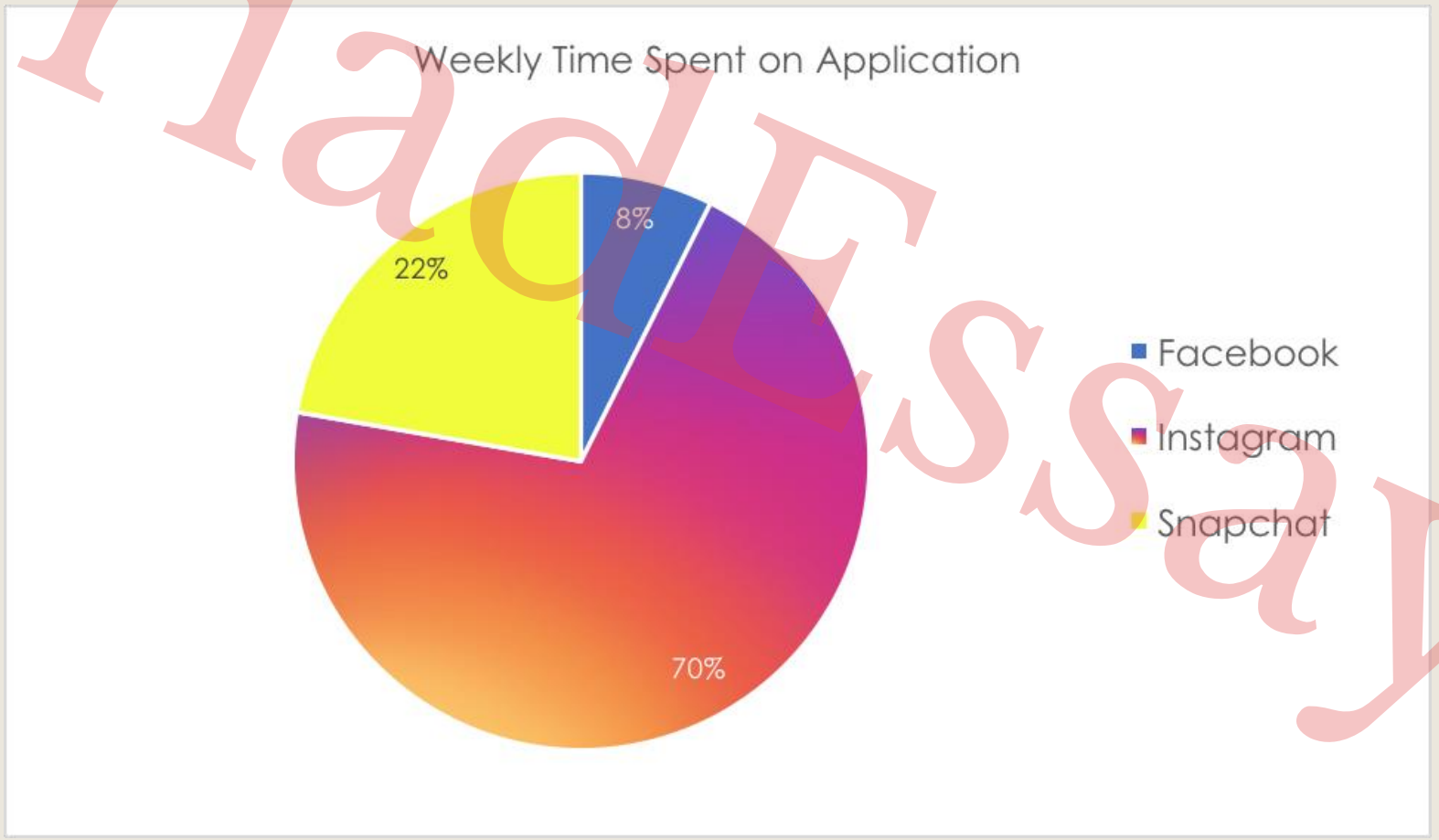
Further Findings of Question 3

Using the percentage of time spent on Facebook, Instagram and Snapchat I found in the previous table I also represented it in a pie chart. The pie chart clearly shows that the highest percentage of my time was spent using Instagram.



Data from (Appendix a)

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The Results of Question 3

When comparing the amount of time I spent between Facebook, Instagram and Snapchat my iPhone settings allowed me to gather the relevant data.

