



The
Brilliant
Club

St Michael's Catholic College
Llewellyn Street
London SE16 4UN
Tel: 020 7237 6432
www.stmichaelscollege.org.uk
contact@stmichaelscollege.org.uk

Good News
for
THE LINK
Newsletter for the pupils, parents and staff of
St Michael's Catholic College
Issue 182 - 28th February 2021

The Brilliant Scholars 'graduated'

In September 12 bright minds from Year 8 started to work with a PhD candidate from Oxford to explore 'What makes a long and happy life?'. Students did reading, had virtual seminars, were set weekly work outside their lessons and wrote a university-style assignment. This substantial essay was marked using a university grading system and we are delighted to have had our highest EVER number of first-class graduates.

We offer our congratulations to Isioma, Rahelyn, Julia, Ruby, Ollie, Paul and Daniele for completing the demanding but rewarding course under extraordinary circumstances.

In the next slides are two extracts from their superb submissions.

A study on life expectancy in Brazil and Hong Kong and recommendations for improvements in Brazil

In this paper, we will analyse how life expectancy is affected by different factors, and we'll examine and provide recommendations to improve such scores in Brazil and Hong Kong.

Life expectancy is the average length of time an organism (in our case people) is expected to last. This can be influenced by different factors, such as geographical, cultural and economic. In addition, gender also plays a very important role and affects life expectancy as life satisfaction and happiness scores also do. This is measured using a Likert scale (it is a rating system designed to measure people's attitude, opinions or perceptions. Usually used in questionnaires and responses typically include "strongly agree, agree, disagree etc.). We will be investigating each factor and their impact on life expectancy and the countries we will analyse are Brazil and Hong Kong.

I have chosen to present Brazil in this report because it is a country full of challenges where different government schemes are making an impact. It is, however, a country where there is a great opportunity to improve quality of life and therefore, life expectancy. I have also chosen to study Hong Kong due to its unstable correlation between average happiness scores and life expectancy.



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An Overview of Life Expectancy in Chad and the United States



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In this essay, I will be using the two nations of the United States and Chad to show the variation in life expectancy around the world. Life expectancy is the average number of years a person in a particular location is expected to live. This concept is important because it is a prediction of when we will die. The conditions of nations can also be indicated through well being and life expectancy data. I will describe the current states of the chosen countries and give recommendations for the Republic of Chad. I decided this after being fascinated by the vast gap in life expectancy between countries. Chad was on the lower end of the spectrum therefore in this essay I will be explaining ideas to change this.

The United States of America: Profile

The United States of America is part of 'the Western world' which is stereotyped to be where the leading nations are located. From birth, citizens are expected to live until 78.5 years as demonstrated in the graph below (1). The life expectancy of this nation has been steadily increasing without major fluctuations.

To ensure data is correct, I compared the site from which the graph was taken to 'the BBC'. The BBC life expectancy calculator deduced that a newborn baby will live until 79 years in America (2). This was the same number shown by the world bank indicator so I can be sure it is correct.

Life expectancy depends on many factors including poverty, access to education and lifestyle choices, for example, smoking or obesity. However, all these factors are under the umbrella of wellbeing. Wellbeing is a term used to describe the state of comfort, safety and happiness. Life expectancy heavily depends on wellbeing as shown in Chad's profile through the 'happiness' table. In 1980, the average life expectancy across sexes was 73.7 years (3). The US life expectancy has been steadily rising since then apart from the period from 2014 to 2018 where it declined. The US life expectancy is slowing in its rise, however. Evidence to support this is that in 2018, the life expectancy was 78.81 years which was a 0.03% decrease from the previous year (4). A reason why Americans are living shorter lives could be because of the rise in obesity levels across the country. America is infamous for its fast food. More than $\frac{2}{3}$ of all US citizens are obese and/or overweight which could be the reason people have higher mortality rates (5).

Another reason for slow-rising life expectancy could be due to the rise of suicide rates in America. They increased by 33% since 1999 and are still on the rise (6). This isolates America as everywhere else, suicide rates are declining.

Although the US life expectancy can be viewed as slowing, living for, on average 80 years is formidable. The reason for the country's high life expectancy could be because the economy is currently ahead of the world. The average middle-aged American makes \$50,000 per year (equivalent to £38,000) (7). In January 2018, '552,830' people were counted as homeless (8). This means that homeless people make up merely 0.2% of the whole US population. Although no one deserves to be without a bed at night, America has less homeless people than some other parts of the world. For example, in the Philippines, out of their population of 106 million, 4.5 million are homeless (9).

In conclusion, although the American mortality rates may be rising more slowly, expecting to live for 80 years is an adequate amount of time.



ART



This term, Year 9 students have been exploring global issues ranging from Black Lives Matter to Climate Change. Emmanuela M. explains the meaning of her artwork, "The earth is our only home. A special gift given to us by God, therefore we must be stewards of the earth."





GEOGRAPHY



The Geography A level students attended an online lecture hosted by the Royal Geographical Society. The lecture focused specifically on the effects climate change is having on the south coast of England, especially in regards to rising sea levels and changing storm patterns. The lecturers first began by explaining the purpose of their research (to explore the effects of climate change on sea levels and storms) and then explained what their research has shown. Based on their findings they concluded that there are three main reasons to be concerned: mean sea level rise, increased wave height and increased wave power. The lecturers also explained that this increases the threat of severe flooding in many coastal regions and more and more people are at risk of experiencing the effects of climate change. Overall, the lecture was a fantastic experience and highlighted the importance of acting now in order to prevent future problems. **Alfie S, Year 12**

? Report and Infographic UNIVERSITY OF Southampton

Uploaded onto SCG/SCOPAC website - <https://southerncoastalgroup-scopac.org.uk/scopac-research/scopac-storm-analysis-study/>

SCOPAC RESEARCH PROJECT

Coastal storms: detailed analysis of observed sea level and wave events in the SCOPAC region (southern England)

