

To our Year 6 Mathematicians,

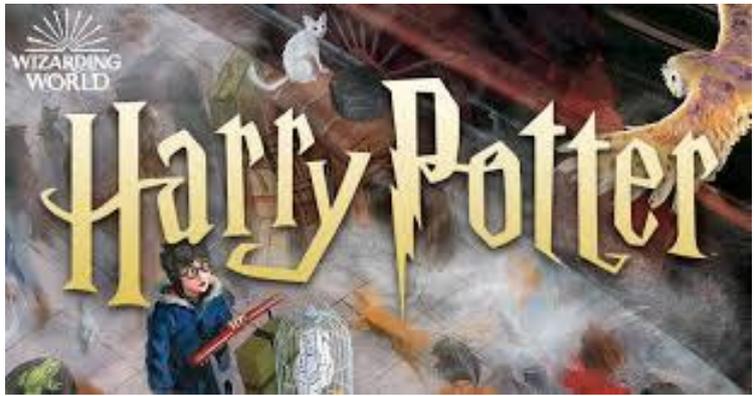
As your Maths teachers at Grace Academy Darlaston, we aim to develop your maths skills to help you realise...

'I can do Maths!'

We are focused on building up each pupil's confidence and resilience in Maths. We want each and every one of you to be able to see the relevance of Maths in the wider community. We aim to provide you with all the skills and knowledge you need to be able to tackle a range of problems in the future.

Therefore, to help you with this transition we have put together some maths problems which you need to solve to help Harry Potter with his wizarding problems. Don't worry if you can't help him with every section, but you should be able to attempt most of them. Each section you complete will be worth one "Grace Point", you need to bring this booklet in to **Mr Garner** on your first day back at the Academy.

We look forward to seeing you from The Maths Department



NAME.....



Section A: Platform Nine and Three-Quarters

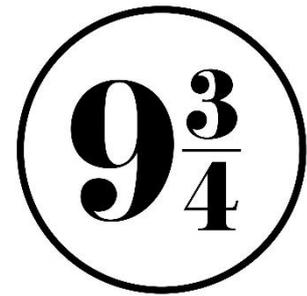
"Where is this school, anyway?"

"I don't know," said Harry, realising this for the first time. He pulled the ticket Hagrid had given him out of his pocket.

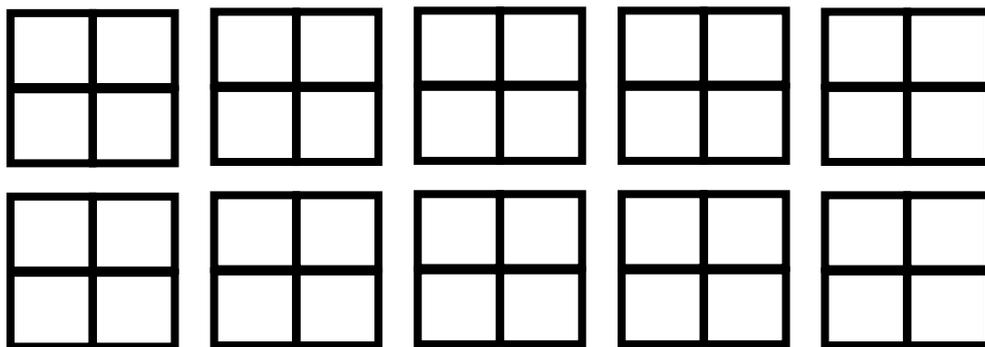
"I just take the train from platform nine and three-quarters at 11 o'clock," he read.

His aunt and uncle stared.

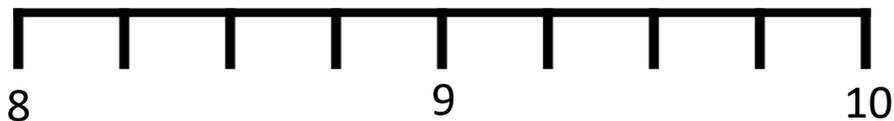
"Platform what?"



Question 1: Colour $9\frac{3}{4}$



Question 2: Using an arrow where would $9\frac{3}{4}$ be on the number line?



"All you have to do is walk straight at the barrier between platforms nine and ten..."

