Sixth Form Preparation Work

Lower Sixth Preparation Work

Dear Student/Parent,

I hope that your GCSE examinations have gone well and that you are starting to enjoy a well-deserved summer holiday! Whilst September may seem a long way off it is important that you are fully prepared for your Sixth Form studies in order that you can start as you mean to go on and achieve of your best during the year.

In order to start in the best manner possible you will find contained in this booklet preparation material which must be undertaken before starting the Sixth Form in September. The reading and other source materials will enable you to commence your studies with background knowledge to allow you to take a full part in lessons. It's essential that this work is done in timely fashion to ensure you set off on your Sixth

Form career with the best approach! You should only undertake the work for those subjects you have opted for in the Lower Sixth! Should you change your mind in the light of GCSE results you will need to discuss this with Mr Anderson and I and then, if a change is possible, you will need to undertake the preparation material for that subject contained in this booklet.

Whilst preparation work is important it is also essential that you ensure you rest and relax over the summer to ready yourself for the challenges of the Sixth Form – it's not easy, but it's extremely rewarding - and I look forward to welcoming you into the Sixth Form at WGS in September.

Yours sincerely,

Toby Hughes, Deputy Head

Art and Design

1. Visit an Art Exhibition. Photograph at least one artwork and discuss your thoughts of the piece. What do you know? What can you see? What would you like to know? This should be around an A4 page (with the image)

2. Collect a set of photographs for your A Level project. They could be on any theme of your choosing. Ideas to get you started can be: Aged, Narrative, Ruins or Backstage.

We re-tweet art news stories at @WGSArt - follow us. Some excellent shorts on exhibitions and artists:

* www.youtube.com/user/nationalgalleryuk
* https://www.youtube.com/user/tate

Biology

The following are useful sites for the Lower Sixth topic on evolution. They will provide some interesting background to this topic. Read and enjoy!

* http://humanorigins.si.edu/research
* https://www.newscientist.com/article-topic/human-evolution/
* https://www.nature.com/scitable/knowledge/library/overview-of-homini-evolution-89010983

The book 'The Incredible Unlikeliness Of Being: Evolution and the Making of Us' by Dr Alice Roberts will also be useful.

Find out about a current 'new' advance relating to Biology in the media. Students should prepare to discuss their findings during their first week back in September.

Business Studies

Please read through the following weblinks and presentations:

https://www.tutor2u.net/business/collections/aqa-a-level-business-study-notes-3-1-what-is-business

https://www.tutor2u.net/business/collections/aqa-a-level-business-study-notes-3-2-managers-leadership-and-decision-making

https://www.tutor2u.net/business/collections/aqa-a-level-business-study-notes-3-3-decision-making-to-improve-marketing-performance

Chemistry

These are general articles on topical issues in Chemistry at the moment.

An article highlighting the effects of global warming on the Earth:

environment.nationalgeographic.com/environment/global-warming/gw-effects/

An interesting read into how scientists are checking potential greenhouse gas and radioactive emissions from the hydraulic fracturing of shale:

www.rsc.org/eic/2016/05/exploring-uk-fracking-emissions-concerns

An article about how different separation techniques in chromatography are used in the real world:

www.rsc.org/eic/2016/05/chromatography-separation-scaling-peak

General A level chemistry guide – this could be useful to get key words etc:

www.chemguide.co.uk/index.html#top

Plus Chemistry Challenge document: wgs.org.uk/wp-content/uploads/2015/01/Chemistry-Quiz-Everything-You-Need-To-Know-1.pdf

Design Technology

Please read the pdf which can be downloaded from the following link - This will form the basis of a Product Investigation Task. http://www.jamesdysonfoundation.co.uk/resources/engineering-box-teachers-pack/

Economics

Please read through the following weblinks and presentations:

Altruism

Anchoring

Assumptions in economics

Asymmetric information

Bounded rationality

Choice architecture

Economic resources

Economic Systems

Finite and Renewable Resources

Index numbers

Inequality of Income and Wealth

Information Economics - Moral Hazard and Adverse Selection

Information Economics - The Market for Lemons

Market Failure - Income and Wealth Inequality

Opportunity Cost

Poverty Trap

Rational behaviour

Rationing scarce resources

Scarcity and Choices
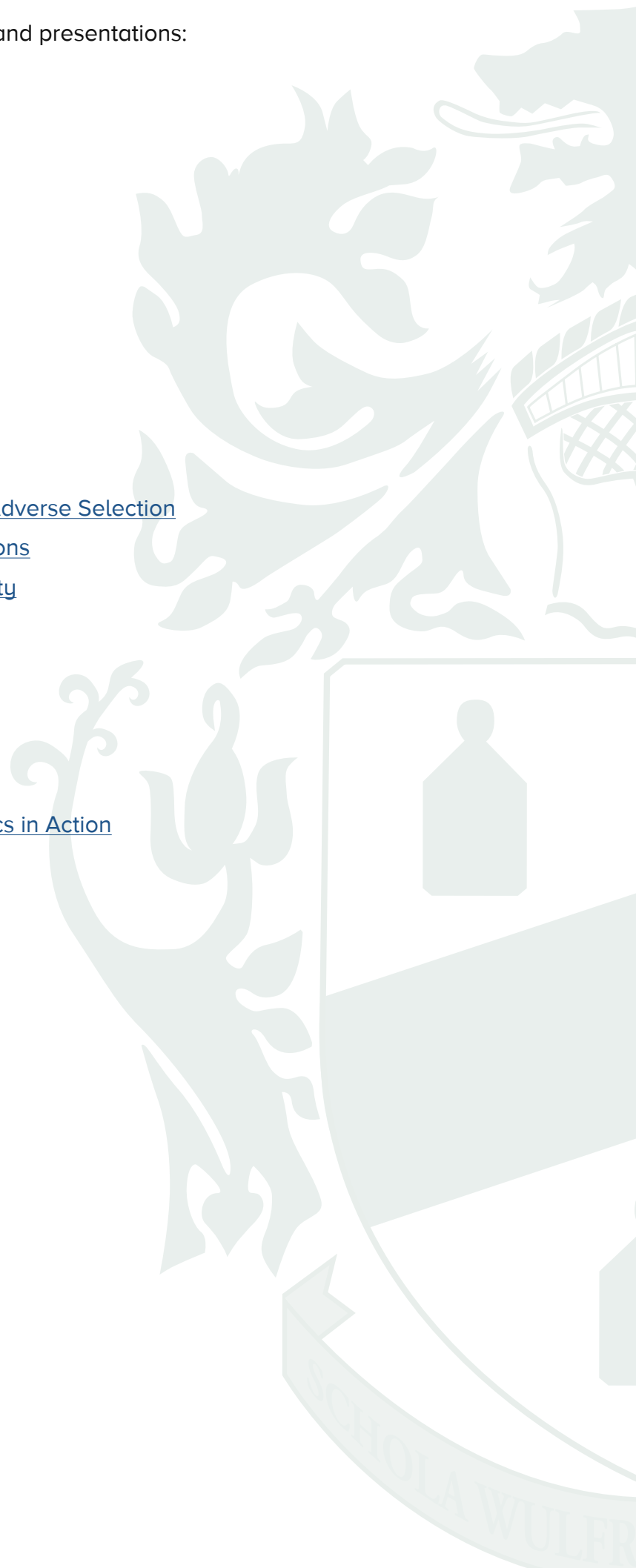
Shoves and Nudges – Behavioural Economics in Action

Specialisation and the Gains from Trade

The cost benefit principle

Utility theory

What is Economics?

English Language

Work through the 3 tasks below:

The History of the English Language: https://vimeo.com/105221860
A fascinating film from 1943 exploring the multicultural roots of the language we speak today.

http://www.bristol.ac.uk/arts/exercises/grammar/grammar_tutorial/
You will need a good working knowledge of how grammar works in English, so aim to complete a range of these exercises to test yourself.

Texting by David Crystal: www.davidcrystal.com/?fileid=-4116
A PDF extract from one of the legendary David Crystal's books on English. This analyses and explores the idea of texting, messaging and abbreviation in society.

English Literature

You will be undertaking a topic on 'Dystopia' as part of your A Level. The two texts you will be studying are 'The Road' by Cormac McCarthy and 'The Handmaid's Tale' by Margaret Atwood.

As preparation for the start of the year please undertake at least 4 of the following tasks and have an understanding of the word 'dystopia' for the start of term.

Watch
'The Road' (2009) starring Viggo Mortensen.
Channel 4 Box Set of 'The Handmaid's Tale' (2017/2018). Please note that series 2 is an invented sequel to the novel.

Read a couple of summaries of The Handmaid's Tale and The Road from either:
Cliffs Notes - https://www.cliffsnotes.com/literature/h/the-handmaids-tale/critical-essays/literary-analysis-of-the-handmaids-tale (Safe, reliable, not bad)
Sparknotes - http://www.sparknotes.com/lit/handmaid/ (like Cliffs Notes, safe and reliable)
Gradesaver - https://www.gradesaver.com/the-handmaids-tale (academically, the best of the lot)
Cliffs Notes - https://www.cliffsnotes.com/literature/r/the-road/book-summary
Shmoop - https://www.shmoop.com/the-road-mccarthy/spirituality-theme.html

French

Use the links below to have an understanding of francophone culture both in France and across the world. Print out one article from each printed source and provide a summary in English (100 words max) noting 10 words of vocabulary - French to English. For the radio and TV sources, you must provide a summary in French of 100 words max. Hand in to SFB/CMU as appropriate.

