



Numeracy Magazine

Volume 1, Issue 2

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Summer Issue: End of a Year

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Hello all students, peers, teachers, parents and friends of St Anne's.

For those that waited, we did indeed miss an issue but one thing for sure we were never going to end the year without one.

In this issue you will find more articles from our ambassadors and news on things we did throughout the year. Towards the back pages you will find more puzzles and

crosswords and the answers to the puzzles and crosswords of the previous issue.

This year was the birth of our magazine. Our intention has been to share interesting things



about numeracy, give any and all students a voice to talk about things that interest them and to have some fun. We hope you have enjoyed reading our previous issue and we hope you enjoy reading this one too.

We wish you a great summer.

Mr Davies-Alexis & The Numeracy Ambassadors.

Numeracy: Year's end

What we have done this year?

Numeracy league



This year at St. Anne's we introduced the Numeracy League. The Numeracy League is a Kahoot based competition played amongst the KS3 Students of our school. The competition sees students compete against each other once every half term. The student who accumulates the most points across the 6 games is crowned numeracy champion of the year and this year we are pleased to say our champion for Key Stage 3 is Elizabeth Davis 8T who received a Post Office 'All in One' gift card and our congratulations on the student notice board.



Numeracy Channel

This year was the launch of the Numeracy Channel, The Numeracy Channel is a forum on our school (Microsoft) Teams. Each day in the channel students from our school can and were able to take part in themes inspired by numeracy. Monday was a weekly puzzle, Tuesday was math inspired poetry, Wednesday students received articles or videos which they could watch on interesting topics; Thursday a quick maths challenge and Friday, called Friday fun, was used to encourage students to play games over the weekend. This year we would like to make a shout out to Natalia Maciejewska 8C, Wiktoria Fiedura 9K, Michelle Ewelike-Leslie 7C, and Jaina Dabeedyal 8B whose participation and presence on the channel was very impressive.

Numeracy Club

We also had the numeracy Club for KS3 every Tuesday at Lunchtime, where we could play games, research and get educational support.

Assemblies and Competition.

At the start of the year Mr Davies-Alexis presented an assembly to all year groups in KS3 and KS4 on the importance of numeracy. His message was to highlight how numeracy impacts every facet

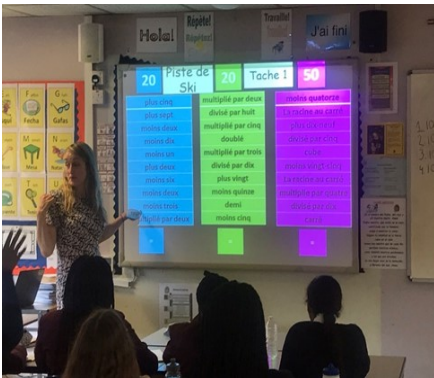
of our lives whether it is in conventional education, how we make decisions around time, money and space or the debilitating or liberating effect of having weak or strong numeracy skills.

KS4 was given the challenge of sharpening and demonstrating their numeracy skills by taking part in the wedding planner project which required the girls to team up into groups of up to 5 to plan a wedding with certain conditions and budget. The challenge was very successful and the group comprising Jessica Okeneme 11K, Emma Galano 11B, and Erin O'Callaghan 11K won the challenge with their proposal.

Lastly, we had a very successful numeracy week. Numeracy week was made up of a number of games and activities that the students could get involved with inside and outside of class. Some of the activities included an escape room, a mathematical treasure hunt, a Whodunit Murder Mystery and many more.

On the next page you will find pictures and some of the activities that many students participated in during Numeracy week.

Numeracy & French with Ms Sheaf.



Ninja Wrath with Year 7



Room of Riddles with Year 8



Diamond Heist: Escape room with Year 8



Numeracy Activity in R.E: Find and Name the Books

I once made a remark about the hidden books of the Bible (merely by a fluke). It kept people looking so hard for the facts and for others it was a revelation. Some were in a jam, especially since the name of the books were not capitalised, some were hidden in words and others found within two but the truth finally struck home to numbers of readers. To others it was a real job. We want it to be a most fascinating few moments for you. Yes, there will be some really easy ones to spot. Others may require judges to help them. I asked my friend Malachi for help.