Define the work BETWEEN

Question 3: Think of three other ways you can you write $9\frac{3}{4}$

| | | |
|--|--|--|
| | | |
|--|--|--|

Be creative, think about words, pictures, symbols, other fractions, decimals, additions, subtractions

| Mental Arithmetic Question Set | Time | Score /50 |
|--------------------------------|------|-----------|
| 1 | | |

What you need to do here is time yourself completing all 50 questions without using a calculator.

Then write the time it took above. Remember to mark your work using a calculator to check how many you got correct.

| | | | |
|------------|-----------|------------|------------|
| 100 + 94 = | 4 x 8 = | 93 - 72 = | 12 ÷ 4 = |
| 89 + 78 = | 8 x 7 = | 102 - 71 = | 36 ÷ 9 = |
| 97 + 92 = | 8 x 10 = | 119 - 50 = | 50 ÷ 5 = |
| 83 + 50 = | 11 x 8 = | 99 - 57 = | 20 ÷ 5 = |
| 88 + 52 = | 3 x 6 = | 135 - 62 = | 20 ÷ 4 = |
| 64 + 75 = | 8 x 10 = | 107 - 53 = | 18 ÷ 6 = |
| 64 + 52 = | 10 x 12 = | 98 - 59 = | 48 ÷ 8 = |
| 82 + 65 = | 10 x 12 = | 92 - 51 = | 120 ÷ 10 = |
| 50 + 83 = | 7 x 9 = | 86 - 73 = | 88 ÷ 11 = |
| 97 + 84 = | 11 x 7 = | 114 - 76 = | 21 ÷ 7 = |

Mental Arithmetic Calculations

| | | | | |
|-----|-----------------|------|-------|---|
| 1) | 925 | + | 800 | = |
| 2) | 150 | × | 11 | = |
| 3) | 4.5 | + | 9.8 | = |
| 4) | 1767 | - | 562 | = |
| 5) | 100 | ÷ | 4 | = |
| 6) | 9.9 | + | 0.09 | = |
| 7) | 5 | × | 6 × 8 | = |
| 8) | 12 ² | | | = |
| 9) | 50 | % of | 520 | = |
| 10) | 5 | - | 3 | = |
| | 9 | | 9 | = |

Section B: Gringotts

“The gold ones are Galleons. Seventeen silver Sickles to a Galleon and twenty-nine Knuts to a Sickle, it's easy enough.”

Question 1: How many Knuts are there in a Galleon?



Question 2: Who has the most amount of knuts in their vault?

| Vault Holder and Contents | Working Out | Total Knuts |
|---|-------------|-------------|
| Lovegood 18 Sickles | | |
| Hagrid 82 Sickles | | |
| Lupin 624 Sickles | | |
| Sirius Black 100 Sickles and 50 Knuts | | |
| Diggory 15 Galleons | | |
| Rita Skeeta 8 Galleons and 8 Sickles | | |
| Cornelius Fudge 16 Galleons and 5 Sickles | | |
| Bellatrix 92 Galleons, 572 Sickles and 206 Knuts | | |

Question 3: Using the table below, calculate the following.

- I. What is 3 Galleons in pounds sterling?

- II. What is 20 sickles in Danish Kroner?

- III. What is 42 knuts in Swiss Francs?

- IV. If you have 200 Galleons and all currencies have 10 unit denomination notes, which would give you the most notes?

Table: Estimation of Wizarding Currency into Muggle Money

| | 1 Galleon | 1 Sickle | 1 Knut |
|-------------------------------|------------|-----------|----------|
| Pound Sterling GBP | £4.93 | £0.29 | £0.01 |
| U.S. Dollar USD | \$7.35 | \$0.46 | \$0.02 |
| Euro EUR | €5.90 | €0.34 | €0.01 |
| Japanese Yen JPY | ¥653.66 | ¥37.91 | ¥1.31 |
| Swiss Franc CHF | 7.75 Fr. | 0.45 Fr. | 0.02 Fr. |
| Australian Dollar AUD | \$7.96 | \$0.46 | \$0.02 |
| Canadian Dollar CAD | \$7.82 | \$0.45 | \$0.02 |
| Danish Kroner DKK | 43.94 kr. | 2.55 kr. | 0.09 kr. |
| South African Rand ZAR | R 54.01 | R 3.13 | R 0.11 |
| Indian Rupee INR | Rs. 354.67 | Rs. 20.57 | Rs. 0.71 |
| Hong Kong Dollar HKD | \$60.64 | \$3.52 | \$0.12 |
| Philippine Peso PHP | ₱342.24 | ₱19.85 | ₱0.68 |
| Thai Baht THB | ฿245.36 | ฿14.43 | ฿0.49 |
| Swedish Krona SEK | 53.81 kr | 3.12 kr | 0.11 kr |
| Serbian Dinar RSD | 631.25 RSD | 36.61 RSD | 1.26 RSD |
| Argentine Peso ARS | \$25.34 | \$1.49 | \$0.03 |

