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GCSE Physical Education
Topic 1 Homework Booklet
Applied Anatomy and Physiology

Paper 1

Mr Barrett

Name _____

HW No	Topic	Issue Date	Deadline	Completed on time	Mark
1	Bones & Functions of the Skeletal System				/ 13
2	Structure of the Skeletal System				/ 9
3	Structure & Types of Joints				/ 11
4	Joint Movements				/ 11
5	Muscles & Antagonistic Pairs				/ 26
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13	Anaerobic and Aerobic Energy				
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Bones & Functions of the Skeletal System

Q1.

Which **one** of these bones is located at the ankle joint?

A Femur

B Humerus

C Scapula

D Talus

(Total 1 mark)

Q2.

Which bones are found at the shoulder joint?

A Femur and tibia

B Humerus and radius

C Scapula and humerus

D Tibia and fibula

(Total 1 mark)

Q3.

Which **one** of these is **incorrect**?

A The skeleton provides oxygen for the working muscles

B The skeleton provides protection for vital organs

C The skeleton provides structural shape and points for attachment

D The skeleton provides support

(Total 1 mark)

Q4.

Which bones are found at the elbow joint?

A Femur and tibia

B Humerus and radius

C Scapula and humerus

D Tibia and fibula

(Total 1 mark)

Q5.

Name the **three** major bones which are located in the arm.

1. _____

2. _____

3. _____

(Total 3 marks)

Q6.

Name the **bone** that sits on top of the knee cap.

(Total 1 Mark)

Q7.

Mineral storage is one of the functions of the skeleton.
Name **three** other functions.

1. _____

2. _____

3. _____

(Total 3 Marks)

Q8.

Explain one way that the skeleton's mineral storage function aids performance in physical activity and sport.

(Total 2 Marks)

Extra Space/Corrections:

Lesson 2 - Structure of the Skeletal System Homework

Q1.

Flat bones provide a protective function within the body.
Name **two** flat bones **and**, using a sporting action of your choice, suggest how these bones provide protection during performance.

1. _____

2. _____

(Total 4 marks)

Q2.

Explain the role of the skeletal system in producing movement of the body.

(Total 5 marks)

Extra Space/Corrections:

Lesson 3 - Structure & Types of Joints Homework

Q1.

Which **one** of the following statements describes the structure of ligaments?

- A Connect muscle to bone.
- B Connect muscle to muscle.
- C Connect bone to bone.
- D A clear slippery fluid.

(Total 1 mark)

Q2.

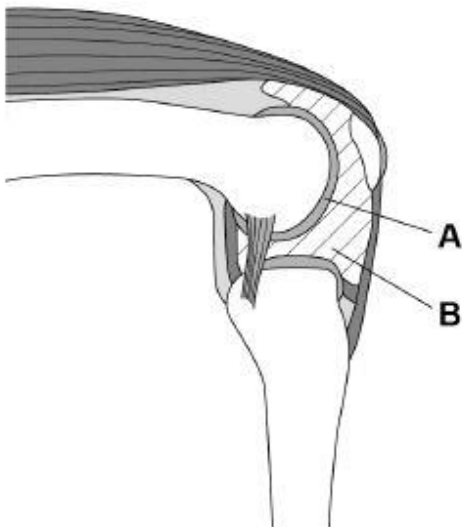
Which **one** of these joint features secretes (release) synovial fluid?

- A Synovial fluid
- B Joint capsule
- C Synovial membrane
- D Bursa/e

(Total 1 mark)

Q3.

The diagram below shows a diagram of the knee joint.



(a) Identify structures **A** and **B** from the diagram.

Structure A _____

Structure B _____

(2)

(b) For **each** of the structures identified in part(a), describe its function in the prevention of injury.

(A) _____

(2)

(B) _____

(2)

(Total 6 marks)

Q4.

Give **one** type of joint in the body.

(Total 1 mark)

Q5.

Give an example from the skeleton of where a hinge joint can be found.

(Total 1 mark)

Q6.

Give an example from the skeleton of where a ball and socket joint can be found.

(Total 1 mark)

Extra Space/Corrections:

Lesson 4 - Joints Movement Homework

Q1.

Which **one** of the following statements describes the term 'extension' at a hinge joint?