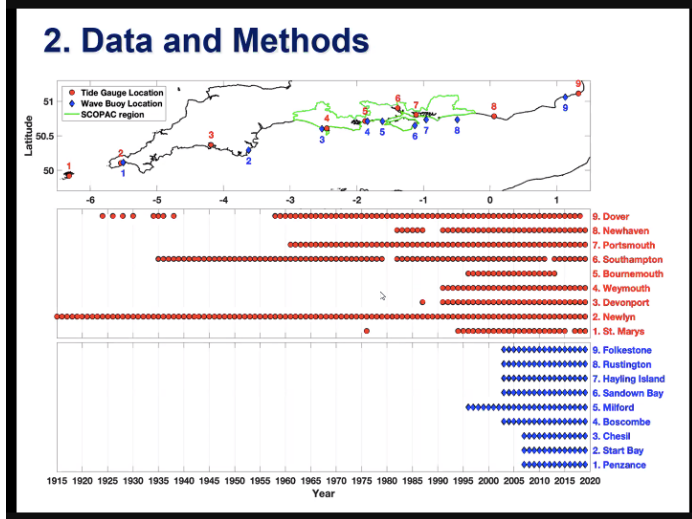
Date: January 2020
Version: 1.1

BCP University of Southampton Coastal Partners

BCP - SCOPAC 2020 Rev 1.1

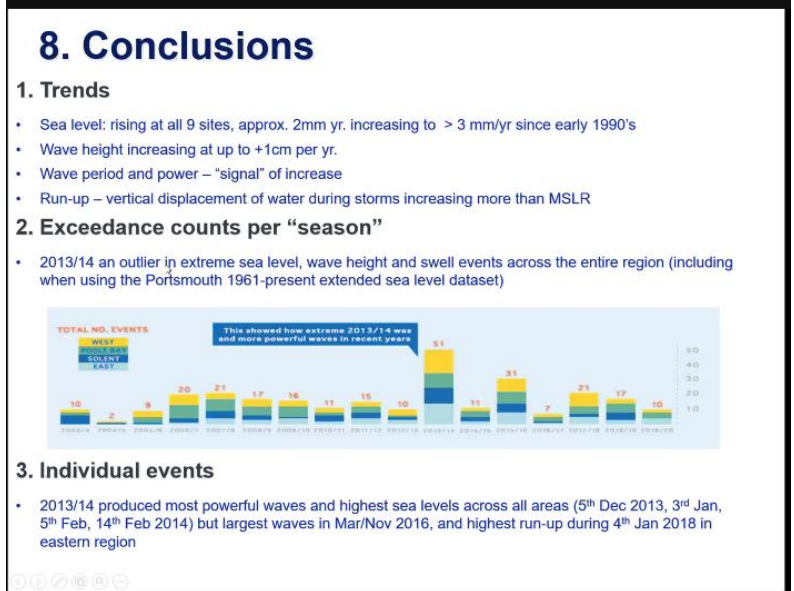


GEOGRAPHY



The Year 12 Geography students have been commended for the way they engaged with the research and applied their A Level content understanding to accurately analyze figures and dissect the comprehensive research produced by academics in coastal management. The lecture was based on new SCOPAC research which suggests a trend of increased storminess and sea level rise for England's south coast, making the case for ongoing and enhanced investment into flood and coastal erosion risk management. Well done to Ellie F. whose question was praised by the panelists and discussed extensively.

Miss Hayden





HISTORY



A Reflection on Holocaust Memorial Day

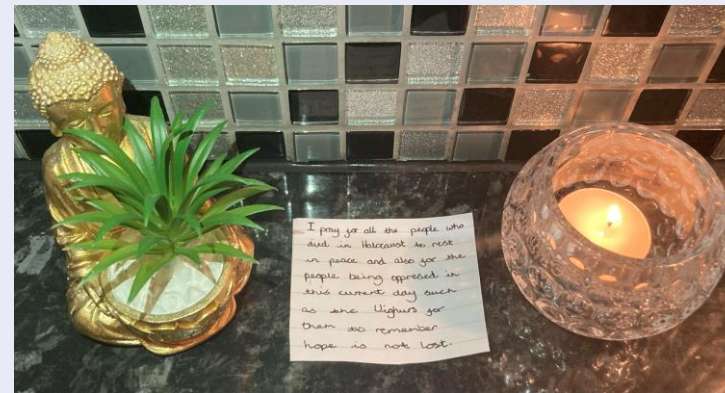
On 27th January St Michael's commemorated Holocaust Memorial Day. I believe that it is important to reflect and remember the Holocaust annually because it helps those in modern society understand another form of discrimination (including anti-Semitism). This helps our school and community by reinforcing humanitarian values, the need to protect others, and our responsibility to make everyone feel welcomed. It also helps us to understand how dehumanization and discrimination can lead to intolerance and even mass genocide. I feel it important that people learn at a young age about the experiences of ethnic minorities to understand and connect with people from backgrounds that are not their own.

The theme of this year's Holocaust Memorial Day was 'be the light in the darkness.' In our assembly and House Competition we learned about the lives and experiences of those who resisted and rescued others from the Holocaust, such as Corrie Ten Boom, Dr Mohamed Helmy, and Father Jacques. We learned about how groups like the Uighurs are being persecuted today. We also examined how important qualities like determination and perseverance are, and how we can use them in our daily lives to help and support others.



BE THE LIGHT IN THE DARKNESS

Holocaust Memorial Day Assembly 2021

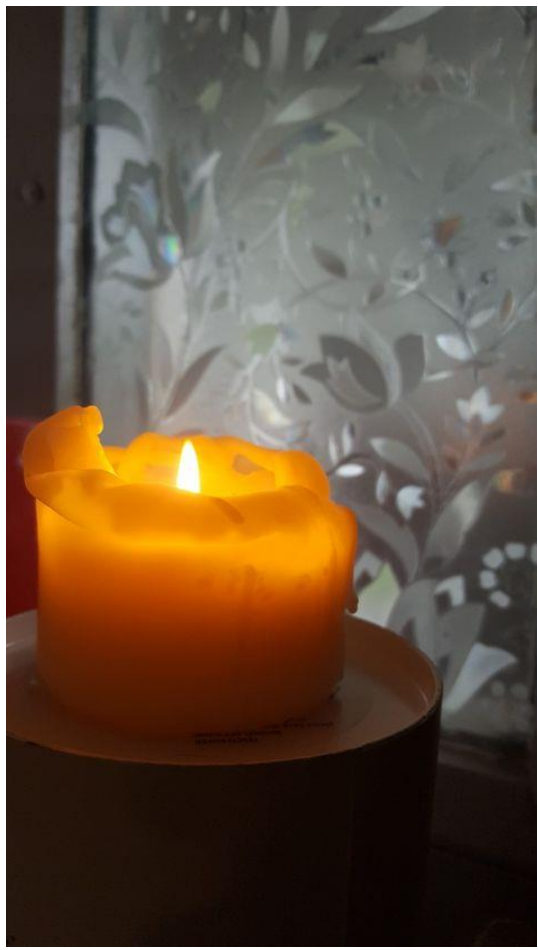


I pray for all the people who died in the Holocaust to rest in peace and also for the people being oppressed in this current day such as the Uighurs for them to remember hope is not lost.

Matthew M 7D



HISTORY



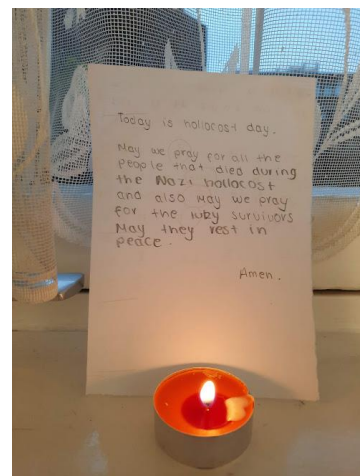
Jessica A 7D

Even though prejudice and persecution are objectively wrong, some people seem resistant to change. If you are a victim of racial bullying you should both challenge it directly and by maintaining your personal self-integrity. You were created by God, perfect in his eyes. If you are beautiful in the eyes of Our Father, don't let the words of anyone else make you feel like you need to change or that you are a threat to anyone. Regardless of the color of your skin, racial stereotypes, or your racial background, you are loved. That will never change.

Armari A 11BC



Dr Mohamed Helmy, one of the 'Righteous Among the Nations' who rescued Jews from the Nazis.



May we pray for all the people that died during the Nazi Holocaust and also may we pray for the survivors. May (those who died) rest in peace. Amen.

Taylor E 7D

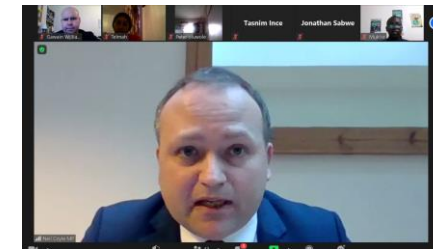


HISTORY



Meeting our Local MP Neil Coyle

a report from an A level politics Student,
covering concentration camps in China, school lockdowns, fake news
and nuclear weapons.



On 3rd February 2021 I joined over 45 Politics and History Sixth formers on Zoom to meet with the Member of Parliament (MP) for Bermondsey and Old Southwark, Neil Coyle, to talk about a range of local, national and international issues.

Neil Coyle is a Labour MP, who has represented Bermondsey and Old Southwark since 2015 when he managed to win the seat from the Liberal Democrats who had represented this area since 1997. At the start of the meeting Neil Coyle explained his job as an MP and then opened up to questions from Students. These questions were diverse: some History students quizzed Neil Coyle on the changes the Labour party had gone through and if the old Dockers Unions of Bermondsey from the 1900s would support Keir Starmer today. Neil believed that they would, as in his view only the Labour party was pushing to help to improve conditions around housing and represent people at the bottom of society.