I will admit it usually takes a minister to find one of them, and there will be loud lamentations when it is found. A little lady says she brews a cup of tea so she can concentrate better. Research has shown that something in our gene is responsible for the difficulty we have in seeing the books. See how well you can compete. Relax now.

There are Seventeen books of the bible in this story. Can you find them?

Numeracy Activity

Food technology: Recipes

Below is the recipe for making sponge pudding for six people:

100g of margarine

100g of caster sugar

2 eggs

225g of flour

30 ml milk

Work out the amount of each ingredient needed to make sponge pudding for 15 people.

Numeracy Activity: French

Mathematical Ski run

2	Piste de Ski	15	Tache 4	20
multiplie par deux	multiplie par deux	multiplie par deux	multiplie par deux	quart
plus six	multiplie par deux	multiplie par deux	multiplie par deux	carre
plus dix	divise par six	divise par six	divise par six	plus trente-cinq
plus trois	plus six	plus six	plus six	plus quarte
plus sept	double	double	double	La racine au carre
moins deux	plus huit	plus huit	plus huit	double
moins deux	demi	demi	demi	La racine au carre
plus un	multiplie par trois	multiplie par trois	multiplie par trois	moin deux
plus onze	plus cinq	plus cinq	plus cinq	cube
moins dix	divise par cinq	divise par cinq	divise par cinq	plus quatre
=	=	=	=	=

Travel down the slope and calculate the number that is found at the end.

Enjoy.

Numeracy Ambassadors

My Mathematic Inspiration



Everybody thinks you are either good or bad at maths, your ability is set and your skill is God given. I think that we are all mathematicians at varying degrees. But, I think the majority of our math ability comes down to resilience and hard work! If you try your best during your maths classes you will quickly find yourself doing better, no matter what age you are. Living proof of this is “Noam Elkies” who was recognised as one of the world’s youngest and most decorated mathematicians.

Noam Elkies, also formally known as Noam David Elkies, was born on 25 August 1966. Elkies was born to an engineer Father and a piano teacher Mother. He attended high school for only 3 years and graduated at 15.

At 14, he was awarded a Gold medal at the 22nd International Mathematical Olympiad, receiving a perfect score of 42. He was also one of the youngest in the world to achieve this.

His mathematical abilities emerged from such a young age and this made his chances to become successful in the future very easy.

His achievements don’t stop there. In 1987, he proved that an elliptic curve over rational numbers is super singular at infinitely many primes. In 1988, he found a counter example to Euler’s sum of power conjecture for fourth powers. In 1993, he was made full Professor at the age of 26. This made him the youngest full Professor in the history of Harvard.

After this followed his invitation to speak at the international congress of Mathematics in Zurich. In 2004, he received a Lester R. Ford Award and the Levi L. Conant prize for his contributions to the mathematics community.

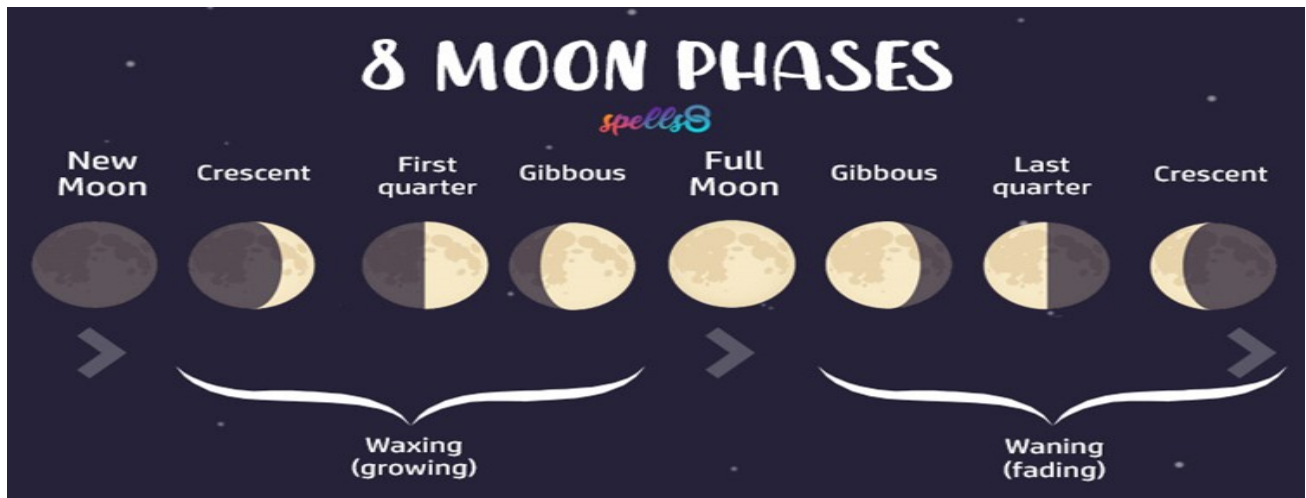
Noam has also been proactive in showing the impact math