It shows that I spend the most time using Instagram, spending a total of 360 minutes a week which is equal to 70% of my time spent between the three social media applications. Given the results of question two, which show that Instagram contains all the features I consider important this data presents a clear correlation.

Therefore, my findings from question three indicate that the application I spend the most time within a week is Instagram because it contains all of the features that are important to me.

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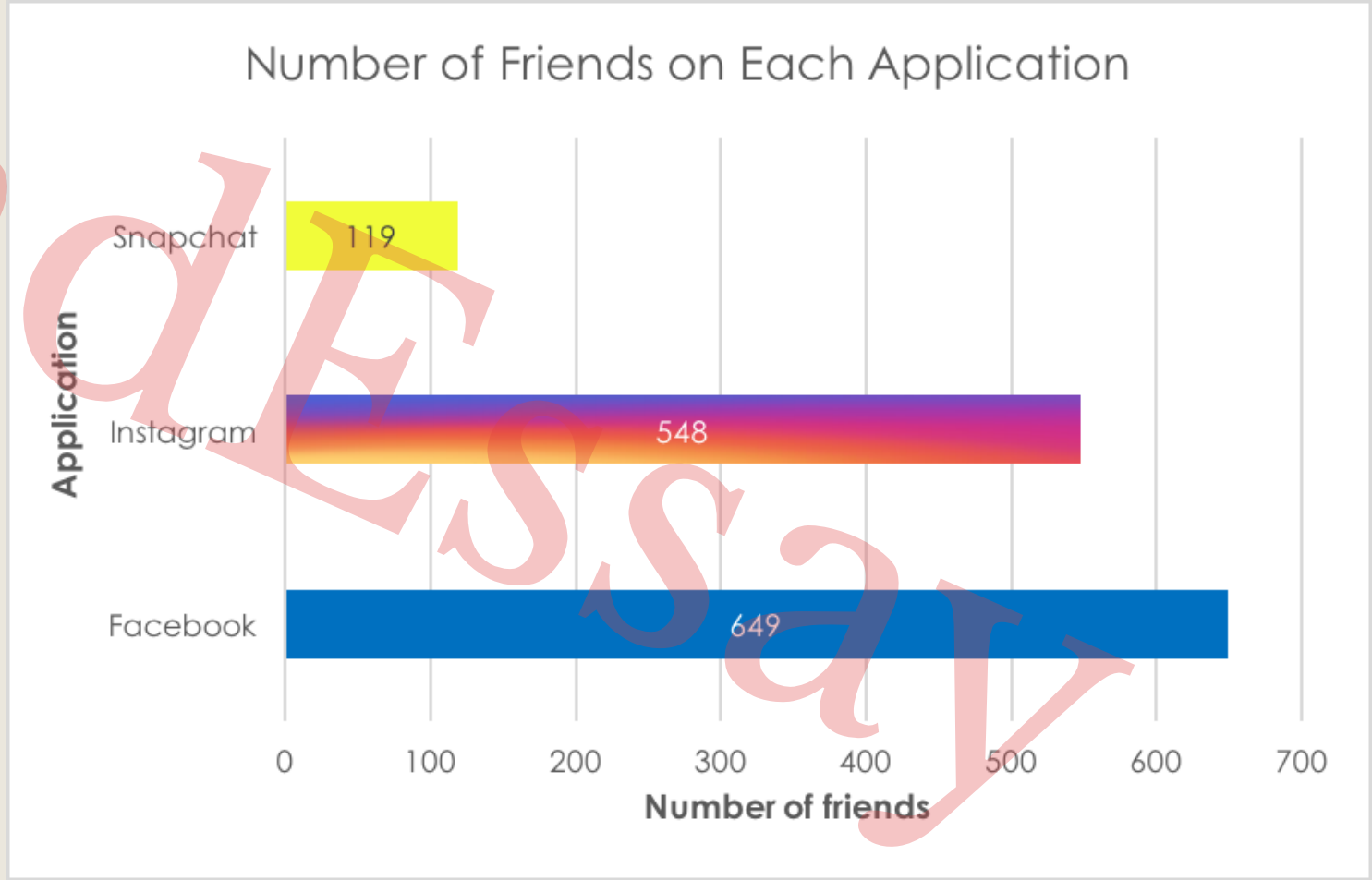
Question 4 :

How many friends do I have on each platform?

Another contributing factor to my investigation is analysing many friends I have on Facebook, Instagram and Snapchat (Appendix b, c & d).