- A The movement of a limb away from the midline of the body
- B The movement of a limb which decreases the angle at a joint
- C The movement of a limb towards the midline of the body
- D The movement of a limb which increases the angle at a joint

(Total 1 mark)

Q2.

Which of the following statements **best** describes 'abduction' at a ball and socket joint?

- A The movement of a limb away from the midline of the body
- B The movement of a limb in a complete circle at a joint
- C The movement of a limb towards the midline of the body
- D The movement of a limb which decreases the angle of a joint

(Total 1 mark)

Q3.

The photograph below shows Usain Bolt driving away from the starting blocks in a 200m race.



Driving leg

Using the photograph, identify the joint movements at the left elbow and the left ankle of Usain Bolt's driving leg.

Left elbow _____

Left ankle _____

(Total 2 marks)

Q4.

(i) What type of joint is found at the shoulder?

(ii) Name **two** types of movement at the shoulder.

1. _____

2. _____

(Total 3 marks)

Q5.

Define abduction.

Use a sporting example in your answer.

(Total 2 marks)

Q6.

Define rotation.

Use a sporting example in your answer.

(Total 2 marks)

Extra Space/Corrections:

Lesson 5 Muscles Homework

Q1.

Which **one** of these muscles is found at the shoulder joint?

- A Deltoid
- B Gastrocnemius
- C Gluteals
- D Tibialis anterior

(Total 1 mark)

Q2.

Which of the following muscle movements occur when the arm bends at the elbow?

- A The biceps contract and the triceps relax
- B The biceps relax and the triceps relax
- C The triceps contract and the biceps contract
- D The triceps contract and the biceps relax

(Total 1 mark)

Q3.

Which **one** of these causes plantar flexion at the ankle?

- A Gastrocnemius
- B Hamstrings
- C Quadriceps
- D Tibialis anterior

(Total 1 mark)

Q4.

Name **two** muscles in the upper body.

1.

2.

(Total 2 marks)

Q5.

In which part of the body are the following muscle groups?

(i) pectorals - _____

(ii) quadriceps - _____

(Total 2 marks)

Q6.

Name **two** muscles which are also located in the leg.

Muscle 1 _____

Muscle 2 _____

(Total 2 marks)

Q7.

Movement occurs when bones and muscles work together.

(i) **Explain** what is meant by extension.

Extension

(2)

(ii) Give **two** examples of sporting situations where extension occurs.

Example 1

Example 2

(2)

(iii) **Name** a muscle which produces the movement that you have chosen in **one** of your examples above.

Physical movement _____

Named muscle _____

(1)

(Total 5 marks)

Q8.

The photograph below shows Usain Bolt driving away from the starting blocks in a 200m race.



Using the photograph, identify the main agonist at the knee and ankle of Usain Bolt's driving leg.

Knee _____

Ankle _____

(Total 2 marks)

Q9.

Explain how muscles and bones work together to produce movement.

(Total 4 marks)

Q10.

Movement occurs through the combination of the skeletal system and the muscular system.

State one bone, one joint and one muscle which would be involved when the arm is moved.

Named bone _____

Named joint _____

Named muscle _____

(3)

Q11.

The image shows a performer weight training. This movement is brought about by the muscular and skeletal systems working together.



Position A

Position B

Explain how the muscles and bones work together to produce the movement from position A to position B.

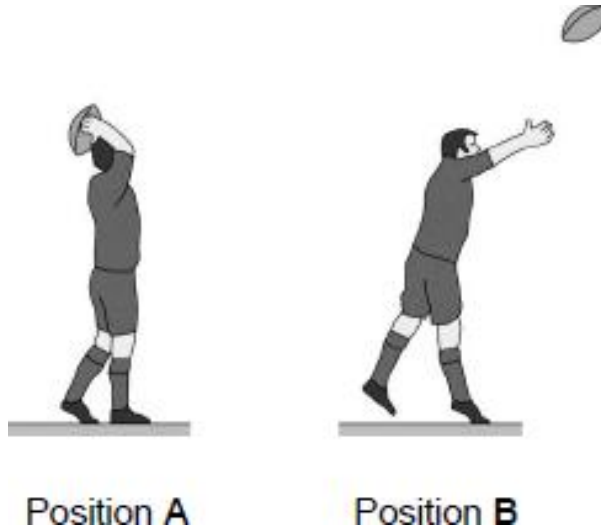
(Total 3 marks)

Extra Space/Corrections:

Lesson 6 Muscles Homework

Q1.