has in things outside of his discipline.

Noam’s interests have also lain in music; a discipline he has practiced since he was a young child, being highly proficient at the piano. Noam has incorporated his love of math into music and helps to highlight its connection and relevance and as a result he is on the Advisory Board of the Journal of Mathematics and Music.

So, if you know you want to be brilliant at a discipline or more, you can, it’s never too late to start. You don’t have to choose one over the other and for Noam to achieve all this at such a young age I hope it can inspire you to believe you can achieve things like this too.

Kayla Edwards and
Marthe Menase 9S



In this article we will discuss how the moon cycle works and what it can be used for.

The moon cycle, also known as the lunar cycle, references the shape of a section of the moon that is sunlit and viewed from Earth. Just like daytime on our lovely planet, the moon is lit up by the sun. However, we can't always see the full moon. This is because the moon cycle goes through phases and restarts every 27- 30 days due to the position of the moon around our earth.

The Lunar Phases

As you can see in the picture above there are eight moon phases. The first moon phase is the **new moon**. This is a phase where we cannot see the sunlight that reflects off the side of the moon. The next moon phase is the **waxing crescent**, which is when much of the far side of the moon is not visible, meaning that we can only see

a slightly round sliver on the right side. After this phase follows the **first quarter**, which is when we can see half of the moon. And then the **waxing gibbous**, which is when most of the moon (except for a tiny sliver to the right) is seen. Next is the **full moon**. This is when the whole moon and this is probably our favourite moon phase, since we find it breathtakingly mesmerising! Moving on, follows the **waning gibbous**, which is when most of the left side of the moon can be seen, then the **last quarter**, which is when half of the left side of the moon can be seen; and lastly, the **waning crescent**, when the minority of the moon's left side can be seen. This is the moon cycle.

What is the moon cycle used for?

One thing several religions such as Islam and Hinduism



use the moon cycle for is to work out when religious festivals are going to take place. For example, Muslims can tell when it's the start of Eid-ul-Fitr since there is a **new moon** at the end of the month of Ramadan. Other religious calendars such as the Hebrew and Chinese calendars also use **modified lunisolar calendars** in which days or months are added to the lunar year to coincide with the solar cycle. And for those that follow folklore and supernatural, did you know that the transformation and strength of a werewolf is determined by the moon too?

Alexia & Amelia Malaluan

Formula One



In the next couple of issues, I would like to talk about formulas. Let's not confuse this with what is seen in chemistry, which are chemical structures or components almost artistically represented on pieces of paper, white boards and Perspex windows. No. I'm talking about mathematical /scientific formulas that are called equations which are key to solving problems quickly and effectively.

To truly understand a formula, it is fair to say one must know the knowledge behind it. So I'm going to give you a list of formulas that I think are important and explain the uses behind some of them so you may discover why they are so important.

Number 1. Celsius to Fahrenheit

Temperature scales provide a way of measuring how hot or cold a body, surface or space is. The main scales of

temperature are Celsius, Kelvin and Fahrenheit. Celsius or centigrade is a scale. The symbol used for Celsius is °C. On the Fahrenheit temperature scale, water freezes at 32° Fahrenheit and boils at 212° Fahrenheit. The symbol used for Fahrenheit is °F.

25° can be converted to Fahrenheit using the Celsius to Fahrenheit conversion formula.