| Mental Arithmetic Question Set | Time | Score /50 |
|--------------------------------|------|-----------|
| 2 | | |

What you need to do here is time yourself completing all 50 questions without using a calculator.

Then write the time it took above. Remember to mark your work using a calculator to check how many you got correct. You should try and beat your score from last time.

| | | | |
|-----------|----------|------------|----------|
| 83 + 85 = | 8 x 10 = | 85 - 61 = | 42 ÷ 7 = |
| 77 + 55 = | 7 x 8 = | 87 - 53 = | 48 ÷ 6 = |
| 64 + 95 = | 11 x 5 = | 140 - 77 = | 35 ÷ 7 = |
| 74 + 65 = | 4 x 9 = | 93 - 77 = | 48 ÷ 4 = |
| 55 + 86 = | 5 x 10 = | 126 - 56 = | 99 ÷ 9 = |
| 69 + 54 = | 6 x 9 = | 114 - 56 = | 72 ÷ 9 = |
| 97 + 80 = | 8 x 8 = | 80 - 56 = | 12 ÷ 4 = |
| 98 + 85 = | 10 x 7 = | 124 - 53 = | 12 ÷ 3 = |
| 71 + 82 = | 7 x 5 = | 114 - 63 = | 18 ÷ 6 = |
| 62 + 88 = | 8 x 6 = | 93 - 78 = | 63 ÷ 9 = |

| Mental Arithmetic Calculations | | | | |
|--------------------------------|-----------------|------|-------|---|
| 1) | 971 | + | 900 | = |
| 2) | 210 | × | 7 | = |
| 3) | 6.6 | + | 5.9 | = |
| 4) | 1560 | - | 604 | = |
| 5) | 192 | ÷ | 8 | = |
| 6) | 6.7 | + | 0.02 | = |
| 7) | 3 | × | 8 × 9 | = |
| 8) | 10 ² | | | = |
| 9) | 40 | % of | 1270 | = |
| 10) | 9 | - | 7 | = |
| | 13 | | 13 | = |

Section C: Magical Sweets and Treats

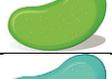
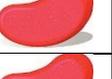
Around half past 12 there was a great clattering outside in the corridor and a smiling, dimpled women slid back their door and said "Anything off the Trolley, dears?"



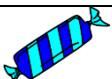
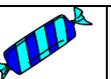
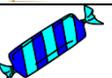
Question 1: Find how the value of each of the sweets.

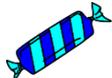
| | | | |
|---|---|---|----|
|  |  |  | 19 |
|  |  |  | |
|  |  |  | |
| 27 | | 21 | |

 =
 =
 =

| | | | |
|---|---|---|---|
|  |  |  | 8 |
|  |  |  | |
|  |  |  | |
| | 25 | -6 | |

 =
 =
 =

| | | | | |
|---|---|---|---|----|
|  |  |  |  | 30 |
|  |  |  |  | 24 |
|  |  |  |  | |
| 18 | | | | |

 =
 =
 =

| Mental Arithmetic Question Set | Time | Score /50 |
|--------------------------------|------|-----------|
| 3 | | |

What you need to do here is time yourself completing all 50 questions without using a calculator.