The image below shows a rugby player throwing the ball during a lineout.



Complete the table to identify:

- the type of joint operating at the **elbow**
- the agonist muscle causing the movement at the elbow from Position **A** to Position **B**
- the type of contraction occurring in the agonist muscle at the **elbow** to cause this movement.

Type of joint (i)	Agonist muscle (ii)	Type of contraction (iii)

(Total 3 marks)

Q2.

Define concentric contraction.

Use a sporting example in your answer.

(Total 2 marks)

Q3.

Define isometric contraction.

Use a sporting example in your answer.

(Total 2 marks)

Q4.

Holding a balanced position is important in many physical activities.

Give one static balance and explain how the muscles work to maintain this balance.

Extra Space/Corrections:

Lesson 7 Respiratory System Homework

Q1.

During inspiration, which **one** of these must air first pass through before entering the bronchi?

A Alveoli

B Bronchioles

C Lungs

D Trachea

(Total 1 mark)

Q2.

In order for respiration to take place air must be taken in.

(i) Name **two** of the air passages which allow air to enter the body.

1. _____

2. _____

(2)

(ii) **Describe** what gaseous exchange is and clearly state **where** it takes place.

(3)

(Total 5 marks)

Q3.

Breathing enables gaseous exchange to occur at the alveoli.

Outline how **two** features of the alveoli assist in gaseous exchange.

1.

2.

(Total 2 marks)

Lesson 8 Respiratory System Homework

Q1.

Describe how respiration takes place.

(3)

(Total 6 marks)

Q2.

Adam plays badminton every week at a local leisure centre.

How would the mechanics of Adam's breathing change during inhalation as a result of exercise?

(Total 2 marks)

Extra Space/Corrections:

Lesson 9 Respiratory System Homework

Q1.

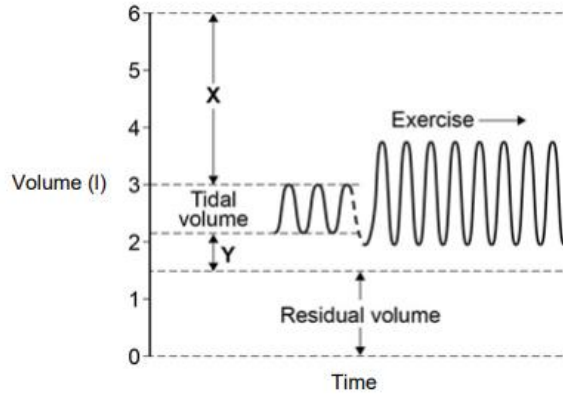
Which **one** of these lung volumes is defined as the volume of air left in the lungs after maximal expiration?

- A Expiratory reserve volume
- B Inspiratory reserve volume
- C Residual volume
- D Tidal volume

(Total 1 mark)

Q2.

The diagram shows the lung volumes recorded on a spirometry trace.



Identify the lung volumes labelled **X** and **Y**.

X: _____

Y: _____

(Total 2 marks)

Q3.

Zack is a 16-year-old GCSE PE student. He is just about to play a game of basketball for his school team.

- (a) Zack's respiratory system will experience a number of changes before and during the game of basketball.

Define the terms tidal volume **and** residual volume.

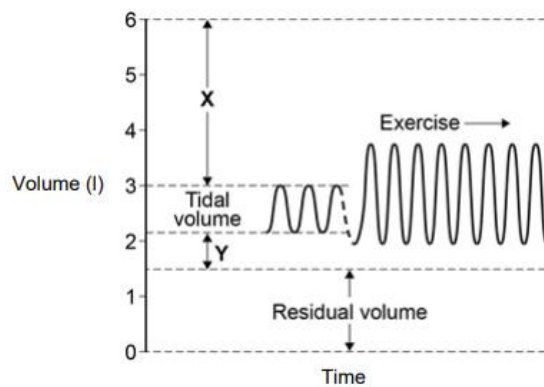
(2)

(b) Outline what will happen to Zack's tidal volume **and** residual volume once exercise starts.