Le Monde - articles relating to immigration, social and political issues - click on specific tabs for articles: www.lemonde.fr/societe/

BBC World News - articles relating to francophone African topical issues: http://www.bbc.com/afrique

France 24 for TV news clips - use tabs to hone in on other francophone countries, culture or specific topics: www.france24.com/fr/

Regional French news for Brittany: www.ouest-france.fr/

Geography

http://learn.arcgis.com/en/projects/get-started-with-arcgis-online/

Follow the link above and work through the online lessons. This will give you the vital tools to start using this software in your studies. Arcgis is intended to be your 'Go to GIS tool' to access a huge range of data sets, maps etc. It will also be an integral part of your Independent Investiagtion.

German

Use the links below to refresh your German knowledge over the summer. Regular work of a small duration will pay dividends. Keep a record of what you've done and make a list of at least 10 new words you come across in each section.

Listen regularly to the news in German using the following website. The news in German – spoken very slowly: http://www.dw.com/de/21062016-langsam-gesprochene-nachrichten/a-19344842

Learn a little more about the federal states in Germany and how German is organised: http://www.lernspass-fuer-kinder.de/themen-uebersicht/bundeslaender/

Learn German with someone else – this is a great website for independent learning, for the sheer love of speaking and learning German. Set up a free account and off you go! Los geht's! Deutsch für dich - Goethe institute

If you have an iPad download the following Apps- Newshound (from linguascope) and Fluent U.
We would also like you to borrow a German film from the school library – or watch one on Netflix/ Amazon film and write a brief resume of it, so that we can discuss them during the first lesson back.

Government and Politics

Please read material on the following websites in preparation for discussions in class:

www.tutor2u.net/politics/presentations/introduction-to-as-politics/default.html

www.parliament.uk/

www.simplepolitics.co.uk

www.huffingtonpost.co.uk/

www.private-eye.co.uk/

History

English History: wgs.org.uk/wp-content/uploads/2015/01/English-History.pdf

Russian history 1917-1930

www.bbc.co.uk/programmes/p02h7dlv

www.documentarytube.com/videos/the-russian-revolution

alphahistory.com/russianrevolution/russian-revolution-topics/

spartacus-educational.com/Russian-Revolution.htm

twitter.com/revoltingrussia?ref_src=twsrc%5Etfw

ICT

Please watch the BBC Click! programme on iPlayer regarding new technologies and developments in ICT and Computing and keep up with developments through this programme throughout the summer.

www.bbc.co.uk/programmes/b006m9r

Mathematics

You are asked to review some key topics from GCSE. On the following pages, you will find some typical questions and a link to a website which may help if you have forgotten how to do them. Other websites are available, and you could also use MyMaths if you have an ID.

PLEASE NOTE: You will need a 'casio classwiz fx-991ex' calculator for the start of term.

Indices and Surds:

https://corbettmaths.com/wp-content/uploads/2013/02/negative-indices-pdf1.pdf
https://corbettmaths.com/wp-content/uploads/2013/02/fractional-indices-pdf.pdf
https://corbettmaths.com/wp-content/uploads/2013/02/surds-pdf1.pdf

1)   Write down each of these in fraction form:
    a) 5^{-3} b) 6^{-1} c) w^{-2} d) t^{-3} e) $4p^{-4}$ f) $\frac{1}{4}m^{-1}$

2)   Change each fraction into index form:
    a) $\dfrac{7}{x^3}$ b) $\dfrac{3}{5q^2}$

3)   Evaluate the following without a calculator:
    a) 5^0 b) 3^{-2} c) $27^{\frac{1}{3}}$ d) $9^{-\frac{1}{2}}$ e) $8^{\frac{2}{3}}$

4)   Simplify each of the following surds into the form $a\sqrt{b}$:
    a) $\sqrt{18}$ b) $\sqrt{24}$ c) $\sqrt{12}$ d) $\sqrt{50}$

5)   Simplify the following:
    a) $\left(\dfrac{\sqrt{3}}{2}\right)^2$ b) $\left(\dfrac{\sqrt{8}}{2}\right)^2$ c) $2\sqrt{45} \times 3\sqrt{3}$

Quadratic Expressions

Expanding Brackets

6)   Multiply out and simplify the following:

a) $(5m - 2)(2m + 3)$

b) $(4k - 7)(2k - 1)$

c) $(x + 4)^2$

d) $(t - 5)^2$

e) $(y - 5)(y + 5)$

Factorising Quadratic Expressions

7)   Factorise the following:

a) $x^2 + 5x + 6$

b) $a^2 + 8a + 12$

c) $t^2 - 18t + 32$

d) $w^2 - 4w - 12$

e) $x^2 - x - 90$

f) $2x^2 + 5x + 2$

g) $3x^2 + 7x + 2$

h) $2x^2 + 3x - 9$

i) $3t^2 - 10t - 25$

Difference of two squares

8)   Factorise the following:

a) $x^2 - 9$

b) $49 - y^2$

c) $9u^2 - 1$

Solving Quadratic Equations

9)   Rearrange the following quadratic equations into the standard format and solve them by factorising:

a) $x^2 - x = 42$

b) $8x(x + 1) = 30$

c) $(x + 1)(x - 2) = 40$

Using the Formula:

10) Solve the following equations using the quadratic formula. Give your answers to 2 decimal places.

a) $2x^2 + x - 8 = 0$ b) $x^2 - x - 10 = 0$ c) $3x^2 = 7 - x$

Simultaneous Equations:

11) Solve the following simultaneous equations:

a) $\begin{array}{l} 5x + 2y = 20 \\ 4x + 3y = 23 \end{array}$ b) $\begin{array}{l} 5x - 3y = 11 \\ 2x + 4y = 20 \end{array}$ c) $\begin{array}{l} 3x - 2y = 15 \\ 2x - 3y = 5 \end{array}$

Rearranging Formulae:

(and following page)

12) Make x the subject of the formula:

a) $\dfrac{m + ax}{b} = t$ b) $\dfrac{g(hx - r)}{p} = y$ c) $q - \dfrac{u}{x} = 8$

Algebraic fractions

13) Simplify the following fractions by factorising:

a) $\dfrac{6x - 2x^2}{2x}$ b) $\dfrac{x^2 - 81}{x + 9}$ c) $\dfrac{x^2 + 2x - 3}{4x - 4}$

If you have time, it would also be helpful to look up:

Straight Line Graphs

Music

To prepare for Music A-level please watch and listen to the following (many of these are available through YouTube): Watch the film "Amadeus"

Listen to:
- Beethoven Symphony no 6
- Berlioz Symphonie Fantastique
- Stravinsky "Firebird Suite"
- Prokofiev "Romeo and Juliet"
- Mozart Flute concerto
- Elgar cello concerto
- Bach Magnificat

Physical Education

Anatomy and Physiology – please read the following:

www.brianmac.co.uk

Select from the left hand menu:

.... Article library > training > conditioning - read the article titled 'How does stretching affect an athlete's performance

.... Article library > training >physiology- read the article titled 'Get to know your muscle fibres'

..... Article library > training > nutrition - read the article titled 'Food for thought'

Please use YouTube for the following materials:

(1) Olympics 2012 - the importance of Sports Psychology
(2) Jose Mourinho - The Special One Documentary

Physics

www.particleadventure.org/standard-model.html

Please look through the following 3 sections:-

What is fundamental?

What is the world made of?

What holds it together?

Psychology

www.psychlotron.org.uk is an excellent site and 'Psychology Latest' is downloadable as a free app.

Prospective Psychology students will be immeasurably finer individuals if elements of the following books are read (they do not need to be purchased):

- Oliver Sacks - The man who mistook his wife for a hat
- Bruce Hood - Supersense
- Desmond Morris - The Naked Ape
- Lauren Slater - Opening Skinner's Box

Religious Studies

Click on the 'Ideas' tab to find out about the historical roots and key beliefs of Judaism
Judaism 101

Get a basic introduction to Ethics and their potential pitfalls.
www.youtube.com/watch?v=Zv9rQ-2YFs0

Put an ethical dilemma into this and work out the best thing to do.
Making an Ethical Decision

Find out about one of the most significant religious people in Philosophy of Religion
www.youtube.com/watch?v=Mz_iGGGMddw&list=PLMXBOYcuqu_YF6ug3bf1Q9NuUPVwoFhi3

Find out about a significant atheist thinker in Philosophy of Religion
www.youtube.com/watch?v=r3QZ2Ko-FOg

Read some of the articles from here to find out about some key arguments in Philosophy of Religion
www.philosophyofreligion.info/

60 second adventures in thought - A simple summary of large philosophical questions -
www.youtube.com/watch?v=5zVaFjSxAZs

Theatre Studies

Please use the Digital Theatre Plus streaming service, which WGS subscribes to, in order to view at least two plays.

You should go to the digital theatre plus website (www.digitaltheatreplus.com/) then logon using ihmt@wgs-sch.net and the password ityler123 (please do not share login details with others as the account is limited to a maximum of 10 users).

Please watch: The Crucible and As You Like it.

Extension work is watching Into The Woods as well as the interviews with actors, designers and directors associated with these productions.