



# Harry Potter Spells

PICCOLLAGE

## AIM

We want to be able to analyse data and prove different and accurate ways to clearly show the mathematical representation of Harry Potter Spells.

We have talked about it and concluded that the mathematical processes and concepts we want to use are as of the following:

- Graphs (Comparison, Bar and Pie)
- Percentages
- Fractions
- Mode
- Median
- Range
- Time Lines
- Number Lines
- Angles
- Charts
- Addition
- Subtraction
- Division

## INSPIRATION AND APPROACH

WILF: Different ways to show the mathematical data representation of Harry Potter Spells clearly.

SOS: We were able to determine and present different Harry Potter Spells using maths clearly.

We decided to choose a Harry Potter topic because we're creating maths with something we can explore with enthusiasm. It's something we can enjoy but it's also a topic that we believe hasn't been investigated into yet.

We decided to only use spells that have been *said* while using a *wand*, which applies to both the movies and the books.

Our first step of action is to re watch and re read all of the Harry Potter books and movies, in order to have primary resources.

We will then analyse the data and make conclusions based on the information.

# PREDICTIONS:

More Spells In Books, Or Movies?: Movies

The Character Who Says The Most Spells: Hermione (Alannah)  
Harry (Mahaliah)

Movie With The Most Spells: The Deathly Hallows Part 2

Book With The Most Spells: The Deathly Hallows

Which Spell Is Said The Most: Expecto Patronum (Alannah)  
Expelliarmus (Mahaliah)

# SURVEY ANALYSIS

	A	B	C
1	<b>Most Common Spell - Survey</b>		
2	People	Books	Movies
3	1. Jo-Yen	Expelliarmus	Lumos
4	2. Steph	Expelliarmus	Expecto Patronus
5	3. Zoe	Avada Kedavra	Expelliarmus
6	4. Sarah Le	Expelliarmus	Expelliarmus
7	5. Audrey	Expelliarmus	Expelliarmus
8	6. Athena	Expelliarmus	Expelliarmus
9	7. Abiha	Expelliarmus	Expelliarmus
10	8. Charlotte	Expelliarmus	Expelliarmus
11	9. George	Stupify	Avada Kedavra
12	10. Jayden	Expelliarmus	Avada Kedavra
13	11. Evan	Expelliarmus	Expelliarmus
14	12. Emily	Expelliarmus	Expelliarmus

Expelliarmus was seen to be a popular and well known spell, which stood out to many of the people whom we surveyed.

7 out of 12 people said Expelliarmus for both the movies and books.

10 people said Expelliarmus for the books, while only 9 said it for the movies.

Avada Kedavra was the second most popular spell, coming from 3 different people. However, 1 of them thought of it for the books, the other two for the movies.

Only one person said Lumos.

Only one person said Stupefy.

Only one person said Expecto Patronum.

# MOVIE SURVEY RESULTS

2=Lumos

$$\frac{0.0833}{1.0000} \times 100 = 8.33\%$$

3.33  
3.6  
998  
990

9988° - Rounded to 30°

1/12=Expecto Patronum

$$\frac{0.0833}{12/1.0000} \times 100 = 8.33\%$$

8.33  
x 3.6  
4998  
24990

24990° - Rounded to 30°

1/12=Expelliarmus

$$\frac{0.666}{12/1.0000} \times 100 = 66.6\%$$

6.6  
3.6  
996  
980

9976° - Rounded to 240°

2/12=Avada Kedavra

$$\frac{0.1666}{12/2.0000} \times 100 = 16.66\%$$

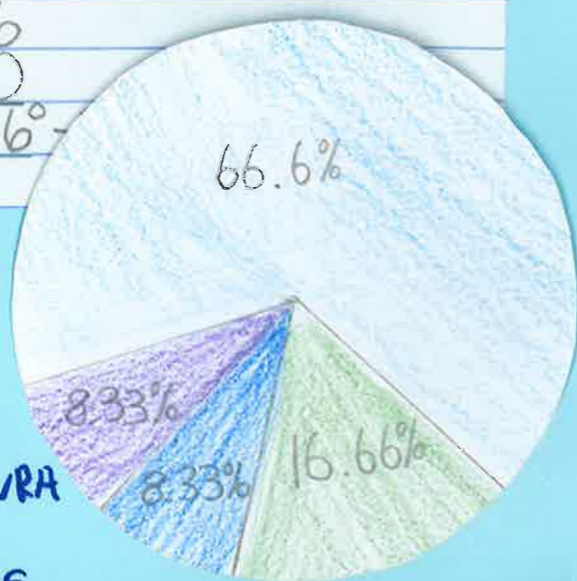
16.66  
x 3.6  
9796  
49980

59776°

WHAT IS THE MOST COMMON SPELL?