Then write the time it took above. Remember to mark your work using a calculator to check how many you got correct. You should try and beat your score from last time.

| | | | |
|------------|----------|------------|------------|
| 62 + 73 = | 6 x 6 = | 107 - 51 = | 90 ÷ 9 = |
| 91 + 91 = | 4 x 6 = | 92 - 70 = | 144 ÷ 12 = |
| 75 + 79 = | 6 x 5 = | 136 - 54 = | 24 ÷ 8 = |
| 80 + 73 = | 7 x 12 = | 124 - 77 = | 63 ÷ 7 = |
| 73 + 63 = | 5 x 10 = | 138 - 70 = | 72 ÷ 12 = |
| 100 + 75 = | 6 x 9 = | 117 - 73 = | 36 ÷ 12 = |
| 64 + 75 = | 6 x 9 = | 81 - 76 = | 18 ÷ 6 = |
| 52 + 59 = | 4 x 10 = | 135 - 68 = | 72 ÷ 6 = |
| 65 + 61 = | 11 x 8 = | 116 - 56 = | 28 ÷ 7 = |
| 75 + 90 = | 7 x 12 = | 97 - 77 = | 18 ÷ 3 = |

| Mental Arithmetic Calculations | | | | |
|--------------------------------|----------------|------|-------|---|
| 1) | 968 | + | 700 | = |
| 2) | 231 | × | 6 | = |
| 3) | 2.1 | + | 2.8 | = |
| 4) | 1615 | - | 551 | = |
| 5) | 200 | ÷ | 8 | = |
| 6) | 5.8 | + | 0.02 | = |
| 7) | 3 | × | 4 × 9 | = |
| 8) | 9 ² | | | = |
| 9) | 50 | % of | 420 | = |
| 10) | 7 | - | 5 | = |
| | 11 | | 11 | = |

Section D: Time Turner

“Where did you get that hourglass thing?”

“It’s called a Time-Turner,” Hermione whispered, “and I got it from Professor McGonagall on the first day back. I’ve been using it all year to get to all my lessons...”



Question 1: Put these times in order from the shortest to the longest.

- 3 hours
- 92 minutes
- 1.5 hours
- 600 seconds
- 120 minutes
- 2 hours
- 6000 seconds
- 2 ¾ Hours

Shortest

Longest

| | | | | | | | |
|--|--|--|--|--|--|--|--|
| | | | | | | | |
|--|--|--|--|--|--|--|--|

Question 2: One turn on the Time-Turner moves her forward or back 1 hour, but she has lost her watch! Can you work out what time she is on?

10:15am → **Forward 1 ½ hours** →

2:20pm → **Forward 2 ¼ hours** →

11:32am → **Forward 2 ½ hours** →

← **Backward 4 hours** ← 6:00pm

← **Backward 2 ½ hours** ← 3:35pm

← **Backward ¾ hour** ← 8:10pm

| Mental Arithmetic Question Set | Time | Score /50 |
|--------------------------------|------|-----------|
| 4 | | |

What you need to do here is time yourself completing all 50 questions without using a calculator.

Then write the time it took above. Remember to mark your work using a calculator to check how many you got correct. You should try and beat your score from last time.

| | | | |
|-----------|-----------|------------|------------|
| 87 + 51 = | 9 x 9 = | 139 - 78 = | 72 ÷ 8 = |
| 94 + 86 = | 10 x 7 = | 82 - 59 = | 36 ÷ 12 = |
| 90 + 89 = | 9 x 12 = | 113 - 60 = | 48 ÷ 4 = |
| 87 + 74 = | 8 x 12 = | 90 - 76 = | 132 ÷ 12 = |
| 55 + 66 = | 10 x 10 = | 131 - 61 = | 40 ÷ 10 = |
| 91 + 77 = | 4 x 10 = | 107 - 71 = | 40 ÷ 4 = |
| 92 + 93 = | 4 x 6 = | 137 - 70 = | 54 ÷ 6 = |
| 88 + 52 = | 12 x 11 = | 95 - 80 = | 45 ÷ 9 = |
| 93 + 84 = | 7 x 10 = | 119 - 64 = | 16 ÷ 4 = |
| 63 + 61 = | 11 x 8 = | 139 - 76 = | 33 ÷ 3 = |

| Mental Arithmetic Calculations | | | | | |
|--------------------------------|-----------------|------|------|---|-----|
| 1) | 954 | + | 400 | | = |
| 2) | 177 | × | 11 | | = |
| 3) | 3.1 | + | 4.6 | | = |
| 4) | 1834 | - | 508 | | = |
| 5) | 95 | ÷ | 5 | | = |
| 6) | 5.6 | + | 0.03 | | = |
| 7) | 4 | × | 3 | × | 8 = |
| 8) | 11 ² | | | | = |
| 9) | 50 | % of | 170 | | = |
| 10) | 6 | - | 5 | | = |
| | 9 | | 9 | | = |

Section E: Potions Master

"This is your copy of *Advanced Potion-Making*, is it, Potter?"

"Yes," said Harry, still breathing hard.

"This is the copy of *Advanced Potion-Making* that you purchased from Flourish and Blotts?"

"Yes," said Harry firmly.

"Then why," asked Snape, "does it have the name 'Roonil Wazlib' written inside the front cover?" ...



Question 1: The following recipe for Forgetfulness Potion makes enough for 5 people.

10 tablespoons of powdered Griffin claw

2.5 tablespoons of Salamander blood

30 rat tails

- I. Explain how do we make an ingredient list for 10 people?

- II. Explain how do we make an ingredient list for 1 person?

Question 2: The following recipe is for a Wit-Sharpening Potion which serves 10 people

4 ground scarab beetles

1 ginger root

2 tablespoons armadillo bile



- I. How much of each ingredient do you need for 30 people? Show working out.

- II. How many doses can you make with 100 beetles?

| Mental Arithmetic Question Set | Time | Score /50 |
|--------------------------------|------|-----------|
| 5 | | |

What you need to do here is time yourself completing all 50 questions without using a calculator.

Then write the time it took above. Remember to mark your work using a calculator to check how many you got correct. You should try and beat your score from last time.

| | | | |
|-----------|-----------|------------|------------|
| 88 + 68 = | 10 x 8 = | 128 - 52 = | 144 ÷ 12 = |
| 71 + 56 = | 7 x 6 = | 126 - 72 = | 60 ÷ 10 = |
| 95 + 94 = | 6 x 10 = | 126 - 73 = | 99 ÷ 11 = |
| 91 + 99 = | 9 x 6 = | 81 - 57 = | 96 ÷ 8 = |
| 98 + 51 = | 11 x 8 = | 132 - 60 = | 36 ÷ 3 = |
| 95 + 94 = | 11 x 11 = | 113 - 76 = | 30 ÷ 10 = |
| 85 + 93 = | 12 x 7 = | 107 - 55 = | 36 ÷ 3 = |
| 75 + 92 = | 11 x 7 = | 103 - 57 = | 66 ÷ 6 = |
| 93 + 92 = | 3 x 10 = | 86 - 52 = | 88 ÷ 11 = |
| 59 + 82 = | 11 x 9 = | 107 - 78 = | 96 ÷ 8 = |

| Mental Arithmetic Calculations | | | | |
|--------------------------------|----------------|------|-------|---|
| 1) | 989 | + | 200 | = |
| 2) | 138 | × | 5 | = |
| 3) | 8.7 | + | 8.7 | = |
| 4) | 1218 | - | 796 | = |
| 5) | 72 | ÷ | 4 | = |
| 6) | 7.3 | + | 0.04 | = |
| 7) | 4 | × | 4 × 7 | = |
| 8) | 6 ² | | | = |
| 9) | 70 | % of | 750 | = |
| 10) | 9 | - | 8 | = |
| | 13 | | 13 | = |

Section F: The Knight Bus

“Welcome to the Knight Bus, emergency transport for the stranded witch or wizard. Just stick out your wand hand, step on board, and we can take you anywhere you want to go. My name is Stan Shunpike and I will be your conductor this eve”.



Question 1: Look carefully at the time table below for the buses that run around Hogwarts.

| Station Stop | Bus A | Bus B | Bus C |
|--------------------------|-------|-------|-------|
| <i>Herbology</i> | 06:30 | 08:30 | 10:30 |
| <i>Umbridge’s Office</i> | 06:40 | 08:40 | 10:40 |
| <i>Boy’s Dormitory</i> | 07:00 | - | 11:00 |
| <i>Clock Tower</i> | 07:20 | 09:20 | 11:20 |
| <i>Owlery</i> | 07:30 | 09:30 | - |
| <i>Stone Circle</i> | 07:35 | 09:35 | 11:35 |
| <i>Hagrid’s Hut</i> | 07:50 | - | 11:50 |
| <i>Great Hall</i> | 08:10 | 10:10 | 12:10 |
| <i>Boat House</i> | 08:20 | 10:20 | - |
| <i>Viaduct</i> | 08:35 | - | 12:35 |
| <i>Stone Bridge</i> | | | |

Answer the questions below using the information from the timetable.

- I. It takes 2 hours and 22 minutes to get from Herbology to Stone Bridge on Bus A. Complete the timetable for Stone Bridge.
- II. It takes 2 hours and 41 minutes to get from Herbology to Stone Bridge on Bus B. Complete the timetable for Stone Bridge.
- III. It takes 2 hours and 37 minutes to get from Herbology to Stone Bridge on Bus C. Complete the timetable for Stone Bridge.
- IV. How long does it take to get from Herbology to Stone Circle?
- V. How long does it take to get from Hagrid’s Hut to Viaduct?
- VI. Harry needs to get to Hagrid’s Hut for 8:30. What bus will he need to get?
- VII. If Harry is at the Boy’s Dormitory. He needs to get to the Boat House, what is the last bus he will be able to catch?

| Mental Arithmetic Question Set | Time | Score /50 |
|--------------------------------|------|-----------|
| 6 | | |

What you need to do here is time yourself completing all 50 questions without using a calculator.

Then write the time it took above. Remember to mark your work using a calculator to check how many you got correct. You should try and beat your score from last time.

| | | | |
|-----------|----------|------------|-----------|
| 56 + 82 = | 11 x 6 = | 115 - 56 = | 70 ÷ 10 = |
| 72 + 73 = | 7 x 11 = | 134 - 67 = | 35 ÷ 7 = |
| 83 + 53 = | 7 x 7 = | 91 - 59 = | 84 ÷ 12 = |
| 94 + 52 = | 8 x 12 = | 99 - 68 = | 28 ÷ 4 = |
| 86 + 88 = | 6 x 5 = | 80 - 80 = | 84 ÷ 7 = |
| 88 + 73 = | 5 x 9 = | 102 - 63 = | 84 ÷ 7 = |
| 96 + 61 = | 8 x 5 = | 105 - 64 = | 32 ÷ 4 = |
| 68 + 90 = | 3 x 5 = | 122 - 74 = | 35 ÷ 7 = |
| 53 + 69 = | 8 x 11 = | 104 - 71 = | 88 ÷ 11 = |
| 56 + 56 = | 9 x 10 = | 83 - 56 = | 33 ÷ 11 = |

Mental Arithmetic Calculations

| | | | | |
|-----|----------------|------|-------|---|
| 1) | 993 | + | 100 | = |
| 2) | 203 | × | 12 | = |
| 3) | 2.4 | + | 9.2 | = |
| 4) | 1273 | - | 643 | = |
| 5) | 133 | ÷ | 7 | = |
| 6) | 7 | + | 0.04 | = |
| 7) | 6 | × | 3 × 4 | = |
| 8) | 3 ² | | | = |
| 9) | 30 | % of | 1250 | = |
| 10) | 4 | - | 1 | = |
| | 6 | | 6 | = |

Section G: Triwizard Tournament

“Finally, I wish to impress upon any of you wishing to complete that this tournament is not to be entered into lightly. Once a champion has been selected by the Goblet of Fire, he or she is obliged to see the tournament through to the end. The placing of your name in the goblet constitutes a binding magical contract. There can be no chance of heart once you become a champion. Please be very sure, therefore that you are wholeheartedly prepared to play before you drop your name into the goblet. Now, I think it is time for bed. Good night to you all.”



Question 1:

Harry has to face a dragon in the first round of the Triwizard cup. The dragon he fought was picked by picking a name out the bag.

There was a Chinese Fireball, Common Welsh Green, Swedish Short Snout and a Hungarian Horntail.

What was the probability of Harry picking:

- I. A Welsh Green
- II. A dragon breed originating from Europe
- III. A dragon breed originating from Asia

Question 2:

CEDRIC DIGGORY puts all the letters of his name into a bag and takes one at random.

What is the probability that he takes:

- I. The letter A?
- II. A vowel?
- III. The letter D?
- IV. A consonant?

Question 3:

The Triwizard Tournament was a magical contest held between the three largest wizarding schools of Europe: Hogwarts, Durmstrang Institute, and Beauxbatons Academy of Magic, each school being represented by one Champion. In total 15 pupils put their names into the Goblet of fire. Only 4 pupils from Hogwarts, 7 from Durmstrang and 4 from Beauxbatons.

- I. Which school had the greatest chances?
- II. What was the probability that Harry's name was chosen?