Coyle answered questions about the lack of representation of Black people in Parliament and local government, the shortcomings of current climate policies and if the UK should adopt a written constitution. He did quite a good job keeping up.

I stepped forward to ask about something I've been really worried about from watching and reading the news. My question was 'What is the government doing about the genocide against the Uighur Muslims in China? Will there be any intervention or a trade ban? and what were his personal views on it?'

He believed the Conservative government was not doing enough. He said there was a massive need for Britain to step up and make it clear to China and any other country that uses labour camps and attacks on religious and minority groups that actions compromising human rights to this extent that "it was not to be considered a new norm by us and needs to stop". He went on to say that if we were still part of the EU, we would be in a much better and stronger position to act together with Europe to put pressure on China. Neil Coyle, advised us that we could do something about it, he advised us to be aware of where we buy our clothes and shoes from, as some products are made by forced labour in the Uighur Muslims concentration camps and some products like hair extensions have been found to be made by shaving these people's heads.

I felt he gave a good response in relation to advising and making us aware of what we could do and that even as young adults in school, we could do something. However, the fact that there was no clear response to what the government was doing about it was unnerving to hear and showed me again some of the unseen consequences of leaving the EU, making it harder for people to stand up together in Europe and stop undemocratic countries from torturing people and running camps.



HISTORY

Meeting our Local MP Neil Coyle continued

In the meeting there was a question made by another student on Neil Coyle's history of voting to support the nuclear bomb programme Trident which will cost £205 billion across its 30 year lifespan. The student wanted to know if this money could be spent somewhere better that was less likely to end the world.

Neil Coyle responded with his view that nuclear weapons ensure peace and are necessary for security. This response, I do not agree with because nuclear weapons result in 'peace' only by the knowledge that everyone has a nuclear weapon and if one sets one off, the other will also set off one back. Having started to study the Cold War in September as part of my History A level I know that this idea used to be called MAD (mutually assured destruction). In my view this is an illusion of security and actually make us more of a target to other countries that have Nuclear weapons. Even if we were attacked by a country with Nuclear weapons I do not think we should use our weapons against them as civilians would be the majority of people dying in a Nuclear war. I do not think there is any justifiable time to use a Nuclear bomb. When there have been security threats near me like the terrorist attacks in Borough Market and across London, Trident has been no help, instead it has been the police that stopped these threats.

Neil Coyle recently wrote on Twitter that this pandemic has caused the highest excess deaths since WW2, how have Nuclear Weapons helped with this massive threat to the people of Britain? The money put into Trident and the development of atomic weapons could've been used to tackle this pandemic by giving small businesses more money to stay afloat whilst in lockdown. It could be used to supply children with proper free school meals during lockdown across the whole country. That money could've been saved and ready to use in case of a pandemic. I did not agree with Neil Coyle's views on nuclear weapons.

Near the end of the meeting there was a question on when schools will open. Neil Coyle said that with the vaccine rollout, we should be optimistic about the near future and going back to normal. He addressed the fact that the government's top priority should be to open up the schools as even though schools are working really hard with all the learning online, he understands it is not the same.

He referred to his younger child and expressed his concern for their need to be playing with other children to have fun and improve their social skills and he was concerned their confidence was being affected by a lack of social interaction. Neil Coyle expressed his views on lockdown coming too late and if the Labour government had the majority of seats, they would have proceeded with lockdowns earlier. Neil unsurprisingly believed Keir Starmer was correct in criticising Boris Johnson's response to the slow lockdown, especially over Christmas. In addition, he explained how the government should've been better prepared for a pandemic referring to NHS internal enquires from 2014 that suggested they need more funding then.

I found this meeting useful and interesting because I was able to ask questions of any issues to an expert in Politics. Being closed in at home, and looking at social media it can be easy to start listening to fake news and conspiracy theories on lockdown and Covid-19. Sometimes it's difficult to tell the difference between what's real and fake but talking to an MP and getting to hear about what is really going on is in many ways calming and sort of a reality check.

I also got some insight into what a backbench MP actually does, and whether I agreed or disagreed with his views, it was very interesting and useful to me as a Politics and History student hearing about how the government and the opposition handles national and international issues. *Monika, Year 12*

BLACK LIVES MATTER: a social movement

Politics department Prize Winner Telmah D. writes about her presentation on the topic

Black Lives Matters (BLM) is a new and welcomed force to be reckoned with in our society. BLM is a decentralized outsider political and social movement. BLM UK advocates for non-violent civil disobedience in protest against incidents of police brutality across the globe; all racially motivated violence against black people and the reform of institutions thriving from the benefits of institutional racism. The UK saw its largest social movement within the last five years this summer in the midst of one of the most intractable pandemics of the century. The murder of George Floyd in May triggered the outcry of black people as well as allies all over the world. A community of frustrated supporters and protestors calling out institutions for allowing the lynching of yet another black man in today's society. I was given the opportunity to focus on a pressure group and/or social movement of my choice in my Government & Politics lesson and bring forth a presentation that would inform my classmates of its purpose as well its influence on today's society. The events of this year therefore led me to do my presentation on Black Lives Matter UK. Being a Black British student, existing racial tensions are a concern of mine. I worry that individuals' ethnocentrism may invigorate them to spew abuse towards me. I see that the very society that is supposed to be structured to protect people of all races and gender is still very much reaping the 'benefits' of institutionalised racism. Institutional racism is discrimination or unequal treatment on the basis of membership of a particular ethnic group (typically one that is a minority or marginalized), arising from systems, structures, or expectations that have become established within an institution or organization. It is very common to find this form of concealed racism in the workplace; the government; the criminal justice system and even in the education system where minorities are still massively underrepresented in Russel Group universities.

continues...