EXPELLIARMUS = AVADAKEDAVRA

EXPECTO PATRONUM = LUMOS



# BOOK SURVEY RESULTS

1/12=Stupefy

$$\frac{0.0833}{12/1.0000} \times 100 = 8.33\%$$

8.33  
x 3.6  
4998  
24990

24990° - Rounded to 30°

1/12=Avada Kedavra

$$\frac{0.0833}{12/1.0000} \times 100 = 8.33\%$$

8.33  
x 3.6  
4998  
24990

24990° - Rounded to 30°

1/12=Stupefy

1/12=Avada Kedavra  
10/12=Expelliarmus

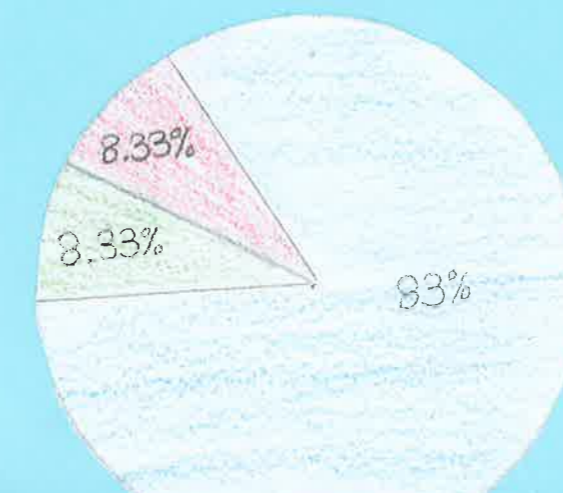
10/12=Expelliarmus

$$\frac{0.83}{12/10.0000} \times 100 = 83\%$$

83  
x 3.6  
498  
2490

2488° - Rounded to 2

WHAT IS THE MOST COMMON SPELL?



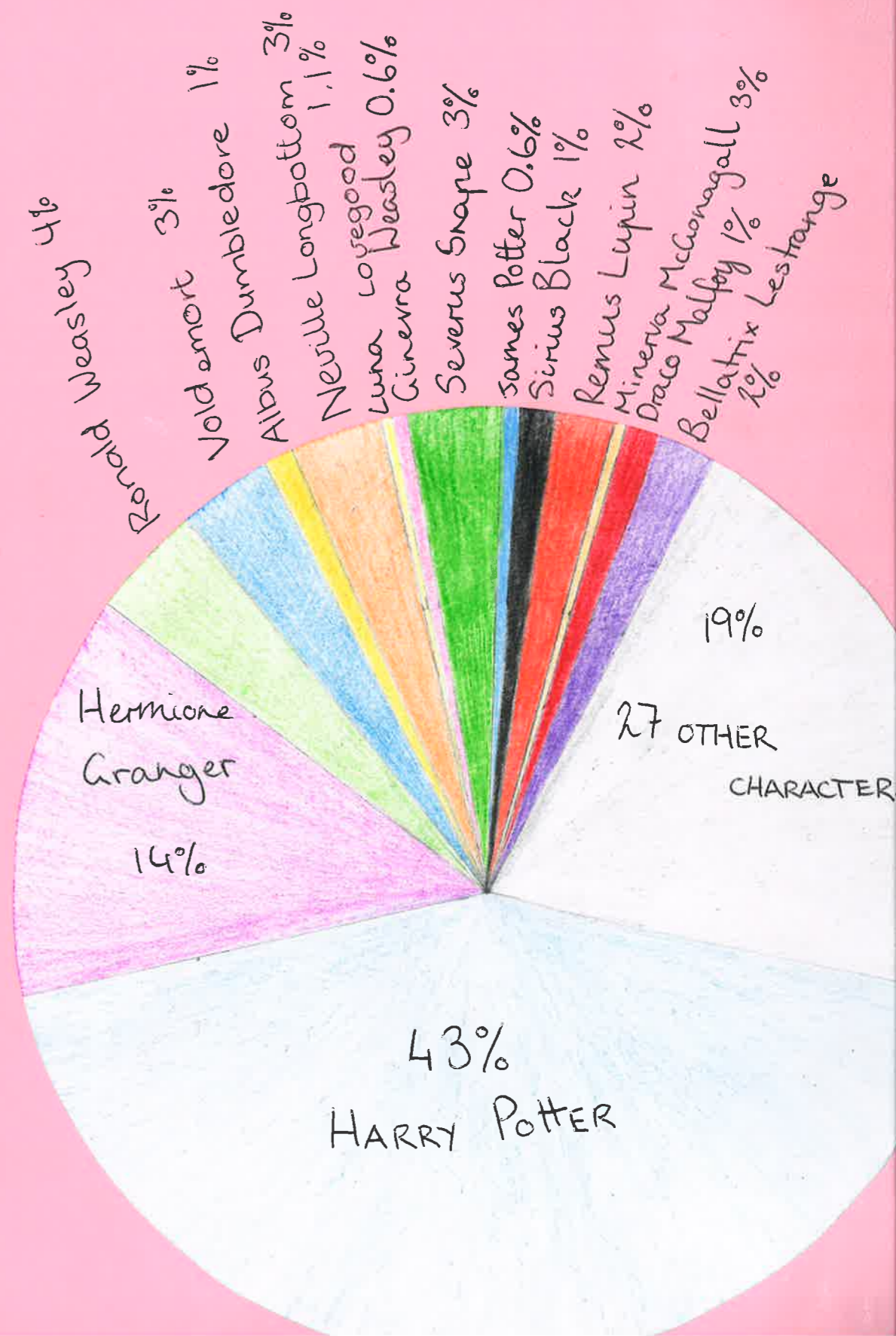
KEY:

EXPELLIARMUS  
AVADA KEDAVRA  
STUPEFY

# KEY

CHARACTER	PERCENTAGE
Harry Potter	43%
Hermione Granger	14%
Ronald Weasley	4%
Voldemort	3%
Albus Dumbledore	1%
Neville Longbottom	3%
Luna Lovegood	1.1%
Ginerva Weasley	0.6%
Severus Snape	3%
James Potter	0.6%
Sirius Black	1%
Remus Lupin	2%
Minerva McGonagall	3%
Draco Malfoy	1%
Bellatrix Lestrange	2%
27 other characters	19%

# CHARACTERS WHO CAST S IN ALL 7 BOOKS



## PIE CHART ANALYSIS

Harry Potter overall says the most spells within all of the books with 43%. Hermione comes second with a total of 14%. 27 other characters had the percentage of 19%.

We found out Luna Lovegood only says one spell in the whole series with a total of 1.1% making it a decimal percentage. Some characters only say a few spells which give them a very thin line in the whole pie chart.

Each character has their own specific colour (as seen in the key) so you can see which ones they are clearly.

$$128/297 = \text{Harry Potter}$$

$$\frac{0.43 \times 100}{297 \overline{) 128.000}} = 43\%$$

$$\begin{array}{r} 43 \\ \times 3.6 \\ \hline 258 \\ 1290 \\ \hline 1548 \end{array} \text{ - Round up to } 155^\circ$$

$$42/297 = \text{Hermione Granger}$$

$$\frac{0.14 \times 100}{297 \overline{) 42.00}} = 14\%$$

$$\begin{array}{r} 14 \\ \times 3.6 \\ \hline 84 \\ 420 \\ \hline 504 \end{array} \text{ - Round to } 50^\circ$$

$$11/297 = \text{Ronald Weasley}$$

$$\frac{0.04 \times 100}{297 \overline{) 11.00}} = 4\%$$

$$\begin{array}{r} 4 \\ \times 3.6 \\ \hline 24 \\ 120 \\ \hline 14.4 \end{array} \text{ - Round to } 14^\circ$$

$$9/297 = \text{Voldemort}$$

$$\frac{0.03 \times 100}{297 \overline{) 9.00}} = 3\%$$

$$\begin{array}{r} 3 \\ \times 3.6 \\ \hline 18 \\ 90 \\ \hline 10.8 \end{array} \text{ - Round to } 11^\circ$$

$$4/297 = \text{Albus Dumbledore}$$

$$\frac{0.01 \times 100}{297 \overline{) 4.00}} = 1\%$$

$$\begin{array}{r} 1 \\ \times 3.6 \\ \hline 6 \\ 30 \\ \hline 3.6 \end{array} \text{ - Round to } 4^\circ$$

$$9/297 = \text{Neville Longbottom}$$

$$\frac{0.03 \times 100}{297 \overline{) 9.00}} = 3\%$$

$$\begin{array}{r} 3 \\ \times 3.6 \\ \hline 18 \\ 90 \\ \hline 10.8 \end{array} \text{ - Round to } 11^\circ$$

$$1/297 = \text{Luna Lovegood}$$

$$\frac{0.003 \times 100}{297 \overline{) 1.000}} = 0.3\%$$

$$\begin{array}{r} 0.3 \\ \times 3.6 \\ \hline 18 \\ 090 \\ \hline 1.08 \end{array} \text{ - Round to } 1.1^\circ$$

$$2/297 = \text{Ginevra Weasley}$$

$$\frac{0.006 \times 100}{297 \overline{) 2.000}}$$

$$\begin{array}{r} 0.6 \\ \times 3.6 \\ \hline 36 \\ 180 \\ \hline 2.16 \end{array} \text{ - Round to } 2.2^\circ$$

$$10/297 = \text{Severus Snape}$$

$$\frac{0.03 \times 100}{297 \overline{) 10.00}} = 3\%$$

$$\begin{array}{r} 3 \\ \times 3.6 \\ \hline 18 \\ 90 \\ \hline 10.8 \end{array} \text{ - Round to } 11^\circ$$

$$2/297 = \text{James Potter}$$

$$\frac{0.006 \times 100}{297 \overline{) 2.000}}$$

$$\begin{array}{r} 0.6 \\ \times 3.6 \\ \hline 36 \\ 180 \\ \hline 2.16 \end{array} \text{ - Round to } 2.2^\circ$$

$$4/297 = \text{Sirius Black}$$

$$\frac{0.01 \times 100}{297 \overline{) 4.00}} = 1\%$$

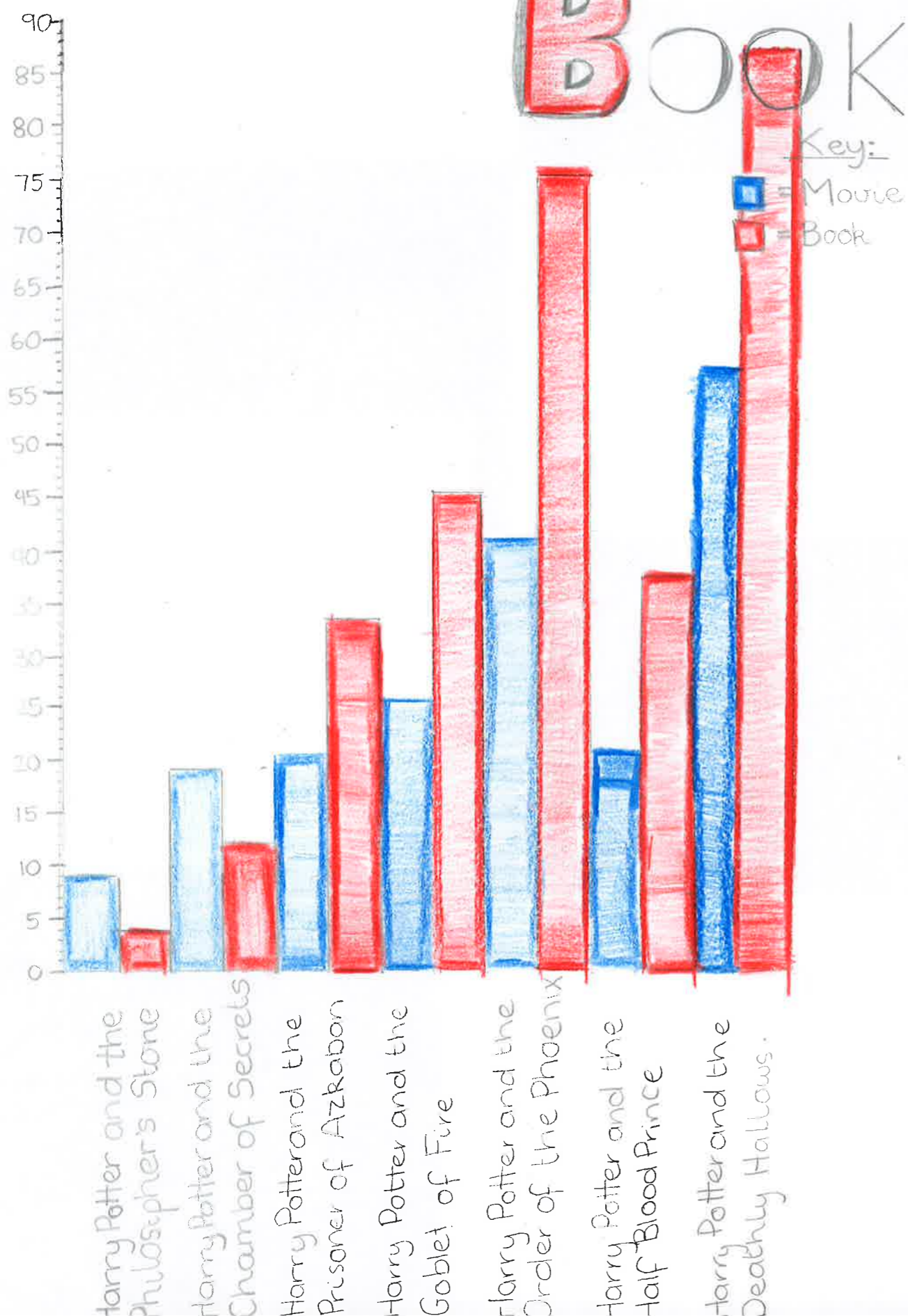
$$\begin{array}{r} 1 \\ \times 3.6 \\ \hline 6 \\ 30 \\ \hline 3.6 \end{array} \text{ - Round to } 4^\circ$$

$$6/297 = \text{Remus Lupin}$$

$$\frac{0.02 \times 100}{297 \overline{) 6.00}}$$

$$\begin{array}{r} 2 \\ \times 3.6 \\ \hline 12 \\ 60 \\ \hline 7.2 \end{array} \text{ - Round to } 7^\circ$$

# 1 MOVIES VERSUS BOOKS



## GRAPH ANALYSIS

From the prisoner of Azkaban and above, there are always more spells in the books than in the movies.

In the first two books/movies there are more in the movies.

The deathly Hallows have the most spells.

The order of the Phoenix has the second most spells in the books.

The movie with the most spells is the Deathly Hallows, however it is two movies combined.

The number of spells always increases until the Half Blood Prince where we see it drop.

## REFERENCES & ACKNOWLEDGEMENTS

We would like to acknowledge several different people for whom without, we would not have been able to do this MTQ.

Firstly, J.K Rowling, Chris Columbus and David Yates who were the author and directors of the Harry Potter series.

Secondly, our teacher Miss HB for helping us with our maths and supporting us and our idea.

Thirdly, to all the people we surveyed, for giving us their time and answering our question.

Finally, our parents who helped us arrange to meet with each other and were a constant support base for us.

We must also reference the sources we used, which were as of the following:

-Harry Potter books (borrowed from Milgate Primary School Library and Mahaliah's cousin)

-Harry Potter Wikia (to check for unknowns spells)

-123movies.to (to watch the movies)

-Pages, PicCollage and Photos (to present our work)

## CONCLUSION

In this investigation, we have been able to incorporate maths into one of the most unlikely subjects you could think of. Together, we have collected data and used it to draw accurate conclusions. We have used primary as well as secondary sources to complete this project. We have learnt new methods in maths while also using the ones we already knew of before.

We found out that the most spells were said in the books, which causes our prediction to be false since we estimated it to be the movies.

In total, the spell "Stupefy" is said the most in total of all the *books* and *movies*. It is said 49 times altogether which makes it a very common spell. The character who said it the most was Harry Potter whilst the most common location that Stupefy is said in, is the Department of Mysteries

Our investigation has led us to conclude that within all the *books*, there is a total of 290 spells altogether. We have found out that Harry Potter says the largest amount of spells with a percentage of 43%.

Altogether, there are accurately 482 spells said in the whole series (books and movies). We estimated that for both the books and movies, the Deathly Hallows would hold the most spells and we were correct.

We ended up using most of our mathematical methods that we aimed to use in our approach. Some of our inquiries, did bring us to a conclusion but others did not as we didn't pursue them due to lack of clear and accurate evidence.