Dear Parents/Carers

As we begin the last push towards the exams this summer we thought you might like to get more involved in the revision your sons/daughters are undertaking. To that end I am introducing the **5-a-Day Challenge**. I will send home 5 questions each day which you can ask your son/daughter – perhaps over dinner, and of course we will supply you with the answers (in red). If they get each question correct – fabulous! If not add it to their questions the next day, as repetition is the key to turning short term memory into long term memory. In addition, I will include a key tip – some of which are obvious, but I am of the strong opinion that there is nothing wrong with the obvious!

I will be sending the first one on Monday, and then every day until Easter.

Hopefully this is something you will want to get involved with and that together we can ensure students are fully prepared and confident when the main exam season arrives in May.

Kind regards

Anna Nightingale
Vice Principal

Week 1
Monday 17.03.20

The 5-a-Day Challenge (answers in red)
Questions to ask your Year 11 teenager to help with their revision

Tip: Learning information for exams can be tricky. Research shows that reviewing information as you go along can help improve memory retention. Help your child get into good habits of revisiting information regularly each week.

1. **Maths -** Find the Highest Common Factor and Lowest Common Multiple for the following sets of numbers:

   a. 21 and 35 (HCF = 7, LCM = 105)
   b. 8 and 20 (HCF = 4, LCM = 40)
   c. 4, 12 and 18 (HCF = 2, LCM = 36)

   You could also ask for a definition of Highest Common Factor and Lowest Common Factor and how they reached their answer!

2. **Biology:**
   Which microscope would you use to observe ribosomes? (Electron)

3. **Chemistry:**
   What is the definition of an atom? (The smallest part of an element that can exist)

4. **Physics**
   How does increasing Resistance affect Current? (If Resistance increases, Current will decrease)

5. **English:**
   An Inspector Calls- Finish the quotation and tell me who said it!   '_____ absolutely _____'
   ('unsinkable, absolutely unsinkable'; Mr Birling)

The 5-a-Day Challenge (answers in red)

Questions to ask your Year 11 teenager to help with their revision

Tip: Did you know that physically active students have more active brains? Research shows that exercise can also improve exam performance and mental wellbeing. Please encourage your child to keep active and take regular breaks when studying.

1. **Maths:**
   FOUNDATION: What is the area of a semi-circle with diameter 10cm? (Give your answer in terms of π) (12.5π cm^2)
   HIGHER: What is the surface area of a hemisphere with diameter 10cm? (Give your answer in terms of π) (75π cm^2)
2. **Biology:**
   What is the function of ribosomes? (Protein synthesis)
3. **Chemistry:**
   What is the definition of a compound? (A substance containing two or more elements, chemically combined)
4. **Physics:**
   What Stores of energy are increasing and decreasing as an object falls downwards? (Kinetic Energy is Increasing - ((Gravitational Potential energy will be Decreasing))
5. **English: An Inspector Calls -** What object does Sheila hand back to Gerald? (the engagement ring)

The 5-a-Day Challenge (answers in red)

Questions to ask your Year 11 teenager to help with their revision

Tip: Productive people work smarter, not harder. Please encourage your child to take regular breaks when studying and to revise in shorter intervals

1. **Maths:**
   A is on a bearing of 200º from B. What is the bearing of B from A? (020º)
2. **Biology:**
   What is an enzyme? (A biological catalsyst)
3. **Chemistry:**
   How can chemical reactions be represented? (By word or chemical equations)
4. **Physics:**
   What is the definition of specific heat capacity? (The amount of Joules of energy needed to raise the temperature of one kilogram of the substance by one degree Celsius)
5. **English: An Inspector Calls -** Precisely when is the play set? (just before the sinking of the Titanic in April 1912)

The 5-a-Day Challenge (answers in red)

Questions to ask your Year 11 teenager to help with their revision

Tip: Revising can be a daunting experience. Encourage your child to break down information into bitesize chunks, form patterns and connections to help them learn.