(2)
(Total 4 marks)

Q4.

The diagram shows the lung volumes recorded on a spirometry trace.



Using the information in the diagram above, suggest a sporting activity that may be being performed. Justify your answer.

(Total 3 marks)

Extra Space/Corrections:

Lesson 10 Cardiovascular System Homework

Q1.

(a) Identify the blood vessel that carries oxygenated blood away from the heart.

(1)

(b) State two characteristics of the blood vessel identified in part (a).

1.

2.

(2)

(c) Evaluate the importance of vasodilation when taking part in physical exercise

(4)

(Total 7 marks)

Q3.

When a performer exercises, blood is redistributed to different parts of the body. Explain two ways in which the body redistributes blood during exercise.

1. _____

2. _____

(Total 4 marks)

Extra Space/Corrections:

Lesson 11 Cardiovascular System Homework

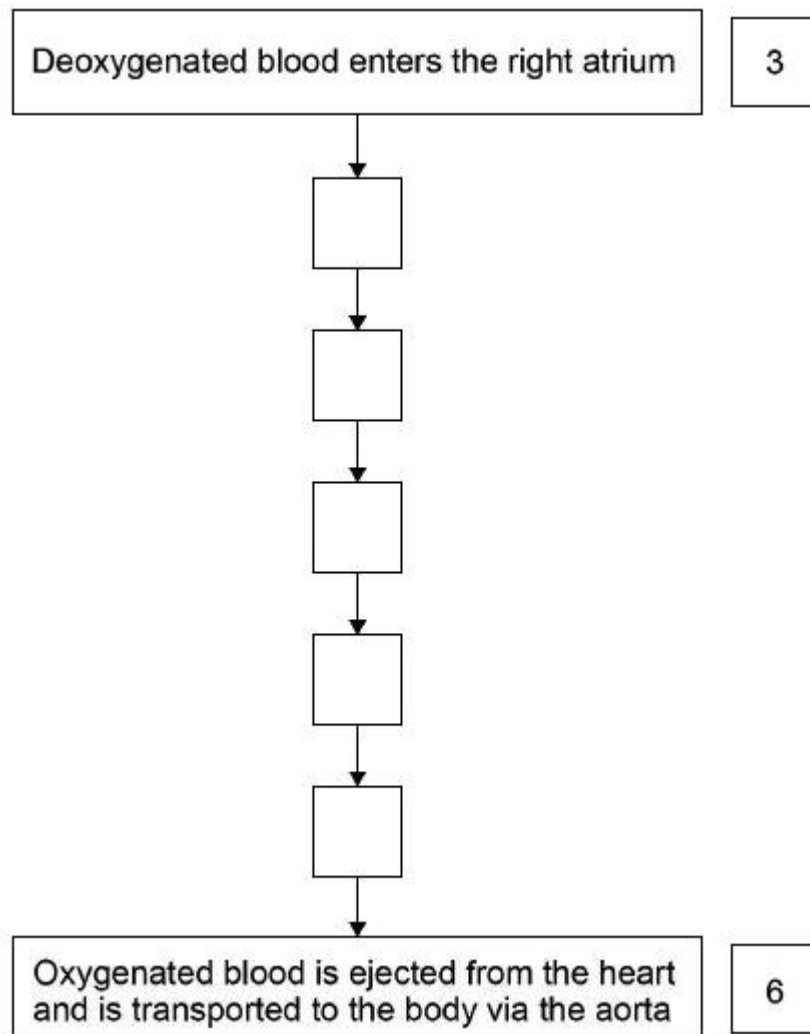
Q1.

Complete the diagram below to show the pathway of blood through the heart during the cardiac cycle.

Write the numbers from the following list in the boxes shown in the diagram to show the correct order of the pathway.

The first and last positions in the diagram have been completed for you. Use each number only once.