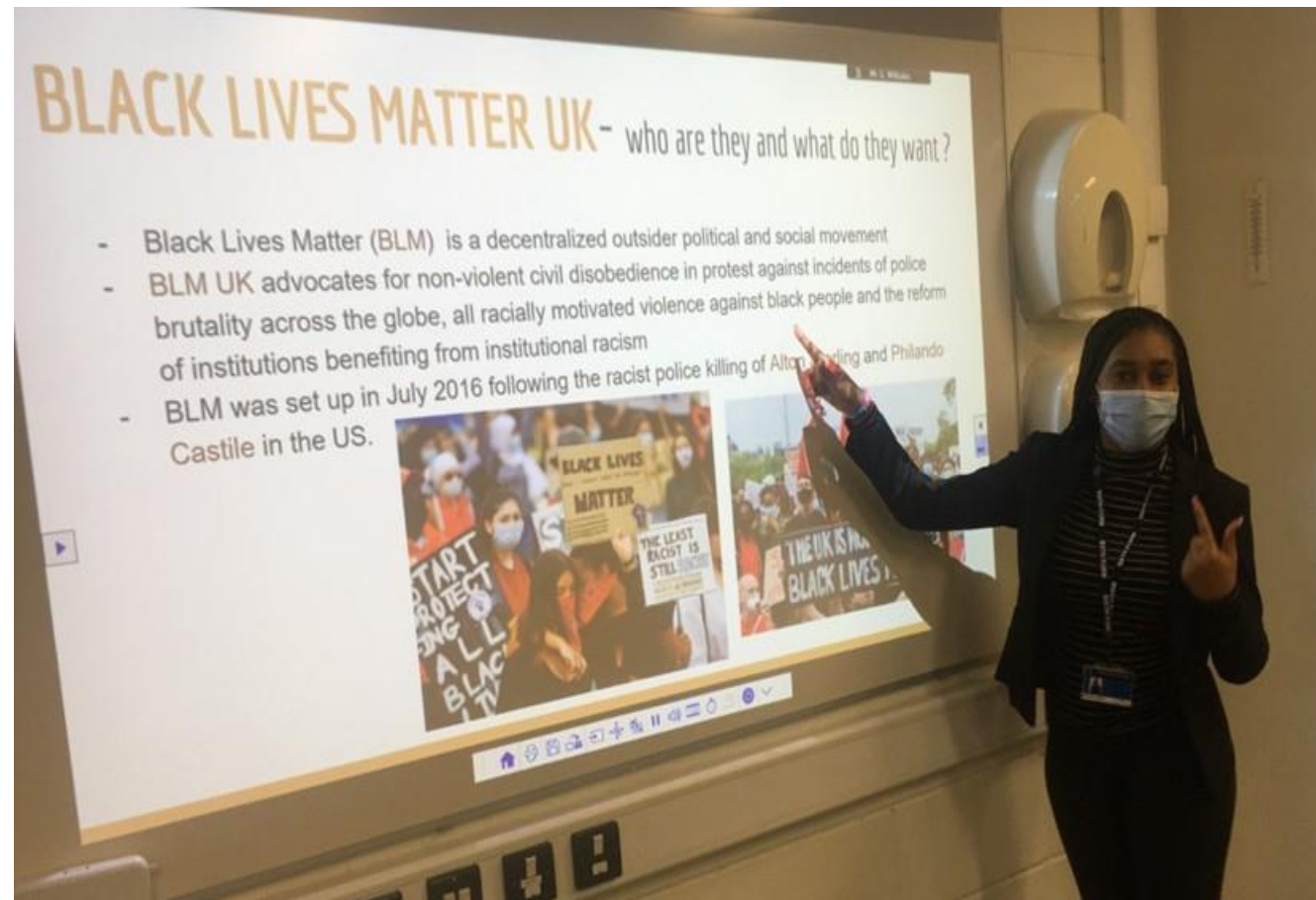


BLACK LIVES MATTER: a social movement continued

This is as a result of the black people being held back through centuries of enslavement and racism for the sake of 16th century-20th century Western prosperity. Black people are still struggling to break these massive barriers which is made even harder by people denying that any problems even exist. This is what the Black Lives Matter UK is trying to reveal to government, to make them change policy and curriculums. But, also to change the mind of the general public, to talk more and act against these problems in our society. Black Lives matters are showing the need for reform to create an equalised future for everyone.

A pressure group like BLM can have great influence on a multi-racial community like our school as it speaks to black students to hold onto the principles of black pride through their interactions with other people and it's also important as it encourages people of all races to be allies and be solutions to the problem of racism rather than contributors in order to co-exist with citizens from all regions of the world. When all of my class had completed our presentations, we had a vote and my work was the clear winner. I won a T-shirt from the Houses of Parliament with the slogan 'it starts with you on it'

Telmah D. 12A





SCIENCE



PHYSICS WORK BY CASPAR GT (9X1)

MR KHAIRI

C/W Heating & Cooling

- Heating curve of ice:
- 1 B + D = constant temperature
 - 2 B + D = change of state B = Melting, D = Boiling
↳ for change in temperature.
 - 3 A + C + E = Kinetic store increasing } energy stores
B + D = potential store increasing } ↳ temp increase.

Cooling curve of steam:

- 1 First stage - decrease in temp
- 2 Second stage - boiling point of water
E_k = no change because temp is constant. E_p changes: gas to liquid - amount of intermolecular forces acting on particles increases. ions state - no intermolecular forces on molecules, but liquid state intermolecular forces happens - bonds have formed between molecules - this requires energy: come from potential energy store of particles E_p ↓
- 3 Third stage - E_k ↓ + stops at 0°C.
0°C - liquid water into solid ice water freezing into solid ice.
- 4 Fourth stage - solid - stronger intermolecular forces than liquids - not free to move + regular pattern
intermolecular force increase, E_p increases.
- 5 Final stage - ice decreasing more in temp E_k ↓

Excellent notes from video with subheadings & keywords.

Example: mass

V	ΔE = 21000	Δθ = 2	c = 4200	ΔE (10k J) = 10000 J	Δθ = 10
E	ΔE = mcΔθ			ΔE = mcΔθ	c = 4200
S	21000 = m × 4200 × 2			10000 = m × 4200 × 10	
R	(21000) ÷ (2)	(4200)		10000 = m × 42000	
A	2.5			0.24	
U	= 2.5kg			= 0.24kg	

Use of VESPA mnemonic to solve calculations

- 1 1000 = m × 540 × 5 = 1000 ÷ 540 ÷ 5 = 0.37 kg ✓
- 2 2000 = m × 100 × 2 = 2000 ÷ 100 ÷ 2 = 1.11 kg ✓
- 3 600 = m × 390 × 4.5 = 600 ÷ 390 ÷ 4.5 = 0.34 kg ✓
- 4 500000 = m × 4200 × 2.5 = 500000 ÷ 4200 ÷ 2.5 = 47.62 kg ✓ 48
- 5 0.1 kg = m × 540 × 80 = 100 ÷ 540 ÷ 80 = 2.31 g ✓ 2.3

self reflection, green pen of answers.

Example: temp change

V	ΔE = 5000	m = 5	c = 390	ΔE = 800	m = 600g
E	ΔE = mcΔθ			ΔE = mcΔθ	
S	5000 = 5 × 390 × Δθ			500 = 0.1 × 100 × Δθ	
R	(5000) ÷ (5 × 390)			Δθ = 50	
A	= 2.6°C			= 50	
U	= 2.6°C			= 50°C	

- 1 4000 = 20 × 390 × Δθ = 4000 ÷ 20 ÷ 390 = 0.51°C ✓
- 2 1000 = 0.5 × 100 × Δθ = 1000 ÷ 0.5 × 100 = 20°C ✓
- 3 70000 = 10 × 900 × Δθ = 70000 ÷ 10 × 900 = 7.8°C ✓
- 4 2000 = 0.05 × 540 × Δθ = 2000 ÷ 0.05 × 540 = 7.4°C ✓
- 5 200 J = 2000g × 4200 × Δθ = 200 ÷ 2000 × 4200 = 1.9°C ✓

4/2/21



SCIENCE



PHYSICS WORK BY ANGELICA R (9X1)

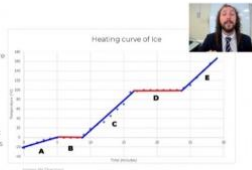
MR KHAI RI

Heating and cooling lesson 04.02.21

Notes:

Warm up

1. Identify the stages where the temperature is constant.
2. Identify and label the stages where there is a change of state.
3. For each stage (A-E) write down if the kinetic store or potential store is increasing



Very clever use of screenshot from video for her digital notes. Efficient.

- In B and D, we can see that the temperature is constant, as it decreases but stays the same
- B can be identified as melting, due to the sudden increase in low temperature to a medium-high one
- D is boiling due to the fact that it reached high temperatures of 180, meaning the liquid has most likely evaporated.
- ACE, was kinetic energy store increasing and B + D was potential energy store increasing
- when a substance decreases in temperature, the kinetic energy store must change
- if the temperature decreases, then the particle's kinetic energy store also decreases
- boiling point of water begins at 100 degrees celsius and when that decreases that's where condensation occurs
- during change of state - temperature is constant, so kinetic energy store does not change
- but this means the potential energy store does change
- bonds have formed between the molecules, that require energy and this came from the potential energy stored in the particles
- this means that potential energy store has decreased
- 0 degrees celsius is where liquid water turns into solid ice
- solids have stronger intermolecular forces in attraction than liquid, therefore if that increases then kinetic potential energy store decreases
- internal energy = kinetic + potential energy of particles
- gas state will have the highest amount of internal energy

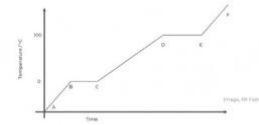
Questions:

- 1) Which state of matter has the least internal energy
I think it's solid. (1 mark)
- 2) Which state of matter has the most internal energy
The gas state. (1 mark)
- 3) When a substance is cooled the internal energy decreases. (2 marks)
When a substance is heated the internal energy increases.
- 4) When changing state from solid to liquid, the potential energy...
Increases (1 mark)
- 5) When changing state from gas to liquid, the potential energy...
Decreases. (1 mark)
- 6) When cooling a substance of the kinetic energy store of the particles...
Increases x (decreases)

Independent practice

1. Describe what is happening at each of these stages on the diagram in terms of potential and kinetic stores for the water molecules:

- a. A-B
- b. B-C
- c. C-D
- d. D-E
- e. E-F



2. Challenge - correctly identify and explain the effect on temperature and state of matter for each stage by using your answer

- 1) A-B Kinetic increases
- 2) B-C Potential increases
- 3) C-D Kinetic increases
- 4) D-E Potential increases
- 5) E-F Kinetic increases

Challenge: The energy is constant from B-C and D-e. ✓

More notes:

Self assessment & corrections. Attempting challenge tasks!

4/2/21



SCIENCE



PHYSICS WORK BY ISABELLA M (9X1)

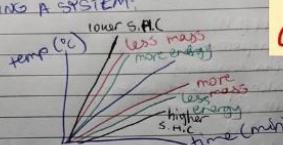
MR KHAIRI

is constant during B-C, D-E.

SPECIFIC HEAT CAPACITY:

- mass / kg
- how much energy is required to raise the temperature of 1kg of a material by 1°C
- units are J/kg°C

HEATING A SYSTEM:



lower s.h.c. (less mass more energy)
higher s.h.c. (more mass less energy)

temp (°C)
time (min)

- Specific heat capacity is the amount of energy required to raise the temperature of 1kg by 1°C.
- A temperature change depends on:
 - mass
 - specific heat capacity
 - amount of energy transferred

CALCULATING ENERGY CHANGES:

Energy change: mass x specific heat x change in temperature

$$\Delta E = m \times c \times \Delta \theta$$

Excellent note-taking (key points, definitions)

EXAMPLE:

1) Water has a s.h.c. of 4200 J/kg°C. mass = 10kg | Temp = 6°C.
Energy change?

Values: $c = 4200 \text{ J/kg°C}$, $m = 10 \text{ kg}$, $\Delta \theta = 6$
 Equation: $\Delta E = mc\Delta \theta$
 Substitute: $= 10 \times 4200 \times 6$
 Rearrange: $= X$
 Answer: $= 252000$
 Units: $\Delta E = 252000 \text{ J}$

2) Iron has a s.h.c. of 450 J/kg°C. mass = 2000g. Temp = 5°C
 $c = 450 \text{ J/kg°C}$, $m = 2000 \text{ g}$, $\Delta \theta = 5$
 $kg = 2 \text{ kg}$
 $\Delta E = mc\Delta \theta$
 $= 2000 \times 450 \times 5$
 $= 450000 \text{ J}$

QUESTIONS:

1) $\Delta E = mc\Delta \theta$
 $= 1.5 \times 20 \times 390$
 $= 11700 \text{ J}$

2) $\Delta E = mc\Delta \theta$
 $= 4 \times 8 \times 4200$
 $= 134400 \text{ J}$

3) $\Delta E = mc\Delta \theta$
 $= 3000 \times 20 \times 0.45$
 $= 45000 \text{ J}$

MASS:

1) $\Delta E = mc\Delta \theta$
 $21000 = m \times 4200 \times 2$
 $(\div 4200) (\div 2)$
 $2.5 = m$
 2.5 kg

2) $\Delta E = mc\Delta \theta$
 $10000 = m \times 4200 \times 10$
 $10000 = m \times 42000$
 $(\div 42000)$
 $m = 0.24 \text{ kg}$

TEMPERATURE CHANGE:

1) $\Delta E = mc\Delta \theta$
 $5000 = 5 \times 390 \times \Delta \theta$
 $(\div 5) (\div 390)$
 $\Delta \theta = \frac{5000}{5 \times 390} = 2.6 \text{ °C}$

2) $\Delta E = mc\Delta \theta$
 $500 = 0.1 \times 1000 \times \Delta \theta$
 $(\div 100) (\div 0.1)$
 $\Delta \theta = \frac{500}{0.1 \times 1000} = 5 \text{ °C}$

Use of VESPAU & showing working out calculations.

Clear showing working out & rearranging equations to solve unknown.

4/2/21



SCIENCE



PHYSICS WORK BY ALBERT J.M (9X1)

MR KHAIRI

C/W Heating and Cooling Substances 4/2/2021

- 1) The stages where the temperature is constant are B&D.
- 2) The stages where there is a change of state are B and D. B=melting, D=Boiling.
- 3) A, C, E = kinetic energy store increasing.
B, D = potential energy store increasing.

Steam decreases in temperature in the first stage so, the kinetic energy store decreases. Steam changes state (from gas to liquid) and potential energy decreases. Water decreases in temperature in the third stage so, the kinetic energy store decreases. Water changes state (from liquid to solid) and potential energy decreases. Ice decreases in temperature in the fourth stage so, the kinetic energy store decreases.

The gas state has the highest amount of internal energy because less internal energy is removed.

- 1) Solids have the least internal energy.
- 2) Gases have the most internal energy.
- 3) When a substance is cooled the internal energy decreases. When a substance is heated the internal energy increases.
- 4) Potential increases (solid to liquid)
- 5) Potential decreases (gas to liquid)
- 6) Kinetic decreases (cooling)

- 1) $\Delta E = \text{energy change}$
- 2) Specific heat capacity = c
- 3) kg = mass
- 4) $^{\circ}\text{C} = \text{temp. change}$
- 5) $\text{J/kg}^{\circ}\text{C} = \text{specific heat capacity}$

6) $J = \text{Energy change}$. Use of FIFA method / mnemonics to solve calculations for unknowns.

	1)	2)
F	$\Delta E = mc \times \Delta \theta$	$\Delta E = m \times c \times \Delta \theta$
I	$\Delta E = 10 \times 4200 \times 6$	$\Delta E = 20 \times 450 \times 5$
F	$\Delta E = 252000$	$\Delta E = 45000$
A	<u>252,000 J</u>	<u>45,000 J</u>

	1)	2)
F	$m = \frac{\Delta E}{c \times \Delta \theta}$	$m = \frac{\Delta E}{c \times \Delta \theta}$
I	$m = \frac{21000}{4200 \times 2}$	$m = \frac{10000}{4500 \times 10}$
F	$m = 2.5$	$m = 0.24$
A	<u>2.5 kg</u>	<u>0.24 kg</u>

	1)	2)
F	$\Delta \theta = \frac{\Delta E}{m \times c}$	$\Delta \theta = \frac{\Delta E}{m \times c}$
I	$\Delta \theta = \frac{5000}{5 \times 300}$	$\Delta \theta = \frac{500}{100 \times 0.1}$
F	$\Delta \theta = 2.6$	$\Delta \theta = 50$
A	<u>2.6 $^{\circ}\text{C}$</u>	<u>50 $^{\circ}\text{C}$</u>

Concise answers for comprehension with key words/terminology.

- 1) 0.37 kg
- 2) 1.1 kg
- 3) 0.34 kg
- 4) 4.8 kg
- 5) 2.3 g

Self-assessment, with correct units. 100%

4/2/21



MATHS



Isioma A
- Yr 8

Rahelyn A - Yr 8

1. a) $x = 0.63$
 $100x = 63.33$
 $10x = 6.333$
 $9x = 57.333$
 $x = \frac{57.333}{9} = 6.37037$

b) $x = 0.2\bar{4}$
 $100x = 24.66$
 $10x = 2.46$
 $90x = 22.2$
 $x = \frac{22.2}{90} = \frac{11}{45}$

c) $x = 0.1\bar{8}$
 $100x = 18.66$
 $10x = 1.86$
 $90x = 17$
 $x = \frac{17}{90}$

d) $x = 0.1\bar{7}$
 $100x = 17.66$
 $10x = 1.76$
 $90x = 15.9$
 $x = \frac{15.9}{90} = \frac{17}{99}$

e) $x = 0.4\bar{5}$
 $100x = 45.50$
 $10x = 4.55$
 $90x = 41.0$
 $x = \frac{41}{90}$

f) $x = 0.9\bar{1}$
 $100x = 91.2$
 $10x = 9.12$
 $90x = 82.08$
 $x = \frac{82.08}{90} = \frac{1026}{1125} = \frac{127}{140.625}$

g) $x = 0.2\bar{1}$
 $100x = 21.2$
 $10x = 2.12$
 $90x = 19.08$
 $x = \frac{19.08}{90} = \frac{238}{275}$

h) $x = 0.25\bar{6}$
 $1000x = 256.66$
 $100x = 25.66$
 $900x = 231$
 $x = \frac{231}{900} = \frac{77}{300}$

Prove algebraically that $0.2\bar{6}$ can be written as $\frac{127}{495}$

Apply:

1. $x = 0.5\bar{7}$
 $100x = 57.66$
 $10x = 5.76$
 $90x = 52$
 $x = \frac{52}{99}$

2. $0.2\bar{7} + 0.6\bar{4} \div 0.5\bar{3}$
 $x = 0.2\bar{7}$
 $100x = 27.66$
 $10x = 2.76$
 $90x = 25$
 $x = \frac{25}{99}$

3. $0.6\bar{4}$
 $100x = 64.66$
 $10x = 6.46$
 $90x = 58.2$
 $x = \frac{58.2}{90} = \frac{97}{150}$

4. $0.5\bar{3}$
 $100x = 53.66$
 $10x = 5.36$
 $90x = 48.3$
 $x = \frac{48.3}{90} = \frac{161}{300}$

5. $\frac{3}{11} + \frac{4}{33} = \frac{9}{33} + \frac{4}{33} = \frac{13}{33}$ BINGO!

66 Recurring decimals (2) 13/01/2021

Starter:

a) $0.005 = \frac{5}{1000} = \frac{1}{200}$
b) $0.48 = \frac{48}{100} = \frac{12}{25}$
c) $0.875 = \frac{875}{1000} = \frac{7}{8}$
d) $2.248 = \frac{2248}{1000} = \frac{279}{125}$

e) $5.766 = \frac{5766}{1000} = \frac{2883}{500}$
2) a) $\frac{2}{3} = 0.6\bar{6}$
b) $\frac{0.55}{915.0} = 0.6$
c) $\frac{0.454}{115.0} = 0.4\bar{5}$
d) $\frac{466}{157.0} = 0.4\bar{6}$
e) $\frac{14285}{110000} = 0.12986\bar{3}$

Recap:

Terminating decimal - 0.05
Recurring - $0.3\bar{3}$
Irrational - $\pi = 3.142$
 $e = 2.7$

3) a) $x = 0.2$
 $10x = 2$
 $x = \frac{2}{10} = \frac{1}{5}$

b) $x = 0.8$
 $10x = 8$
 $x = \frac{8}{10} = \frac{4}{5}$

c) $0.1\bar{8}$
 $100x = 18.66$
 $10x = 1.86$
 $90x = 17$
 $x = \frac{17}{99}$

d) $0.5\bar{3}$
 $100x = 53.66$
 $10x = 5.36$
 $90x = 48.3$
 $x = \frac{48.3}{90} = \frac{161}{300}$

f) $x = 0.6\bar{3}$
 $100x = 63.66$
 $10x = 6.36$
 $90x = 57.3$
 $x = \frac{57.3}{90} = \frac{191}{300}$

g) $x = 0.1\bar{1}$
 $100x = 11.2$
 $10x = 1.12$
 $90x = 10.1$
 $x = \frac{10.1}{90} = \frac{101}{900}$

h) $0.3\bar{3}$
 $1000x = 333.33$
 $100x = 33.33$
 $900x = 300$
 $x = \frac{300}{900} = \frac{1}{3}$

i) $x = 0.1\bar{7}$
 $1000x = 171.66$
 $100x = 17.16$
 $900x = 154.5$
 $x = \frac{154.5}{900} = \frac{103}{600}$

Maths homework

1. $\frac{5}{8}$
2. $\frac{7}{9}$
3. $\frac{4}{13}$
4. $\frac{2}{10} = \frac{1}{5}$
5. $\frac{4}{11}$
6. $\frac{6}{19}$
7. $2:1$
8. $3:2$
9. $1:5$

12. Adults $\frac{3}{4}$
Children $\frac{1}{4}$
 $\frac{8}{35} \div \frac{1}{5} = \frac{8}{7}$

Maths: angles in parallel lines
to do in depth practice with angles in parallel lines

Keywords: 3rd / February
-corresponding
-alternate
-co-interior
-supplementary
-vertically opposite
-transversal

Starter:
1. $x = 60^\circ$, 2. $180 - (80 + 60) = 40^\circ$, 3. $180 - (70 + 30) = 80^\circ$,
4. $360 - 380 = 80$, $180 - (30 + 65) = 85$, 5. $180 - (64 + 64) = 52$, $x = 180 - 52 = 28$,
6. $180 - (105 + 10) = 65^\circ$, 7. $180 - (80 + 2) = 20^\circ$, 8. $180 - (65 + 2) = 53$, $360 - 50 = 310$,
9. $360 - 60 = 300$, 10. $180 - (90 + 53) = 37^\circ$, 11. $180 - (70 + 2) = 40^\circ$,
12. $180 - (50 + 56) = 74^\circ$, 13. $180 - (86 + 20) = 74^\circ$, 14. $180 - 90 = 90$, $90 \div 2 = 45$,
15. $180 - (35 + 2) = 110^\circ$, 16. $180 - (85 + 60) = 35^\circ$, 17. $180 - 40 = 140$, $140 \div 2 = 70$

Corresponding:
Upper right, $ur = a = e$
Lower right, $lr = d = h$

Co-interior:
 $lr, ur = d + e = 180^\circ$
 $ll, ul = a + f = 180^\circ$

Alternate:
 $lr, ul = d, f$
 $ll, ur = c, e$
 ur, ll



MATHS

Olamide O - Yr 9



Katie C - Yr 9

Title: compound change 5th January 2020

L.O.: to be able to calculate repeated Percentage increase/decrease

Key words: interest, compound interest, depreciate, original, new, decimal multiplier

Starter:	Example
A1. D.5 ✓	£350 → bank
Question	+10% interest every year
	1st year: $350 + 10\%$ of 350 = $100 + 107$
	350×1.10 = 107%
	" $\times 1.10$

Question 1: £4000 → bank
+5% interest every year
1st yr: $4000 \times 1.05 = 100 + 5$
= 105
= 1.054
Answer = £4410

Question 2: £20000 → Population
1st year: $20000 + 10\%$ of 20000 = $20000 + 2000$
 $20000 \times 1.10 = 110 = 1.10$
2nd year: $(20000 \times 1.10) \times 1.10$
3rd year: $(20000 \times 1.10 \times 1.10) \times 1.10$
Answer = 26620

Question 3: £10000 →
1st year: $10000 - 5\%$ of 10000 = $100 - 5$
 $10000 \times 0.95 = 95 / 0.95$
2nd year: $(10000 \times 0.95) \times 0.95$
Answer = 9025

Question 4: £1800 → bank
1st year: $1800 + 4\%$ of 1800 = $100 + 4$
 $1800 \times 1.04 = 104 / 1.04$
2nd year: $(1800 \times 1.04) \times 1.04$
3rd year: $(1800 \times 1.04 \times 1.04) \times 1.04$
4th year: $(1800 \times 1.04 \times 1.04 \times 1.04) \times 1.04$
Answer = 2105.74

Question 5: £500 →
1 hour: $500 - 14\%$ of 500 = $100 - 14$
 $500 \times 0.86 = 86 / 0.86$
2 hours: $(500 \times 0.86) \times 0.86$
3 hours: $(500 \times 0.86 \times 0.86) \times 0.86$
4 hours: $(500 \times 0.86 \times 0.86 \times 0.86) \times 0.86$
5 hours: $(500 \times 0.86 \times 0.86 \times 0.86 \times 0.86) \times 0.86$
6 hours: $(500 \times 0.86 \times 0.86 \times 0.86 \times 0.86 \times 0.86) \times 0.86$
7 hours: $(500 \times 0.86 \times 0.86 \times 0.86 \times 0.86 \times 0.86 \times 0.86) \times 0.86$
8 hours: $(500 \times 0.86 \times 0.86 \times 0.86 \times 0.86 \times 0.86 \times 0.86 \times 0.86) \times 0.86$
Answers = 149.609

Question 6: £40 →
1st year: $40 + 60\%$ of 40 = $100 + 60$
 $40 \times 1.60 = 160 / 1.60$
2nd year: $(40 \times 1.60) \times 1.60$
3rd year: $(40 \times 1.60 \times 1.60) \times 1.60$
4th year: $(40 \times 1.60 \times 1.60 \times 1.60) \times 1.60$
5th year: $(40 \times 1.60 \times 1.60 \times 1.60 \times 1.60) \times 1.60$
Answer = 419.424

Question 7: £800 →
1st year: $800 - 3\%$ of 800 = $100 - 3$
 $800 \times 0.97 = 103 / 1.03$
2nd year: $(800 \times 0.97) \times 0.97$
Answer = 700.92

T Nguyen
14:49 5 Feb
Resolve

You can just do: $500 \times (0.86)^8$

Clw

Title: compound change 5th February 2020

L.O.: to be able to calculate repeated percentage increase/decrease

Keywords: interest, compound interest, depreciate, original, new decimal multiplier

Starter: *

1) 0.5 2) 0.35 3) 0.16 4) 0.2 5) 0.8

1) 0.93 2) 1.7

3) What would you multiply to find 41% of an amount?
0.41%

4) 1.58 5) 2.02

What would you multiply by to find 74% of an amount?
0.74

100% + decimal

£350 → bank
+10% interest every year
compound

1st year: $350 + 10\%$ of 350 = 35
 350×1.10 100% + 10% = 110%

2nd year: $(350 \times 1.10) \times 1.10 = \times 1.10$

3rd year: $(350 \times 1.10 \times 1.10) \times 1.10$

4th year: $(350 \times 1.10 \times 1.10 \times 1.10) \times 1.10$
 $350 (1.10)^4 =$

10th year: $350 (1.10)^{10}$
Original $\times d^n$ = new
d: decimal multiplier
n: time (years, months)



MATHS



Katie C-Yr 9

Kasper M -Yr 10

Samuel D-Yr 10

Exit ticket

Exit ticket: Compound change

Compound interest

£600 is invested at a compound interest rate of 5% per annum.

What is it worth after 3 years?

A: £694.58 C: £690
B: £694.56 D: £694

Correct Answer: **A, B, C, D**

Explanation:
 $£600(1.05)^3 = £694.575$
 when rounded =
 $£694.58$

Compound interest

£200 is invested at 5% per annum compound interest for three years. The interest earned is given by

A. $200 \times 1.05^3 - 200$ B. $200 \times 1.05 \times 3$
C. $200 \times 0.05 \times 3$ D. 200×0.05^3

Correct Answer: **A, B, C, D**

Explanation:
 $£200(1.05)^3 =$
 231.525
 when rounded =

Compound interest

A bank pays compound interest of 5% each year. Kate deposits £500.

Which calculation below would work out how much money Kate would have in her bank after 3 years?

A. $(500 \times 1.05) \times 3$
B. $500 \times 1.05 \times 1.05 \times 1.05$
C. $500 + (3 \times 1.05)$
D. 1.05×500^3

Correct Answer: **A, B, C, D**

Explanation:
 $£500 \times 1.05^3$

$\div 4$ (4 bricks take 10 days) $\times 4$

$\times 3$ (1 bricklayer takes 40 days) $\div 3$

5 bricklayers takes 8 days

$\div 5$ (5 12) $\times 5$

$\times 6$ (1 60) $\div 6$

1) 4 2) 3 6

$\div 4$ (1 8) $\times 4$ $\div 3$ (1 18) $\times 3$

$\times 8$ (8 1) $\div 8$ $\times 6$ (6 3) $\div 6$

Sharing in ratio practice

1. Tony and Luke £20

3 : 7

□ □ □ □ □ □ □ □ □ □

20

$20 \div 4 = 5$ Tony = £15
 $3 \times 5 = 15$ Luke = £35
 $7 \times 5 = 35$

Carly □ □ □ □ □ 5:3

James □ □ □

$70 \div 2 = 35$
 $35 \times 5 = 175$
 $35 \times 3 = 105$

Carly = £175
 James = £105



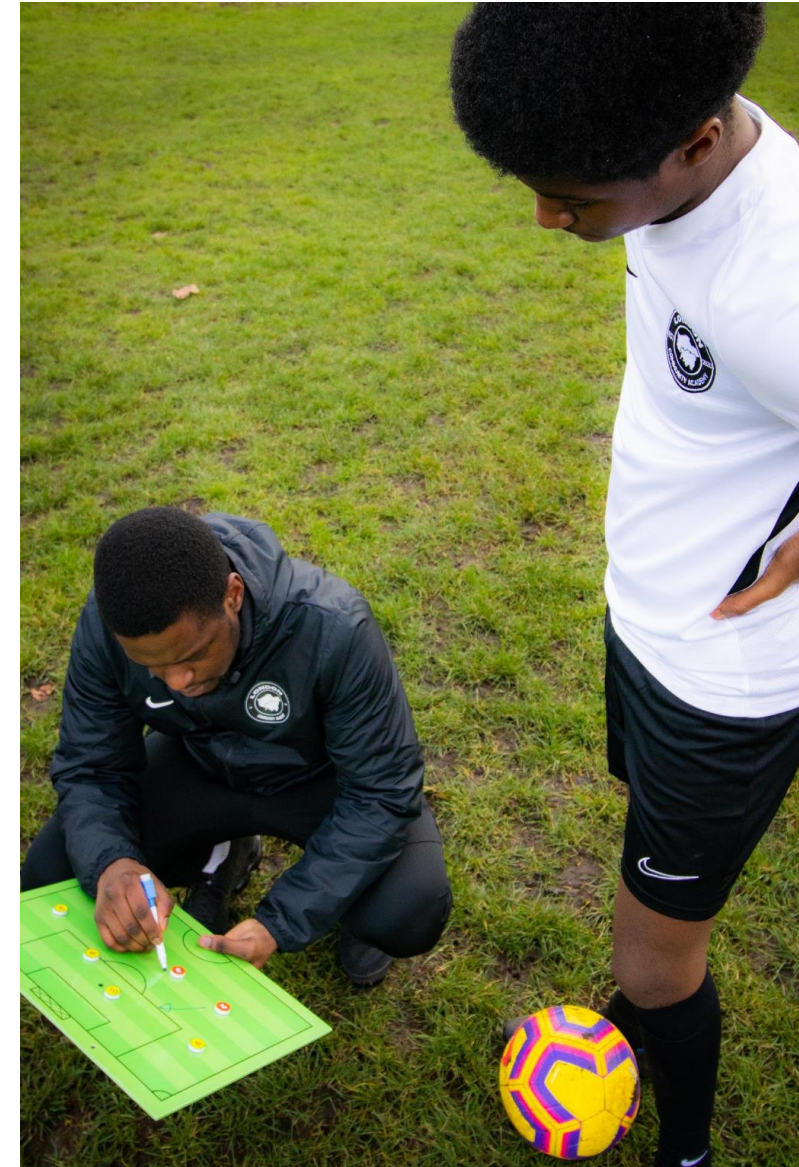
SPORTS



We're very proud of Jean Murungi, a former St Michael's student who, after successfully completing university has set up the London Community Academy to inspire young people through support.

Jean is a great role model for our students and has shown that hard work, passion and determination pay off. We are delighted to be working in partnership with him to deliver extra curricular sport to St Michael's students and would highly recommend Jean and The London Community Academy to other schools.

Read below his short biography





SPORTS



Starting St Michael's in September 2008 was the start of my career journey. I completed my GCSEs and A-Levels at St Michael's and left in 2015 with a great foundation for my future. Rolling back the years, when I first started at St Michael's, we were still in the old building (which felt like an old English school) then when we moved to the new building it was incredibly more modern and stylish. I would like to thank Mr Mahon. He enrolled me to do Philosophy as a GCSE and it opened my mind about the possibilities and meaning of life.

I was not a fan of doing Philosophy as an extra GCSE because I thought it would be draining, but Mr Mahon motivated and pushed me to get a good grade in it. To this day, I still read topics and authors relating to philosophy such as Plato's Republic and Herman Hesse.

Whilst studying in sixth form, football started to become a huge factor in my life. I became interested in the roles of football such as coaching and scouting and decided that my future would be in football. During my final year of BSc Sports Therapy at university, I did a year volunteering at Tamworth Football Club which showed me the life of a sports medic in professional football. It was through this experience that I realised I did not want to be on the medical side of football. I wanted to be involved in the running of the football; from coaching, scouting to day to day running of the club.

After I had completed my FA qualifications in coaching and scouting, I started coaching at Fulham Football Club Foundation and scouting at Colchester United. These clubs gave me the ingredients to become a better coach and scout. Despite the hands-on experience, I still pushed myself to complete my Masters in Football Business, to understand what is involved in the running of a club, as this would be mandatory knowledge for my own football business. During the year of my MA, I decided to open up my own football business called London Community Academy (LCA). By creating this business, it allows me to be part of football as a coach, scout, and director of football. I am thankful to the University College of Football Business as I was given a grant to start my business. Initially, I was nervous about pitching my idea to the university but with the push from my partner and family, I presented LCA to my university and they liked it. I am also thankful to Ms Corcoran who partnered with my business to work at St Michael's delivering after-school football sessions. One of the tips I would give to students is; if you are really passionate about an area of work, then explore it and find what you like in that area. You will surprise yourself with what you can achieve.

My advice to students would be this; take ownership of your future career and remember it is never too late to achieve what you want. I studied Sports Therapy as my undergrad degree but during my final year I realised this was not the side of football I wanted to be on. In the current state of the world, anything is possible so even if it means starting again to achieve your dream, it is possible.



Chaplain's Corner Reflections

Recently the church pushed the initiative- Racial Justice Sunday 2021
At the beginning of his public ministry Jesus outlines his Mission in the synagogue in Nazareth:

'He has sent me to bring the good news to the poor,
to proclaim liberty to captives and to the blind new sight,
to set the downtrodden free,
to proclaim the Lord's year of favour'

His ministry was one of compassionate involvement, concern for the disadvantaged. Aware of obstacles, including those of the Law, which limited joy and fulfilment Jesus acted. He confronted, sometimes angrily, what undermined a person's dignity.

The theme of Racial Justice Sunday 2021 is *A Time to Act*.

Racial issues and inequalities were identified nationally and internationally in 2020 generating awareness, emotion and outrage. In light of this Racial Justice Sunday 2021 is particularly significant.

Action is needed

Action is needed to further the cause of racial justice. What can we do?

In recent years Pope Francis has repeatedly used four verbs encouraging positive and direct action in relation to migrants and refugees, '**Welcome, Protect, Promote and Integrate**'. These same words are essential to advancing the cause of racial justice. None can be omitted, it is as necessary to have plans to *Promote* and *Integrate* as it is to *Welcome*.

Mark 1:21-28

Gospel reading on Racial Justice Sunday

Jesus' sermon in the synagogue in Capernaum triggered a reaction from a member of the congregation. (It is always unnerving to have your sermon interrupted by someone who disagrees with your words). 'What do you want with us?' 'Have you come to destroy us?' The duty of the Prophet in speaking God's words and so bringing God's light into lives and situations is to enlighten, to encourage, sometimes to warn. To identify what action is needed to ensure that all God's people know they are equally valued by society and the Church.

*The plea of the psalmist today is '**...listen to his voice, harden not your hearts**'.*

Racial Justice Sunday is a time to absorb fully this scriptural request.

-Voices that discriminate unjustly, attitudes that undermine on the grounds of race must be opposed.

-Voices of those who feel rejected or perpetually in second place must be listened to.

-The dignity of all must be respected and promoted.

*In the Church we proclaim that everyone of whatever racial origin should be **Welcomed, Protected, Promoted and Integrated**.*

We need to challenge ourselves to act now so that this may be achieved.



Chaplain's Corner Reflections

1st week of Lent.

-Justice

The second half of the Spring term begins.

Our Lenten journey started last week with Ash Wednesday. Ashes were sent to all the students and we hope that they were able to administer it with the guidance provided.

Lent is a time of thought, prayer and reverence. It lasts for forty days in remembrance of the forty days and nights Jesus spent in the desert fasting and being tempted to do wrong. Lent gives us all the opportunity to change our lives for the better.

We all need to lead better lives, for some this might mean to willingly complete all tasks set by teachers, for others it might mean to work towards being a much better person and for others it might mean forgiving others who you have up to now still be bearing a grudge. In St Mark's gospel we hear that 'the kingdom of God has come, repent and believe in the Good news'. So, if you have not already started your Lenten Journey, decide today to make one positive change to your life. Write down what this change is and on a daily basis do your best to make sure you follow this through.



Prayer

Our father who art in heaven,
hallowed be thy name,
thy kingdom come,
they will be done on earth as it is in heaven
give us this day our daily bread
and forgive us our trespasses as we forgive
those who trespass against us
and lead us not into temptation but deliver
from evil
Amen.



Noticeboard

IS YOUR CHILD STILL ENTITLED TO FREE SCHOOL MEALS?

Have your circumstances changed since the beginning of the COVID-19 outbreak? If so, your child may be entitled to free school meals.

Please note however, if you receive Working Tax Credit it is not necessary to apply as you **WILL NOT BE ELIGIBLE.**

Please send the following information to contact@stmichaelscollege.org.uk if you believe your child could now be entitled to Free School Meals.

Your Child's Name (list all children if you have more than one attending St Michael's)

Parent's Name

Parent's National Insurance Number

Parent's Date of Birth

Free School Meals is an ideal way to ensure your son/daughter receives a good hot meal at lunchtime especially during the colder Winter months while at school. Coupled with the considerable savings that can be made, especially in today's economic climate.

While the school is closed during the COVID-19 outbreak and you are eligible for free school meals, you will receive EDENRED vouchers (£15 per child per week) by email that can be redeemed in local supermarkets.

Do not miss out on this opportunity to save money and ensure your child has a substantial free school lunch.

Safeguarding

**Important Notice from the Safeguarding Officer –
there is a copy of our Safeguarding Policy on the College Website.
A hard copy of this is available in the College Office.**

Contacting the College –

**Direct parents access to college via email
contact@stmichaelscollege.org.uk
For absence please phone: 0207 237 6432
EXTN. 730**