Celsius to Fahrenheit formula for a given value can be expressed as,

$$F = \frac{9}{5}C + 32$$

Countries which use Fahrenheit as a measure of temperature are United States, Liberia, Bahamas and the Cayman Islands. So if you ever pass there or in the future work with these nations, being able to understand their scale of measuring temperature could be the difference between life or death.

Number 2. Standard Deviation

Standard deviation is important because it tells us how spread out the values are in a given dataset. Standard

deviation is a quantity that expresses by how much the members of a group differ from the mean value for the group.

$$\sigma = \sqrt{\frac{\sum(x_i - \mu)^2}{n}}$$

σ = Standard deviation of data set

n = Size of data set

x_i = Each value of the data set

μ = The data set mean

It shows how much variation there is from the "average" (mean). A low standard deviation indicates that the data points tend to be very close to the mean, whereas high standard deviation indicates that the data are spread out over a large range of values.

Teachers use it to determine how far certain students are from the mean (average) of the class. Meteorologist use it for weather forecasting. Traders in the city use it to determine the volatility of stocks in the stock market.

Number 3:

Material balance in all systems

Input + generation = output + accumulation + consumption

The formula above aligns with the scientific law which is conservation of mass. The understanding is that in a system that promotes chemical or physical change, the mass of the atoms (chemicals) that enters the system and is used up or processed will be the same mass even when transformed into something new. At it's basis, atoms can be transformed, they are not destroyed, they just become something new.

But the formula above is a formula about material balances and it's a fundamental that is displayed in engineering, manufacturing, cooking and some aspects of business. It helps the world tick. It refers to resources and materials sometimes called 'the feed' that enters a system or mechanism; it is processed, transformed or consumed to produce a desired outcome, product or effect.

A Fun One:

Dr James Hind at Nottingham Trent University was commissioned by an insurance company to come up with a formula for the ultimate snowman. The formula examines a number of variables when assessing snowman supremacy, including height, number and diameters of snowball tiers,

freshness and purity of snow, accessories, outdoor temperature and the 'golden ratio' ϕ , which is used as a marker for beauty and determines the visual appeal of objects.

EQUATION:

$$= \left(\frac{20e^{-L}}{1 + |Te^c|} \right) + \left(\frac{\pi(27 + \sum_{i=1}^3 A_i)}{3 \left| \frac{N}{E} \right| + |\pi - B|} \right) + \left(\frac{46}{1 + \left| 1 - \left(\frac{\phi}{H} \right) \right|} + \sum_{j=1}^{j=4} L_j \right) \left(\frac{1 + \left| 1 - \left(\frac{\phi}{H} \right) \right|}{1 + \left(\phi - \frac{B_2}{B_1} \right)^2 + \left(\phi - \frac{B_3}{B_2} \right)^2} \right)$$

The first term describes the purity of the snow. It gives a maximum score of 20 out of 100, with the score falling for any pieces of litter or grass caught up in the snow, the time since the snow fell and the temperature rising above freezing.

$$\left(\frac{20e^{-L}}{1 + |Te^c|} \right)$$

The middle term gives a maximum score of 30 and is about the 'extras' such as the accessories and facial features.

$$\left(\frac{\pi(27 + \sum_{i=1}^3 A_i)}{3 \left| \frac{N}{E} \right| + |\pi - B|} \right)$$

Lastly, the bottom term is about size and proportions, accounting for half of the total score, making it the most important.

$$\left(\frac{46}{1 + \left| 1 - \left(\frac{\phi}{H} \right) \right|} + \sum_{j=1}^{j=4} L_j \right) \left(\frac{1 + \left| 1 - \left(\frac{\phi}{H} \right) \right|}{1 + \left(\phi - \frac{B_2}{B_1} \right)^2 + \left(\phi - \frac{B_3}{B_2} \right)^2} \right)$$

The best proportions were discovered as follows:

Height – 64-inches (1.62 metres)

Tiers – three

Head diameter – 12-inches (30cm)

Body diameter – 20-inches (50cm)

Base diameter – 31-inches (80cm)