1. **Maths:**
   FOUNDATION: Expand and simplify (x+4)(x-3) Answer $x^2 + x - 12$
   HIGHER: Expand and simplify (x + 4)(x + 2)(x – 1) $x^3 + 5x^2 + 2x - 8$
2. **Biology:**
   What is the definition of resolution? (The ability to distinguish between two separate points in an image)
3. **Chemistry:**
   What is the definition of a mixture? (Two or more elements or compound not chemically combined together)
4. **Physics:**
   What is the definition of power? (The rate at which energy is transferred or the rate at which work is done)
5. **English: An Inspector Calls** - What is socialism? (socialism is a political school of thought whereby wealth and power is shared among the majority rather than a minority/ elite group)

Friday 21.03.20

The 5-a-Day Challenge (answers in red)
Questions to ask your Year 11 teenager to help with their revision
Tip: Research shows that we have a limited 'working memory'. Encourage your child to use varied revision techniques to maximise their memory to perform better.

1. **Maths:**
   Make x the subject of the formula
   FOUNDATION: gx + t = h $x = \dfrac{h-t}{g}$
   HIGHER: y(x + a) = h(x – m) $x = \dfrac{ay+hm}{h-y}$
2. **Biology:**
   How would you calculate magnification? (Size of image ÷ size of real object)
3. **Chemistry:**
   State a separation technique used to separate mixtures (Filtration, crystallisation, simple distillation, fractional distillation or chromatography)
4. **Physics:**
   Why is Nuclear Radiation harmful?
   Radiation is <u>ionising</u>, which can kill cells, cause mutations and lead to cancer.
5. **English: An Inspector Calls -** What is the Inspector's final word in the play? What does it show us about him? (his final word is 'Goodnight' signifying that evening at the end of the play, he has total control, authority and does not invites response from the Birlings)

Week 2
Monday 24.03.25

The 5-a-Day Challenge (answers in red)
Questions to ask your Year 11 teenager to help with their revision

Tip: Distractions can get in the way of your child revising effectively. Help them to create a calming environment to work in and limit distractions such as phones, TV, music etc as these can interfere with the learning process.

1. **Foundation Maths:**

   Jam is made from sugar and strawberries in the ratio 3:5. A jar contains 150g of sugar. How many grams of strawberries are in the jar? (250g) How many grams of jam are in the jar? (400g)

   Higher Maths:

   A is directly proportional to the square root of B. When A=50, B=4
   Find A in terms of B (A=25√B)

2. **Biology:**

   How would you convert millimetres into micrometres? (Multiply the number by 1000)

3. **Chemistry:**

   Which model of the atom replaced the plum pudding model? (Nuclear model)

4. **Physics:**

   Energy cannot be created or destroyed, but it can be what? (transferred usefully, stored or dissipated)

5. **English:**

   What is a metaphor? **A Figurative device whereby a word represents/ symbolises another idea**

Tuesday 25.03.25

The 5-a-Day Challenge (answers in red)
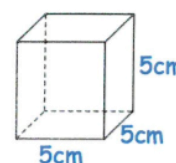### Questions to ask your Year 11 teenager to help with their revision

Tip: Being proactive will help young people take responsibility and action. Support your child to think ahead and to prepare for their lessons in advance by speaking to their teachers about topics coming up.

1. **Foundation Maths:**

   Work out the volume of the cube and state the units in your answer (125cm^3)

   Higher Maths:

   Solve $x^2=51+14x$ (x=17 or x=-3)

2. **Biology:**

   What are found in pairs in the nucleus? (Chromosomes)

3. **Chemistry:**

   What are the three sub-atomic particles found in an atom? (Protons, neutrons and electrons)

4. **Physics:**

   State one way of reducing unwanted energy transfers (Lubrication or thermal insulation)

5. **English:**

   What does Sheila say about the Inspector to Gerald at the end of Act 1? **"You fool he knows...."**
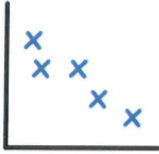
The 5-a-Day Challenge (answers in red)
Questions to ask your Year 11 teenager to help with their revision
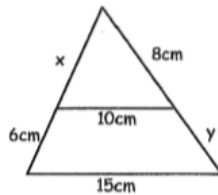
Tip: Research shows that revising for a whole day on one subject is not effective. Encourage your child to mix up their learning by revising for different topics in short bursts of time. This will help to strengthen their memory recall.

1. **Foundation Maths:**

   What type of correlation is this?
       (negative correlation)

   Higher Maths:

   Find x and y   (y=4 and x=12)

2. **Biology:**
   For cell division to take place, what has to happen to the chromosome? (They have to double in number and then divide)

3. **Chemistry:**
   Which of the three subatomic particles has a positive charge? (Protons)

4. **Physics:**
   What store is usually increased by wasted energy?
   The Thermal store of the surroundings

5. **English:**
   How does 'Remains' link to the theme of power in the poetry anthology? **The poem is about physical conflict- war but also about the powerlessness of the speaker to control his PTSD once he is home**

The 5-a-Day Challenge (answers in red)
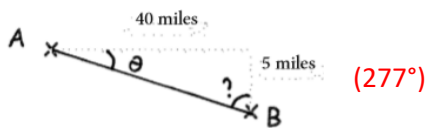## Questions to ask your Year 11 teenager to help with their revision

Tip: Our brains hold onto some information but let go of others. If young people are feeling swamped and overloaded, they can't revise effectively. Encourage them to space out their revision into regular intervals and to build a realistic revision timetable.

1. **Foundation Maths:**

$$\frac{3}{4} \div \frac{5}{6} \qquad \frac{3}{4} \times \frac{6}{5} = \frac{3 \times 6}{4 \times 5} = \frac{18}{20} = \frac{9}{10}$$

Answer

Higher Maths:

Calculate bearing of A from B.   (277°)

2. **Biology:**
   Cells divide in a series of stages called what? (the cell cycle)
3. **Chemistry:**
   The number of protons is always equal to the number of which subatomic particle? (Electrons)
4. **Physics:**
   Name the three fossil fuels   (Coal, gas and oil)
5. **English:**
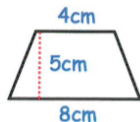   What period in history is your Shakespeare play from? **Jacobean**

The 5-a-Day Challenge (answers in red)
Questions to ask your Year 11 teenager to help with their revision
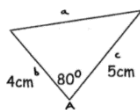
Tip: Your attitude as a parent can impact and influence your child both positively or negatively. Take an interest in what your child is learning, encourage them to embrace challenges and support them to succeed, with a positive attitude towards their learning. Try to make sure your child feels secure, happy and build their confidence.

1. **Foundation Maths:**

Calculate the area of this trapezium (30cm^2)

Higher Maths:

Work out the length of the missing side (a=5.84cm)

2. **Biology:**
   What kind of cell is produced by mitosis? (A body cell, which is genetically identical to the parent cell)

3. **Chemistry:**

   What does the mass number of an atom represent? (The sum of the protons and neutrons in the atom)

4. **Physics:**

   What is a renewable energy resource? (An energy source that is replenished as it is used)

5. **English:**

   What is Criminal Darwinism? **A theory created by Cesare Lombroso in the Victorian times which suggested that criminals looked a certain way- i.e they looked physically inferior to the typical Victorian gentleman.**

Week 3

Monday 31.03.25

The 5-a-Day Challenge (answers in red)

Questions to ask your Year 11 teenager to help with their revision

6. **Maths**

   FOUNDATION: Write 50cm as a fraction of 2m. Give your answer in its simplest form 2m=200cm

   HIGHER: Gary is playing cricket. When attempting to catch the ball, the probability Gary is successful is ¾ . During the game, Gary attempts two catches. Find the probability Gary is successful with both catches. ¾ x ¾ = 9/16

7. **Biology:**

   What is the final stage of the cell cycle? Cytokinesis

8. **Chemistry:**

   What is an isotope? Atoms of the same element that have different numbers of neutrons

9. **Physics:**

   Name a renewable Energy resource. Wind, Solar, Hydroelectric, Geothermal, Wave, Tidal

10. **English:**

    Name the three key themes in 'Remains' and back this up with a quotation. Loss, grief, remorse, shock

Tuesday 01.04.25

The 5-a-Day Challenge (answers in red)

Questions to ask your Year 11 teenager to help with their revision

1. **Maths**

   FOUNDATION: Find the highest common factor of 30 and 18. 30=5x6, 18=3x6 so 6 is the HFC

   HIGHER: Find where the line 7y=3x + 10 meets the x-axis. Y=0, 0=3x+10, -10=3x

2. **Biology:**

   What is mytosis needed for? Growth, repair and replacement of body cells

3. **Chemistry:**

   How are elements arranged in the periodic table? In order of atomic number

4. **Physics:**

   What is the rule for Current in series?

   Current is the same everywhere in a series circuit.

5. English:

Name three contextual factors in Romeo and Juliet. Arranged marriage, gang fighting and duels (middle class men!), Reign of Queen Elizabeth, clear social class and hierarchy

Wednesday 02.04.25

The 5-a-Day Challenge (answers in red)
Questions to ask your Year 11 teenager to help with their revision

1. **Maths**

   FOUNDATION: James has five cards, each with a number written on it. The median is 5. The mode is 3. The range is 8. All numbers are odd. Write down a possible set of numbers James could have. 3, 3, 5, 7 or 9, 11

   HIGHER: A biased coin is flipped three times. The probability of the coin landing on tails is 0.7. Find the probability the coin lands on tails exactly once.
   0.7 x 0.3 x 0.3 = 0.063
   0.63 x 3 = 0.189

2. **Biology:**

   What is the definition of a stem cell? An undifferentiated cell which can give rise to many more cells of the same type, or from which other differentiated cells can arise.
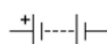
3. **Chemistry:**

   Elements which have similar properties are found in the columns of the periodic table which are called what? Groups
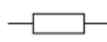
4. **Physics:**

   Name the following circuit diagram symbols:

   cell

   battery

   diode

   resister

5. **English:**

   Who wrote 'War Photographer'? Carol Ann Duffy

The 5-a-Day Challenge (answers in red)
Questions to ask your Year 11 teenager to help with their revision

1. **Maths:**
   FOUNDATION: The ratio of boys to girls in Year 7 is 2:3. There are 40 boys in Year 7, how many girls are there? 60 girls
   HIGHER: A circular mirror has a diameter of 60cm to the nearest centimetre. Find th3e greatest possible area of the mirror. Give your answer in cm^2. Max. diameter = 60.5
   Radius = 30.25, πr^2 = 2874.75cm^2 (2dp)

2. **Biology:**
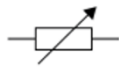   Where do stem cells which form blood cells come from? Adult bone marrow

3. **Chemistry:**
   Elements in the same group share which property? They have the same number of electrons in their outer shell
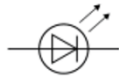
4. **Physics:**
   Name the following circuit diagram symbols:

   Variable resistor   Lamp

   LED   Fuse

5. **English:**
   What era was Jekyll and Hyde written in? The Victorian era/ fin-de-siecle

The 5-a-Day Challenge (answers in red)
Questions to ask your Year 11 teenager to help with their revision

1. **Maths**
   FOUNDATION: Four rectangles with the dimensions 6cmx2cm are arranged. What is the perimeter? 28cm
   HIGHER: Simplify √8   = √4 √2
                                       = 2√2

2. **Biology:**
   Where do stem cells come from? Meristem tissue

3. **Chemistry:**
   Name the scientist who developed the periodic table. Mendeleev

4. **Physics:**
   voltmeter

   ammeter

   thermistor

   LDR

5. **English:**
   What is synaesthesia? When a writer mixes the senses in description – ie: 'deafening silence'