By analysing how many friends I have on each application I am able to determine which will allow me to have the most interactions. I have presented my number of friends in the following side bar graph.

Evidently, I have the highest number of friends on Instagram and the least on Snapchat.



Data from (Appendix b, c, & d)

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The results of Question 4

The results of question four along with the findings in the previous questions have allowed me to see that the Social Media platforms that have had the highest increase in users, are also the ones that I have the most friends on. This suggests that by having the least number of friends on Snapchat it may be related to Snapchat having the lowest increase in users between 2013 to 2019.

Since I have the least friends of Snapchat, I therefore have less people to connect with and communicate during the time that I use it.

Therefore, my findings suggest that I should discontinue using Snapchat as I have the least amount of friends to connect which makes it less useful to spend my time on.

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Conclusion

To Summarise:

- Out of all three applications Facebook has maintained the most active number of users, through it's exponential growth over the past six years.
- The various application features that I evaluated revealed that Snapchat is the least important application for me to use.
- Throughout the week where I monitored my screen time, I spent a total of 512 minutes between the three applications. I spent the most time on Instagram (360 minutes) which was equivalent to 70% of my time between the platforms.
- The application I have the highest number of Friends on is Facebook, which correlates with it being the most popular application worldwide.

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Which Social Media Application will I no longer be using?

The mathematical investigation has been very useful in helping me decide which of the three Social Media applications I will delete in an effort to decrease my overall screen time.

In relation to the popularity of Snapchat, it is evident that it has the least number of users worldwide in comparison to Facebook and Instagram. This also means that Snapchat has seen the least growth in active users between 2013 and 2019 which makes it less appealing for me to use. Although my age group (12 -34 years) has the highest percentage of users, it is shown to continually decrease in the older age categories. This suggests that as I get older I may be less inclined to use it.

The evaluation of the features also highlight that Snapchat has only half the features I value when using a Social Media application. By scoring the lowest in terms of available features, it may contribute to why I only go on it for 114 minutes a week in comparison to Instagram which I spend 360 minutes on.

Lastly, out of the three applications I only have 119 friends on Snapchat which does not make it the best application to message and communicate with my friends on.

For these reasons, Snapchat is the Social Media Application I have chosen to delete from my iPhone in attempt to try and reduce my screen time.

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REFLECTION

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What have I learned about using mathematics to investigate a topic?

By completing my own mathematical investigation, it has provided me with an insight into the importance of completing a mathematically based investigation. Specifically, in exploring my topic on how I can decrease the time I spend on my phone, by deleting one of three social media applications it was very useful. Mathematics was beneficial as it allowed me to interpret the data specific to social media usage. It was important to converting my findings into percentages, converting from hours to minutes and using addition and multiplication to show changes over time for each part of the mathematical investigation.

In addition, the mathematical investigation I conducted highlighted the different ways to present data in graphs and tables when exploring a topic. The use of graphs and tables were helpful as they allowed me to present information clearly and without them it may have been difficult and confusing for me to present. The graphs and tables were also beneficial as they provide information in a visual format making the **information easy to understand.**

Overall, it was evident that the use of mathematical concepts is vital for investigating a topic. In particular it allows for a deeper understanding as well as making a viable conclusion.

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How could I include mathematical investigations in my teaching practice?

Upon completing my own mathematical investigation, I can see that an activity like this is highly engaging as it combines both my personal interests with mathematics. Similarly I believe students would also enjoy completing task like this where research is conducted topics they are interested in, therefore linking it with mathematical concepts. For this reason, I would definitely consider it essential to incorporate a mathematical investigation within my teaching practice.

A brief example of how I may include a mathematical investigation as part of my teaching is when teaching a topic such as Statistics and Probability or Geometry. I believe that both of these topics lend themselves to conducting an investigation. For example within Statistics and Probability students could follow a similar task to what I completed. Students could have the freedom to chose any topic that interests them and conduct an investigation. By doing this students learn a range of skills such a creating different types of graphs and tables as well as interpreting their findings. By choosing a topic that interests them Students are participating in the most meaningful learning. In addition, for Geometry students could investigate a range of different objects such as angles, heights and distances of objects that interest them. This would give students the opportunity to see how Geometry is applied in everyday life.

By incorporating a task like this in my teaching practice, I would aim to ensure that all students have the opportunity to not only be able to do mathematics but understand the importance of it different aspects of their life and not only in the classroom.

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Implications of Mathematical Investigations on teaching?

(Flewelling & Higginson, 2005) suggest that mathematical investigations provide students with the opportunity to partake in learning which has more freedom, thus creating rich learning opportunities as students are more engaged. This is unlike traditional mathematics activities which are text based and do not provide students with the same opportunity to use their imagination.

Mathematical investigations are advantageous because instead of separating knowledge into sections like textbooks they provide a more holistic approach (Lovitt & Lowe, 1994). The connection between mathematical concepts and with broader topics and social contexts allows students to integrate mathematics into everyday life.

Although mathematical investigations are a useful tool, teachers need to consider the mathematical understanding of their students to ensure a successful outcome (Grouws & Cebulla, 2000). If student do not have the required understanding of a topic they may encounter challenges or even complete the task incorrectly, therefore not receiving its benefits. With this in mind, as a preservice teacher I will ensure that if a mathematical investigation is used the students have been taught the relevant skills and their understanding has been assessed. For example if students were conducting an investigation on Geometry, important skills such as understanding different units of measurement, how to measure angles and calculating area and perimetr at their particular level.

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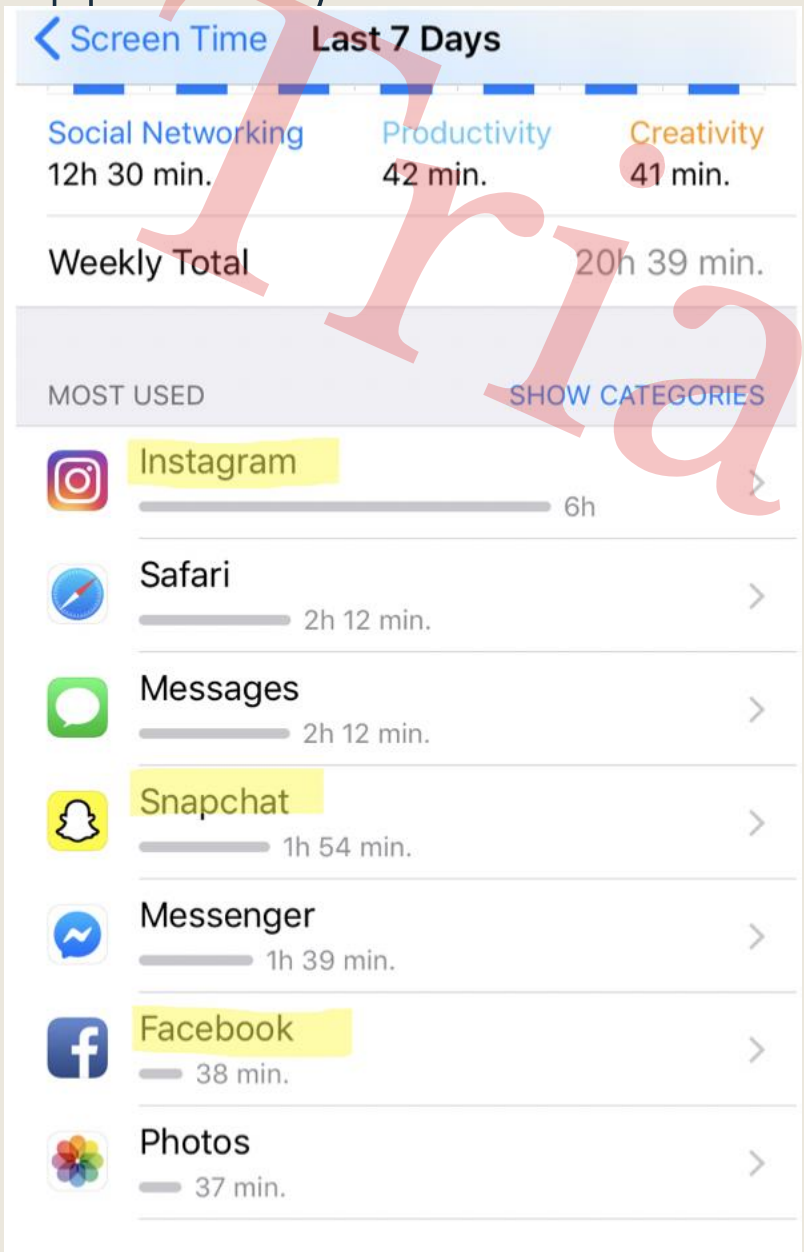
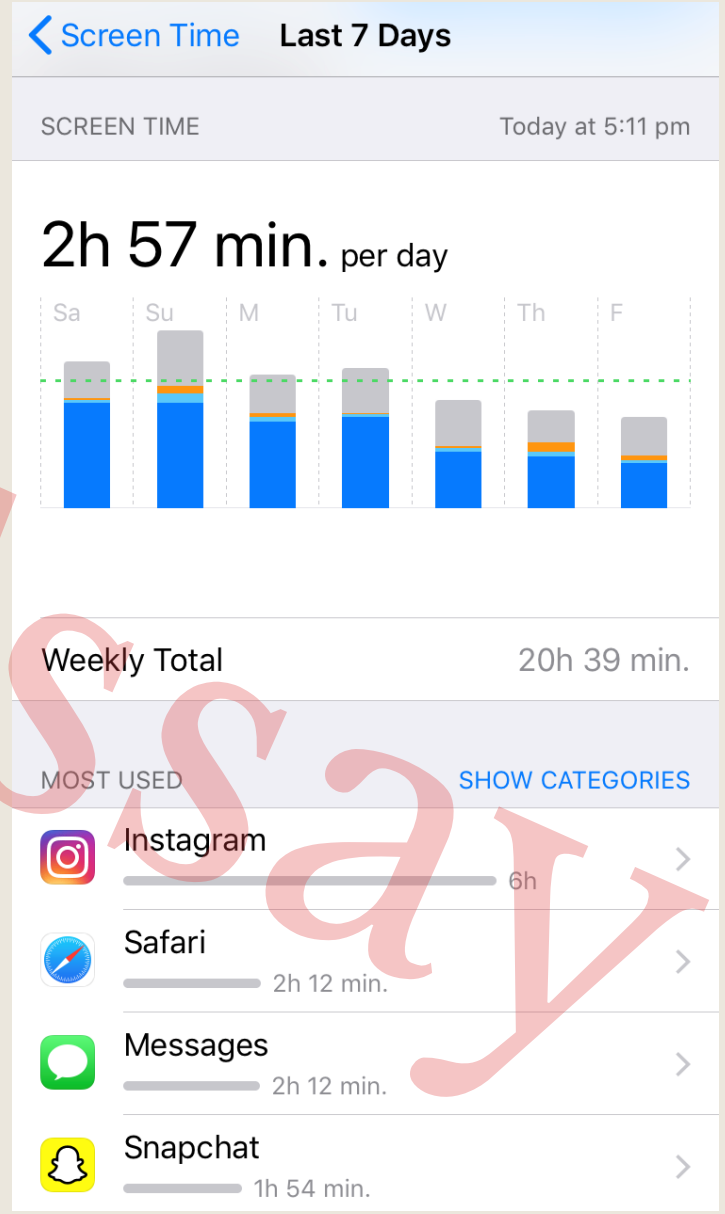
Appendices

Appendix a)





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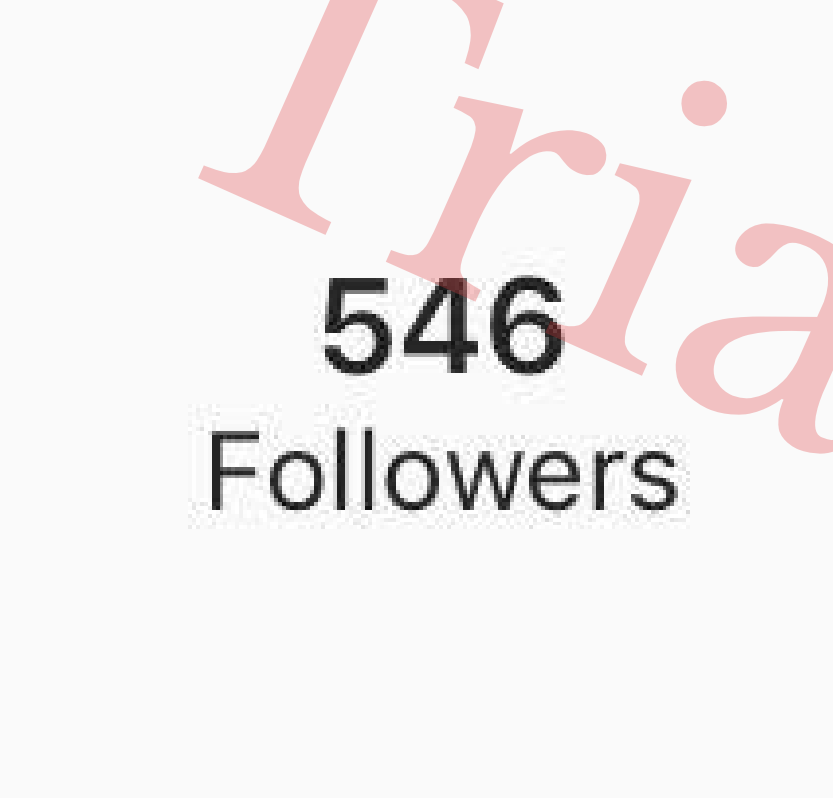
Appendix b)

Instagram follower count from an iPhone screenshot



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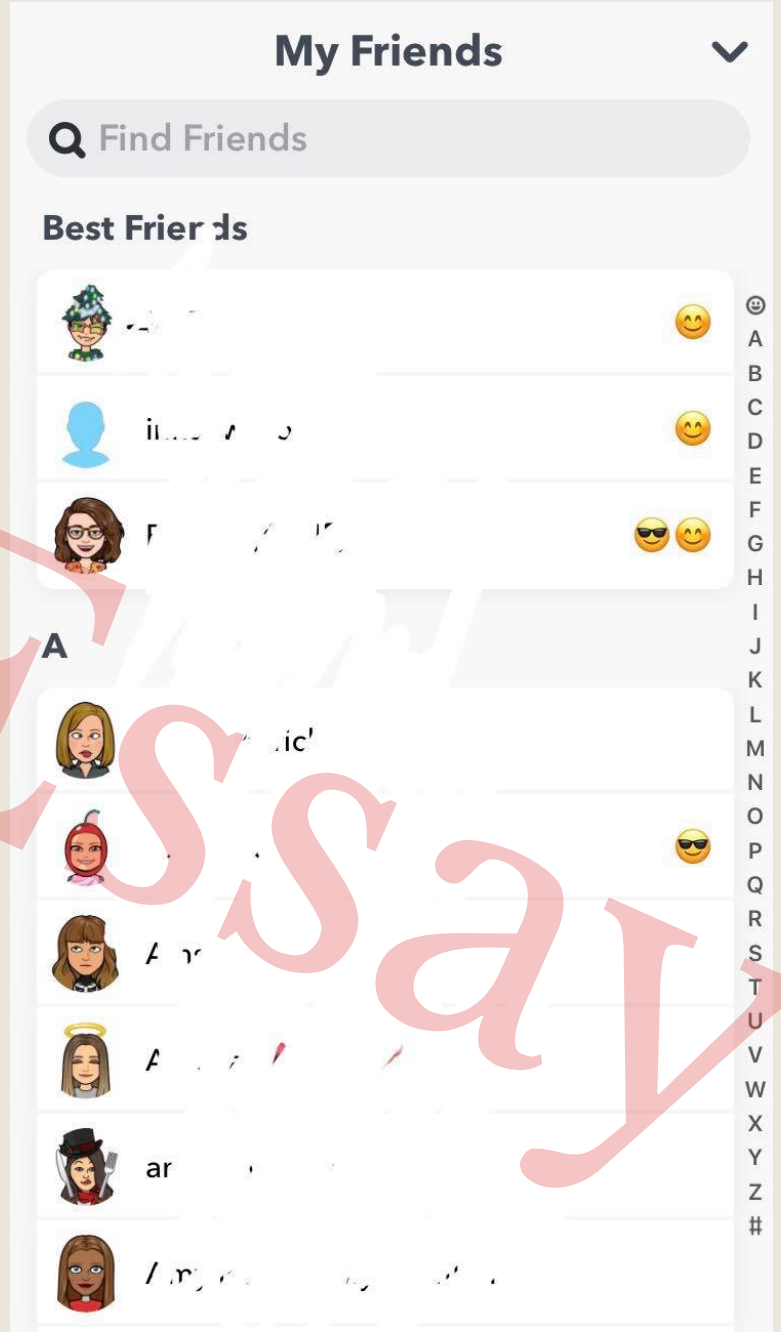
Appendix c)

Number of Snapchat friends – I simply scrolled through and counted them all.



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Appendix d)

Screenshot of how many friends I have on Facebook

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