- 1 Gaseous exchange takes place (resulting in oxygenated blood)
- 2 It passes to the left ventricle
- 3 Deoxygenated blood enters the right atrium
- 4 Then passes into the right ventricle
- 5 The pulmonary vein transports (oxygenated) blood to the left atrium
- 6 Oxygenated blood is ejected from the heart and is transported to the body via the aorta
- 7 The pulmonary artery transports (the deoxygenated) blood to the lungs



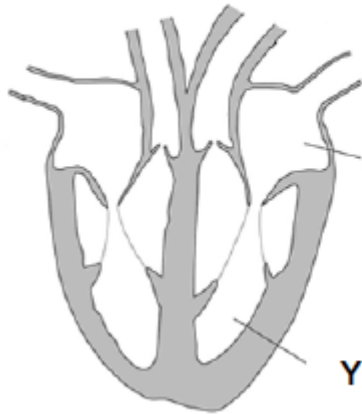
(Total 5 marks)

Q2.

A diagram of the heart is shown below.
Using the diagram, identify the names of the chambers of the heart
labelled **X** and **Y**.

Right

Left



X _____

Y _____

(Total 2 marks)

Q3.

The circulatory system contributes to the efficient performance of a sports performer.

Explain how the heart acts as a pump in a double circulatory system.

(Total 3 marks)

Extra Space/Corrections:

Lesson 12 Cardiovascular System Homework

Q1.

How is maximum heart rate calculated?

A 220 divided by age

B 220 minus age

C 220 multiplied by age

D 220 plus age

(Total 1 mark)

Q2.

(i) What is blood pressure?

(ii) How does physical activity affect blood pressure

during activity? _____

in the long term? _____

(Total 4 marks)

Q3.

What is the pulse?

(Total 1 mark)

Q4.

Define cardiac output.

(Total 1 mark)

Q5.

Just before exercising, Amar may encounter a slight rise in heart rate. What is this slight rise called **and** what is it caused by?

(Total 2 marks)

Q6.

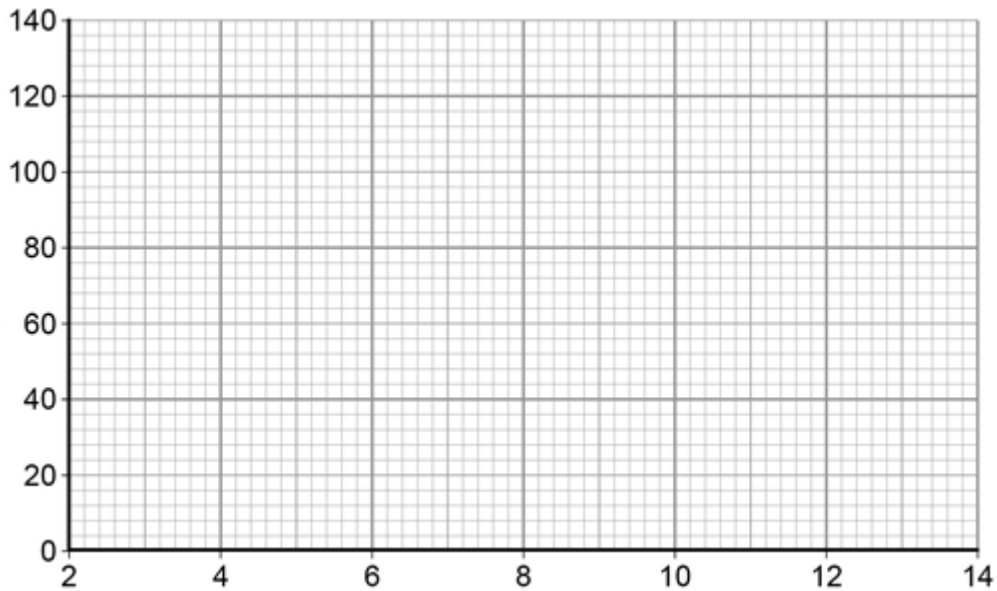
The table shows the heart rates recorded by a 20-year-old athlete. Heart rates have been recorded every two minutes.

- (a) Plot the information shown in the table on the graph paper below to show how heart rate has changed over time. Label the axes and join up the points to make a line graph.

Heart rates recorded by a 20-year-old athlete

Time (minutes)	2	4	6	8	10	12	14
Heart rate (bpm)	80	85	110	115	115	115	85

Heart rates recorded by an athlete



(3)

- (b) Analyse the data shown in the table. Consider what has happened to the athlete between:

- 4 and 6 minutes
- 6 and 12 minutes

(2)

(Total 5 marks)

Lesson 13 Aerobic and Anaerobic Exercise Homework

Q1.

