ERASMUS DARWIN ACADEMY

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Knowledge Organisers: Memory for pupils and helpful 'checklists' for parents

Dear Parent/Carer

I am writing to inform you of the changes we are making to our homework strategy for next academic year. Within this information our rationale for change and key information about how you, as parents and carers, can support your child will be outlined. Many subjects across the Academy will be using Knowledge Organisers to replace previous homework strategies and the following information explains this is more depth.

Why are we moving to knowledge organisers?

Research suggests that equipping students with the skills to be able to learn, retain and recall knowledge is key to the examination success. The newly reformed GCSEs and BTECs are more rigorous and increasingly challenging. Nearly all subjects have lost their controlled assessments (previously known as coursework), with the exception of geography, PE, art, photography, music, design and technology and drama, and these have been replaced with additional exam papers. The focus of these exams is the retrieval and application of knowledge to a range of different contexts. This puts increasing pressure on our students to know and retain even more information for longer. Typically, when students leave their revision until a few weeks or even days/hours before the examinations and tests, this presents a problem.

Our short term memory has limited capacity and students find themselves unable to retain the information so they become stressed and often give up, convincing themselves they are no good at revising or that they "can't do that subject". The secret to success is to regularly revisit the knowledge to be learned (known as 'spaced retrieval'). This helps transfer the knowledge from the short-term memory to the long term memory. This not only helps to make 'learning stick' but it also frees up our short-term memory for day to day learning and experiences. To this end, we are introducing Knowledge Organisers as part of our homework strategy.

What are knowledge organisers?

A knowledge organiser is a set of key facts or information that pupils need to know and be able to recall in order to master a unit or topic. Typically, an organiser fits onto one page of A4, which helps students to visualise the layout of the page, which in turn helps them to memorise the information better. An example is attached to this letter.

How will a knowledge organiser help my child?

Knowledge organisers will be made available at the start of each unit to help them remember what they are learning and to help them to see the bigger learning journey in their subjects. Instead of forgetting previous learning, students will continually revisit and retrieve prior learning from their memories.

How will a knowledge organiser help me to help my child?

Many parents/carers ask us how they can help to support their children at home. Many are worried that they do not have all of the subject specific knowledge to be able to help their children and some worry how to check that their children have done their homework and revision. The knowledge organisers will help you to do all this easily.

Suggested activities for parents

Most homework set will be linked to all or some aspects of the organiser. This might range from learning key words, spellings or remembering dates and definitions.

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Here are some strategies that **might** help you to support your child's learning:

- Read through the organiser with your son/daughter – if you do not understand the content then ask them to explain it to you – 'teaching' you helps them to reinforce their learning.
- Try converting the information into a mind map or make your own version using clip art imagery if the organiser contains a lot of text. Display on the wall or the fridge door until the memory 'sticks'.
- Test them regularly on the spellings of key words until they are perfect. Make a note of the ones they get wrong.
- Get them to make a glossary (list) of key words with definitions or a list of formulae.
- Try recording the knowledge from the organiser as a sound file on their phones, so that your child can listen to it. Some students retain more information this way.
- Read sections out to them, missing out key words or phrases that they have to fill in.
- Test them about their knowledge.

How will teachers check students understanding?

Rather than submitting a piece of homework, teachers will plan their lessons to include a range of knowledge retrieval activities during the lessons, for example a 'low stakes' test where students are required to recall knowledge that has previously been taught. These knowledge retrieval activities recap all taught content which encourages students to continually revisit previous learning, rather than just remembering the last lesson or most recent topic. Teacher's will then have a good understanding of common misconceptions which will enable them to plan lessons and support students accordingly.

Where can I find Knowledge Organisers?

These will be distributed to students by teachers at the start of each topic/unit. Every student will be given a folder to store their Knowledge Organisers, and will be expected to have them in their school bag every day, and forms part of their basic equipment. They will also be available to download on the Academy website. If a student misplaces a knowledge organiser, it is their responsibility to replace it.

Does this effect all year groups?

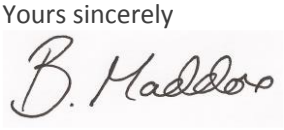
Subjects will be using this strategy in all year groups, apart from the 6th Form. Whilst public exams only happen in the latter school years, we strongly feel that preparing students with the skills to revise and recall from a young age will be hugely beneficial as they move through their school journey.

Will this strategy be used in all subjects?

As reading is also another valuable tool that improves students' ability to achieve in examinations, in English lessons, students will mainly be set reading as homework. This may take the form of reading for pleasure or might be reading related to examinations or set texts but students will be required to complete reading logs in the development stage or annotate extracts in the qualification stage. In Maths, the MyMaths platform will be utilised from Years 7 to 10.

Examples of Knowledge Organisers from PE and Science are attached to this letter. All of the information from this will be shared with students and we look forward to benefits this will bring to our students learning next academic year.

Yours sincerely



Mr B. Maddox
Assistant Principal

Edexcel GCSE PE Paper 1 – 1·1 Muscular Skeletal System

a) Functions of the Skeleton – protect vital organs, responsible for muscle attachment, enable movement at joints, store calcium and phosphorus and produce blood cells

b) Bones – long bones (leverage), short bones (weight bearing), flat bones (protection) and irregular bones (protection and muscle attachment)

c) Joints – pivot (neck), hinge (elbow, knee), ball and socket (hip and shoulder) and condyloid

d) Movements at a Joint – flexion, extension, adduction, abduction, rotation, circumduction, plantar flexion and dorsi flexion

e) Muscle Types – voluntary muscles, involuntary muscles and cardiac muscle

f) Antagonistic Pairs – agonist and antagonist when producing **movement**

g) Muscle fibres – fast twitch (type II which can be broken down further to Type IIa and Type IIx) and slow twitch (type I)

h) Structure of the Skeletal System (location)

Cranium	Carpals and Metacarpals
Clavicle	Pelvis
Scapula	Femur
Vertebrae	Patella
Ribs	Tibia
Sternum	Fibula
Humerus	Tarsals and Metatarsals
Radius	Ulna

Phalanges (hands and foot)

You need to know where these bones are located and what type of bone they are.

Knowledge Organiser

j) The Skeletal System and Muscular System works together to produce movement:

- Fulcrum – the point around which the lever rotates
- Articulation – the point where muscles and bones connect
- Articulate – movement occurs at joints where 2 bones meet

i) Location, function and example of the Voluntary Muscles

Deltoid	Hip Flexors
Biceps	Gluteus Maximus
Triceps	Quadriceps
Pectoralis Major	Hamstrings
Latissimus Dorsi	Gastrocnemius
External Obliques	Tibialis Anterior

For each of these 12 muscles you will need to know the location in the body, their function (movement) and a sporting example that demonstrates this

EDEXCEL TOPIC 2 - MOTION AND FORCES (part 1)

Describing Motion

Scalar and vector quantities

Speed	*How fast an object moves*	The speed of a car is 30m/s. A car moves forward with a velocity of 30m/s.
Velocity	*Speed + direction*	
Distance	*How far*	The table is 1m long.
Displacement	*Distance + direction*	The beach is 1km due east of the town.

Scalar	*A quantity that only has magnitude (size)*	e.g. mass, time, speed, temperature, energy, distance.
Vector	*A quantity that only has magnitude and direction*	e.g. force, velocity, momentum, displacement, acceleration, weight.

Speed is rarely constant.

Walking	*1.4m/s*
Running	*3m/s*
Cycling	*5.5m/s*

Car in town	*13m/s*
Car on motorway	*31m/s*
Train	*55m/s*
Sound in air	*330m/s*
Wind	*5 – 20 m/s*

Measuring Motion

Equations

Average speed = distance ÷ time

s = d ÷ t

Acceleration = (final velocity – initial velocity) ÷ time taken

a = (v – u) ÷ t

Acceleration	*How quickly an object speeds up*
	The change in velocity in a certain amount of time

Acceleration is positive, object is accelerating

Acceleration is negative, object is decelerating

(final velocity squared – initial velocity squared) = 2 X acceleration X distance ÷ time taken

$v^2 - u^2 = 2 \times a \times x$

Uniform acceleration	*Acceleration due to gravity is constant for objects in free fall*
	Constant acceleration

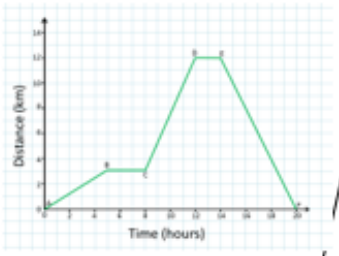
Estimating Acceleration	*Estimate how long it takes the object to stop and then use the acceleration equation*

Acceleration in free fall = $10m/s^2$

Core Practical
Determine the speed of objects
Using light gates

Speed	*Metre/second (m/s)*
Distance	*Metre (m)*
Time	*Second (s)*
Current	*Ampere (A)*
Temperature	*Kelvin (K)*
Acceleration	*Metres/second squared (m/s^2)*
Velocity	*Metre/second (m/s)*

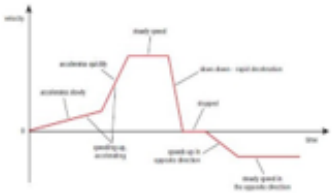
Motion Graphs



Distance-time graphs

Distance-time graph	*Shows how far an object moves along a straight line*
Speed of object	*Use the gradient of graph*
Object stopped	*Graph line flat*
Object going faster	*Graph line steeper*
Object accelerating	*Graph line curves*

Calculating speed from d-t graph	*If the graph is a straight line, the speed along the line is equal to the gradient of the line*	Gradient = vertical ÷ horizontal
	If the graph is a curve, the speed is found by drawing a tangent to the curve and then the gradient of the tangent	



Velocity-time graphs

Velocity-time graph	*Shows how fast an object moves*
Gradient of graph	*Object accelerating*
Graph line flat	*Object has constant / steady speed*
Graph line steeper	*Object has greater acceleration*
Positive diagonal line	*Object is accelerating at a constant rate*
Negative diagonal line	*Object is decelerating at a constant rate*
Graph line curves	*Object is changing acceleration*

Calculate acceleration	*Use the gradient gradient = vertical ÷ horizontal*

Calculating distance travelled from v-t graph	*The area under a section of the graph is equal to the distance travelled in that time*	Distance = Speed X time
	If the acceleration is constant, the area can be split into a rectangle or a triangle	Area of rectangle = base X height Area of triangle = ½ base X height

Knowledge Organiser