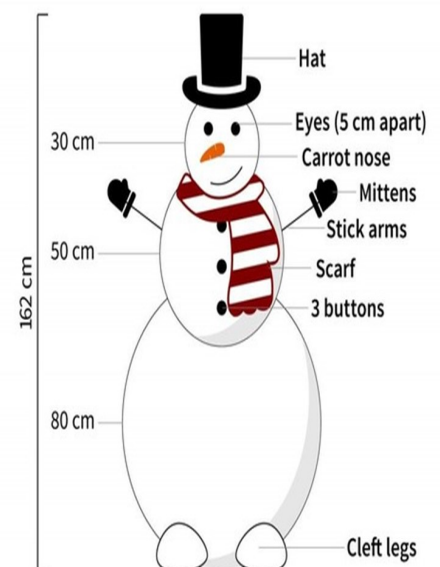
Carrot nose – 1.5-inches (4cm)

Distance between eyes – 2-inches (5cm)

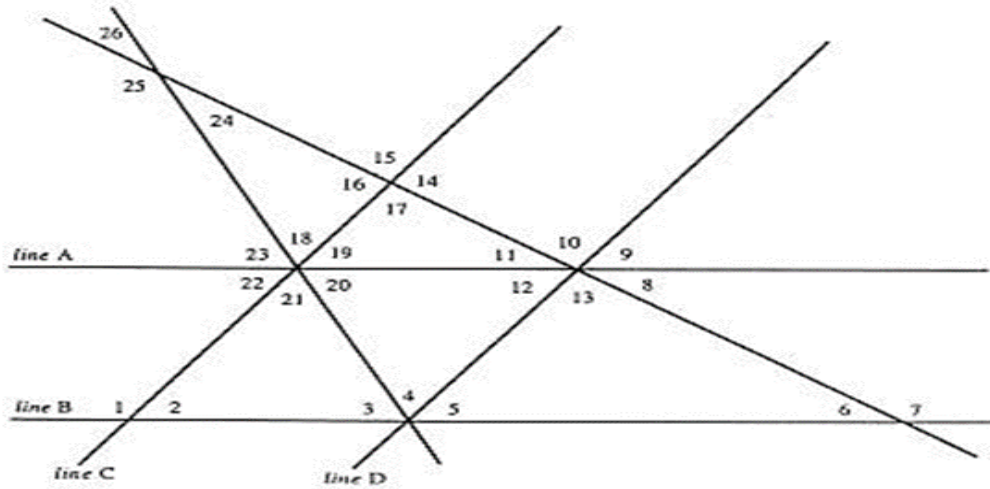
Accessories – hat, scarf, gloves

Buttons – Three, equal

The perfect snowman



Using your knowledge of angles, ie Opposite angles are equal, angles on a straight line add up to 180° , recognising corresponding, alternate and supplementary (co-interior) angles, complete the challenge below.

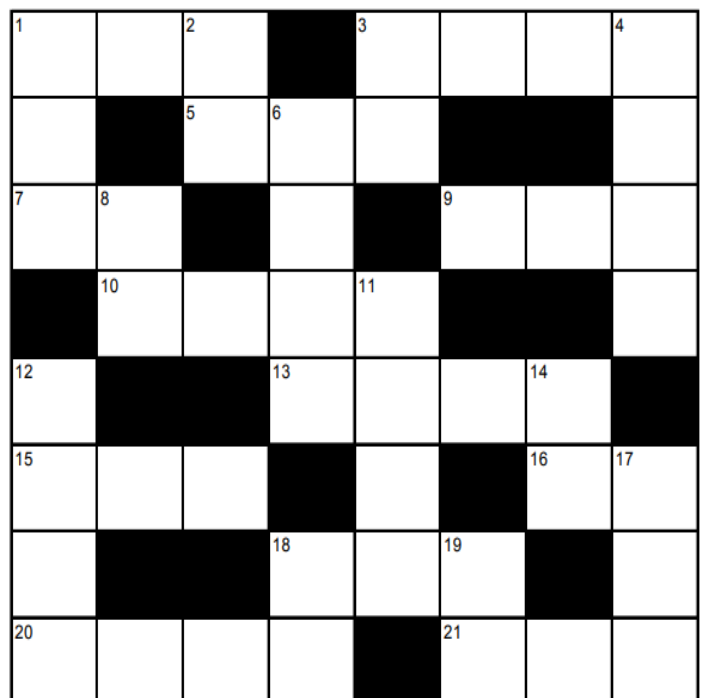


Given that $line\ A \parallel line\ B$ and $line\ C \parallel line\ D$ and $m\angle 1 = 110^\circ$ $m\angle 3 = 55^\circ$ $m\angle 13 = 90^\circ$

- | | | | | |
|----------------|----------------|----------------|----------------|----------------|
| $m\angle 1 =$ | $m\angle 2 =$ | $m\angle 3 =$ | $m\angle 4 =$ | $m\angle 5 =$ |
| $m\angle 6 =$ | $m\angle 7 =$ | $m\angle 8 =$ | $m\angle 9 =$ | $m\angle 10 =$ |
| $m\angle 11 =$ | $m\angle 12 =$ | $m\angle 13 =$ | $m\angle 14 =$ | $m\angle 15 =$ |
| $m\angle 16 =$ | $m\angle 17 =$ | $m\angle 18 =$ | $m\angle 19 =$ | $m\angle 20 =$ |
| $m\angle 21 =$ | $m\angle 22 =$ | $m\angle 23 =$ | $m\angle 24 =$ | $m\angle 25 =$ |
| $m\angle 26 =$ | | | | |

Cross word Puzzle 2

Clues Across	Clues Down
1: 983—509	1: 1342 - 896
3: 1134 + 1209	2: 344 divided by 8
5: 1428 divided by 4	3: Three-quarters of 36
7: 20% of 335	4: 1765 + 1532
9: 53 x 3	6: 1847 x 3
10: 1721 x 2	8: 2nd prime number after 70
13: 4935 - 3112	11: 5678 divided by 2
15: One third of 759	12: Seven-eighths of 2552
16: 522 divided by 9	14: 7 x 5
18: 25% of 1180	17: 80% of 1040
20: 1133 + 2542	18: 5 squared
21: 66 x 12	19: Half of 114



Eight basketball teams reached the quarter-finals of the March Invitational Tournament, in which a single loss means elimination.

The nicknames of these teams are the Armadillos, Badgers, Caribous, Ducks, Elks, Falcons, Gophers, and Hedgehogs. The teams were seeded (ranked) from 1st (highest) through 8th (lowest), then written into the quarter-final columns on the left side of the table below, next to their ranks (which appear in parentheses).

From the following clues, can you figure out which team was seeded where, and complete the table to determine who won the tournament?

Clues

Of the seven games played during the event (four in the quarter-finals, two in the semi-finals, and one in the finals), the higher-ranked team won only three times.

The Falcons were one of just two quarter-final winners who were ranked higher than their opponent.

One finalist was seeded two ranks higher than the other finalist.

The 7th-seeded team was eliminated by the Hedgehogs.

The Ducks reached the finals by defeating teams ranked both lower and higher than themselves.

The Gophers, who were not the 4th seed, ranked just below the Falcons.

The Armadillos played more than one game.

The Badgers were ranked higher than the Caribous but lower than the Elks.

Solution to the Problem:

The Hedgehogs won the tournament.



Cross word Puzzle 1

Clues Across		Clues Down	
1: 191 x 2	3: 1327 + 2404	1: 20% of 1770	2: Square root of 484
5: 50% of 480	7: 6 x 7	3: Three-quarters of 40	4: 4722 - 2856
9: 424 divided by 4	10: 1986 + 2971	6: 1872 + 2879	8: 264 divided by 11
13: 5056	15: 41 x 5	11: 4035 + 3245	12: One third of 3699
16: 75% of 76	18: 953 - 547	14: 75% of 60	17: 1453 - 741
20: 1273 + 2358	21: 8	18: First prime number after 40	19: Half of 124
21: 1856 divided by 8			

PUZZLE 1

1		2		3		4	
3	8	2		3	7	3	1
		5	6				
5		2	4	0			8
7	8				9		
4	2		7		1	0	6
	10			11			
	4	9	5	7			6
12			13			14	
1			1	2	6	4	
15						16	17
2	0	5		8		5	7
			18		19		
3			4	0	6		1
20					21		
3	6	3	1		2	3	2