Which of the following equations summarises the process of anaerobic respiration?

A Energy \rightarrow lactic acid + glucose

B Glucose \rightarrow energy + lactic acid

C Glucose + oxygen \rightarrow energy + lactic acid

D Oxygen + energy \rightarrow lactic acid

(Total 1 mark)

Q2.

Lactic acid production occurs when an athlete's body is:

A Digesting a large meal

B Working aerobically

C Working anaerobically

D Sitting still for a long period of time

(Total 1 mark)

Q3.

Which **one** of the following athletics events is an example of an aerobic activity?

A Javelin

B 100 m

C 5000 m

D High Jump

(Total 1 mark)

Q4.

Which **one** of the following equations summarises the process of aerobic respiration?

A Glucose + oxygen \rightarrow energy + carbon dioxide + water

B Glucose + oxygen + carbon dioxide \rightarrow energy + water

C Glucose + carbon dioxide \rightarrow energy + oxygen + water

D Glucose + water + carbon dioxide \rightarrow energy + oxygen

(Total 1 mark)

Q5.

Which **one** of the following is **not** an anaerobic activity?

A Long jump

B Gymnastics vault

C Tennis serve

D Yoga

(Total 1 mark)

Q6.

Which activity is most likely to use aerobic respiration for energy?

A 10 km cross country run

B Vault in gymnastics

C Shot put

D Jumping to block a shot in basketball

(Total 1 mark)

Q7.

Sporting situations may be considered to be aerobic or anaerobic.

(i) What is meant by the term 'aerobic'?

(1)

(ii) Describe a situation in which a performer would be working aerobically.

(2)

(iii) What is meant by the term 'anaerobic'?

(1)

(iv) Describe a situation in which a performer would be working anaerobically.

(2)
(Total 6 marks)

Q8.

(i) What is lactic acid?

(ii) How does lactic acid affect performance?

(Total 4 marks)

Extra Space/Corrections:

Lesson 14 Excess Post-Exercise Consumption (EPOC) Homework

Q1.

Following a period of intensive exercise, Ben is experiencing excess post-exercise oxygen consumption (EPOC).

State what happens to Ben's breathing immediately after intensive exercise. Explain the reasons why her breathing is like this.

(Total 4 marks)

Extra Space/Corrections:

Lesson 15 Recovery from Vigorous Exercise Homework

Q1.

Evaluate how appropriate an ice bath may be to aid the recovery of a performer immediately after a game of badminton.

(Total 6 marks)

Extra Space/Corrections:

Lesson 16 Immediate and Short Term Effects of Exercise Homework

Q1.

Which **one** of these is an immediate effect of exercise?

- A** Improvement in muscular endurance
- B** Improvement in stamina
- C** Increase in aerobic fitness
- D** Increase in heart rate

(Total 1 mark)

Q2.

Which acid can build up as a result of fatigue?

- A** Formic
- B** Hydrochloric
- C** Citric
- D** Lactic

(Total 1 mark)

Q3.

State **two** short-term effects of exercise (24 to 36 hours after exercise).

1. _____
2. _____

(Total 2 marks)

Q4.

Give **three** short-term effects of exercise.

1. _____
2. _____
3. _____

(Total 3 marks)

Q5.

Fatigue often occurs when a person is participating in a physical activity.

What is meant by the term 'fatigue'?

(Total 1 mark)

Q6.

Explain how fatigue may occur **and** state the negative effect that it can have on a performer in a named physical activity.

(Total 2 marks)

Q7.

Why does fatigue occur during physical activity?

(Total 5 marks)

Extra Space/Corrections:

Lesson 17 Long Term Effects of Exercise Homework

Q1.

Which **one** of these is a long term benefit of exercise?

A Higher resting heart rate

B Reduced blood pressure

C Reduced stroke volume

D Reduced tidal volume

(Total 1 mark)

Q2.

Amar has been training for months in preparation to complete a half marathon. He trains four times a week and does a mixture of steady state running, stretching and weight training.

(a) Amar's cardiovascular endurance will improve as a result of completing steady state running.

State **three** other long-term effects that Amar is likely to experience as a result of completing steady state running.

1. _____

2. _____

3. _____

(Total 3 marks)

Extra Space/Corrections:
