Please check the examination details below before entering your candidate information

Candidate surname	Other names

Pearson Edexcel
Level 1/Level 2 GCSE (9–1)

Centre Number	Candidate Number

Time 1 hour 45 minutes

Paper reference **1PE0/01**

Physical Education

COMPONENT 1: Fitness and Body Systems

You do not need any other materials.

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
  – *there may be more space than you need.*

Information

- The total mark for this paper is 90.
- The marks for **each** question are shown in brackets
  – *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Try to answer every question.
- Check your answers if you have time at the end.
- Good luck with your examination.

Turn over ▶

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Pearson

Answer ALL questions.

Write your answers in the spaces provided.

Some questions must be answered with a cross in a box ☒. If you change your mind about an answer, put a line through the box ☒ and then mark your new answer with a cross ☒.

1 (a) Which **one** of the following joint classifications has the greatest range of movement?

(1)

☒	**A** Ball and socket
☒	**B** Condyloid
☒	**C** Hinge
☒	**D** Pivot

(b) Which **one** of the following antagonistic pairs of muscles would cause plantar-flexion at the ankle?

(1)

☒	**A** Gastrocnemius and gluteus maximus both contract
☒	**B** Gastrocnemius contracts and the tibialis anterior relaxes
☒	**C** Gluteus maximus contracts and the tibialis anterior relaxes
☒	**D** Tibialis anterior contracts and the hamstrings relax

(c) Which **one** of the following is an example of a condyloid joint?

(1)

☒	**A** Atlas and axis
☒	**B** Knee
☒	**C** Shoulder
☒	**D** Wrist

(d) Which **one** of the following would result in a mechanical **disadvantage** when using a lever system to move a load?

(1)

☒	**A** A longer effort arm than load arm
☒	**B** An effort and load arm of the same length
☒	**C** The fulcrum is closest to the effort
☒	**D** The fulcrum is nearer to the load than to the effort

Danny is 20 years old.

(e) Which **one** of the following is Danny's Maximum Heart Rate (MaxHR)?

(1)

☒	**A** 190
☒	**B** 200
☒	**C** 210
☒	**D** 220

Danny uses his heart rate values from an exercise session to calculate the percentage of his maximum heart rate (MaxHR) at different times in a training session.

Danny's percentage MaxHR values are shown in **Figure 1**.

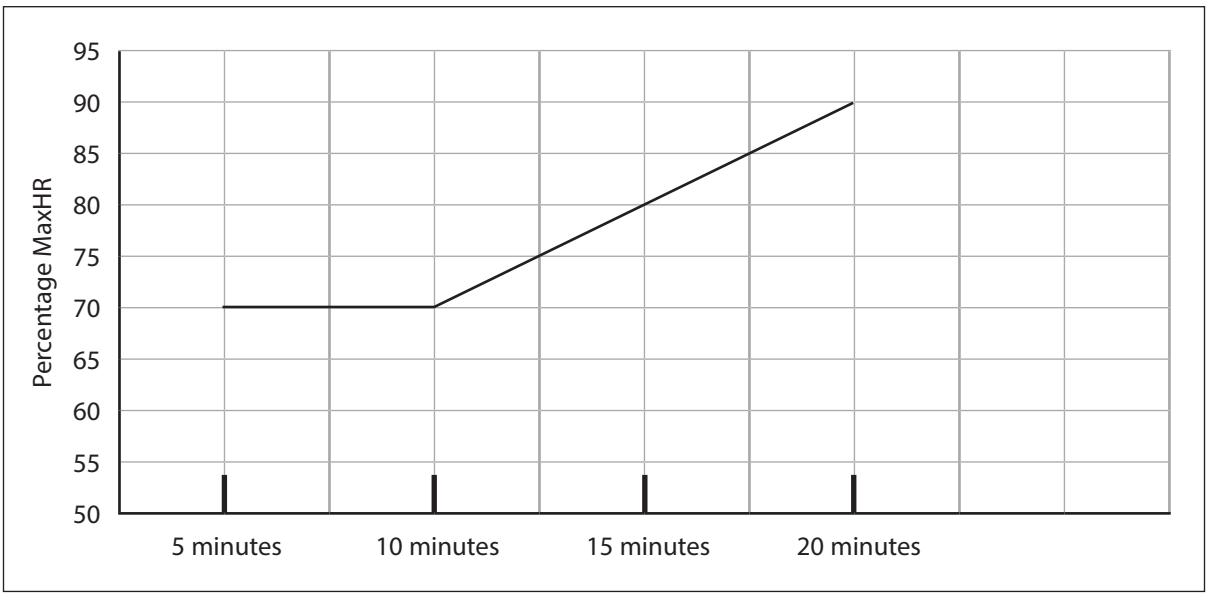

Figure 1

(f) Identify when Danny begins training at the **lower limit** of his **anaerobic** training zone.

(1)

☒	**A** 5 minutes
☒	**B** 10 minutes
☒	**C** 15 minutes
☒	**D** 20 minutes

Danny takes part in a 30 m sprint test. He takes 4.1 seconds to complete the test.

Table 1 shows ratings for the 30 m sprint test.

Gender	Excellent	Good	Average	Fair
Male	<3.9	3.9 – 4.2	4.3 – 4.5	>4.5

(Adapted from Davis et al Sport PE, 2000)

Table 1

(g) Which **one** of the following is the correct rating for Danny, who scored 4.1 seconds in the 30 m sprint test?

(1)

☒	**A** Excellent
☒	**B** Good
☒	**C** Average
☒	**D** Fair

(h) Which **one** of the following is a rule designed to reduce injury in sport?

(1)

☒	**A** Not allowing sticks to go over head height in field hockey
☒	**B** Not being allowed to pass the ball forwards in rugby
☒	**C** Only allowing 7 players on a netball team
☒	**D** Only playing up to 21 points in a game of badminton

(Total for Question 1 = 8 marks)

2 Bones have different **classifications** and **functions**.

Complete **Table 2** by:

(a) Stating the **classification** of each bone.

(b) Stating a **different function** for each classification of bone.

Bone	(a) Classification of bone	(b) Function of each classification of bone
Femur	(1)	(1)
Vertebra	(1)	(1)
Scapula	(1)	(1)

Table 2

(Total for Question 2 = 6 marks)

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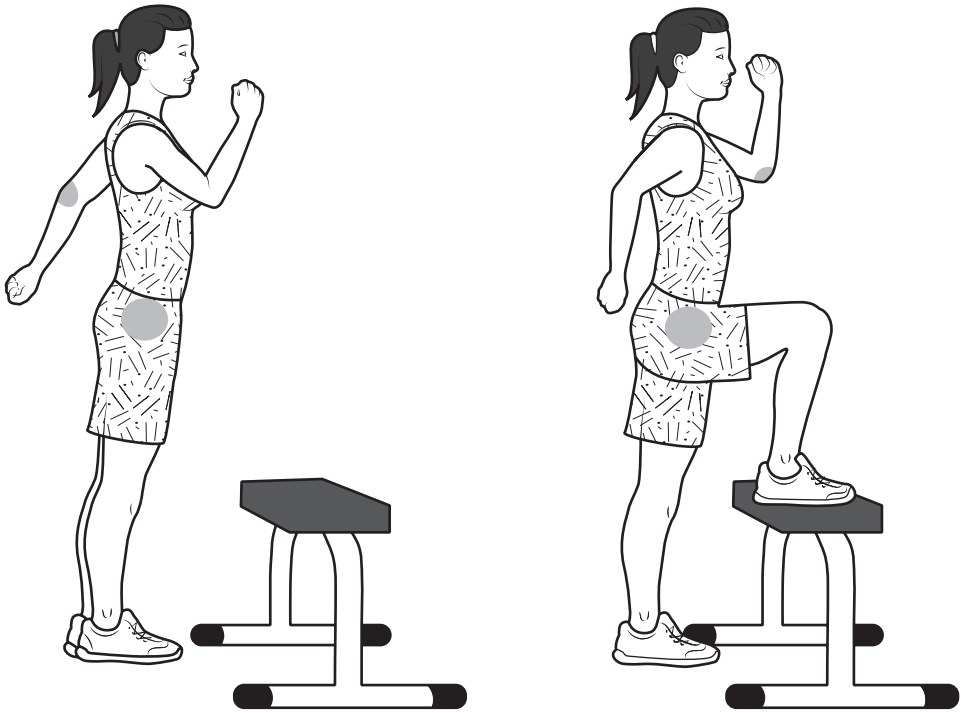
3 **Figure 2** shows Georgia taking part in the Harvard Step Test. Her left elbow and right hip are shaded.



Position A **Position B**

Figure 2

Analyse the action of the antagonistic muscle pairs at the **shaded** joints of the **elbow** and **hip** that cause the movement from **Position A** to **Position B** in **Figure 2**.

(3)

Elbow

(3)

Hip

(Total for Question 3 = 6 marks)

4 Carbon dioxide is produced during aerobic exercise.

(a) Explain the importance of breathing out an increased amount of carbon dioxide during a long-distance race.

(2)

(b) State the name of the structure **in the lungs** where gas exchange takes place.

(1)

(c) During a 100 m race an elite sprinter may only breathe twice.

(i) Explain why an elite 100 m sprinter may only breathe twice during a race.

(2)

(ii) State what happens to the 100 m sprinter's breathing rate once they finish their race.

(1)

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(Total for Question 4 = 6 marks)

5 **Table 3** shows three different sporting techniques.

Complete **Table 3** by:

(a) Stating the lever system in use in each technique.

	Sporting action	Lever system
(i)	 Swinging the lower leg forward to kick a rugby ball	**(1)**
(ii)	 Heading a football forward	**(1)**
(iii)	 Going up onto toes to serve the ball	**(1)**

(Source: © Angyalosi Beata/Shutterstock)
(Source: © TandemBranding/Shutterstock)
(Source: © nd3000/Shutterstock)

Table 3

(b) State the class of lever where the load is in the middle of the lever system.

(1)

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(c) State the term being described:

The ability to lift a heavy load with relatively small muscular effort.

(1)

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(Total for Question 5 = 5 marks)

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6 There are three types of health.

(a) State the type of health missing from this definition.

Health is a state of complete emotional and physical well-being, and not merely the absence of disease and infirmity.

(1)

Figure 3 shows a high jumper.

(Source: © Soonthorn Wongsaita/Shutterstock)

Figure 3

To be fit for their event, high jumpers need high levels of some of the components of fitness.

Complete **Table 4** by:

(b) Stating the component of fitness used in each phase of the high jump.

(c) Stating the importance of each component of fitness during the stated phase of the high jump.

Event phase	(b) Component of fitness used in this phase	(c) Importance of the component of fitness in this phase of the high jump
Take off	**(1)**	**(1)**
Shape over the bar	**(1)**	**(1)**

Table 4

Figure 4 and **Figure 5** show a golfer and some hockey players participating in their sport.

Figure 4

Figure 5

(Source: © OtmarW/Shutterstock)
(Source: © takaimages/Shutterstock)

(d) Justify why having a good reaction time is **more important** to a hockey player than to a golfer.

(3)

(Total for Question 6 = 8 marks)

7 Remi is a long-distance runner. He takes part in the 10,000 m race which is 25 laps of the track.

(a) Justify why it is an advantage if Remi has a high percentage of **type IIa** muscle fibres in his legs.

(3)

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Table 5 shows three different training methods.

Complete **Table 5** by:

(b) Stating a component of fitness improved by each training method.

	Training method	**Component of fitness improved**
(i)	Weight training (using low weights and a high number of repetitions)	**(1)**
(ii)	Plyometrics	**(1)**
(iii)	Continuous training	**(1)**

Table 5

(c) Explain which **one** of the training methods in **Table 5** Remi should use the **most** to improve his performance in the 10,000 m.

(2)

(d) Explain which **one** of the training methods in **Table 5** is **least** relevant to Remi's 10,000 m performance.

(2)

Remi also includes a Fartlek training session every week.

(e) Describe Fartlek training.

(3)

(f) Explain why lactate may accumulate in Remi's muscles during a Fartlek training session.

(2)

(Total for Question 7 = 15 marks)

8 **Figure 6** shows a runner's heart rate trace during an interval training session.

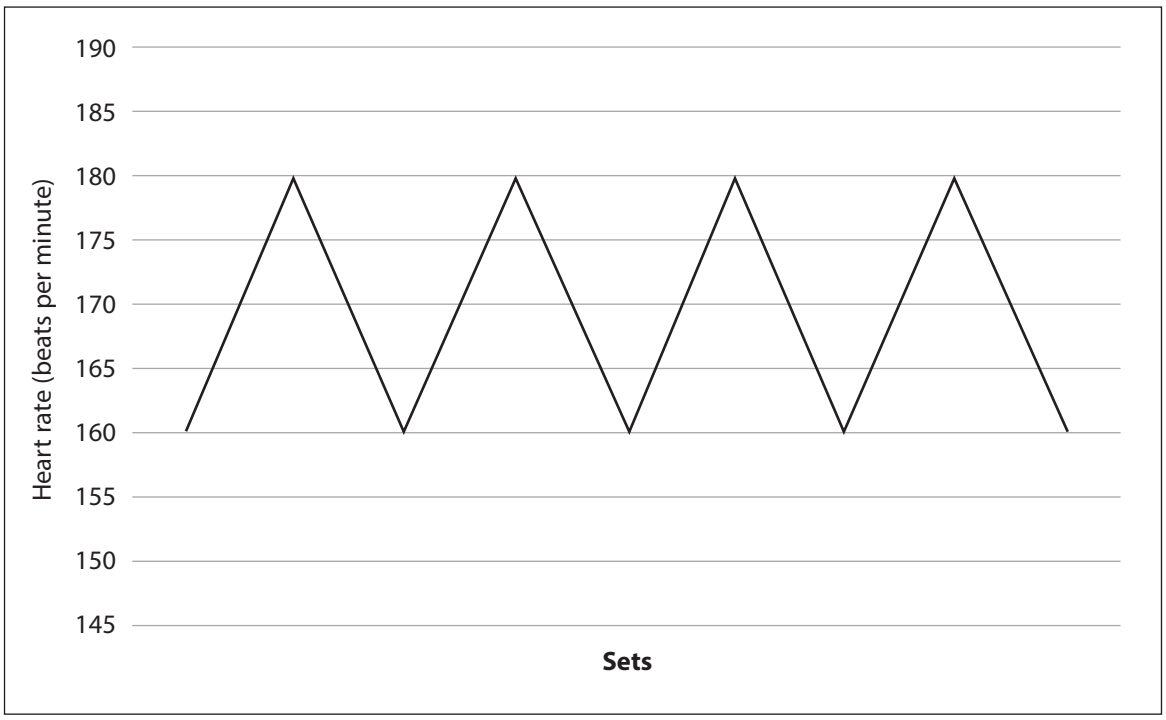

Figure 6

Explain **one** reason why the heart rate trace in **Figure 6** is from an interval training session.

(2)

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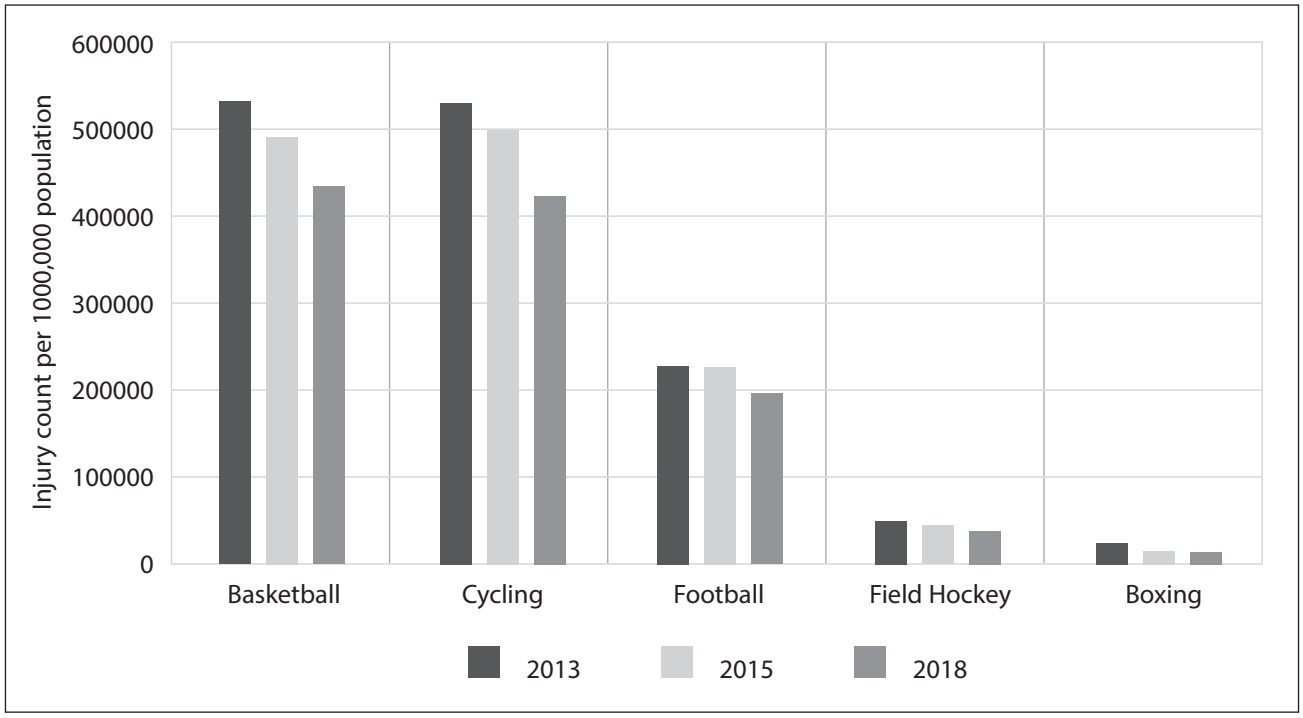
(Total for Question 8 = 2 marks)

9 **Figure 7** shows sports injury data from 2013, 2015 and 2018.



(Adapted from: https://injuryfacts.nsc.org)

Figure 7

(a) Predict, **using Figure 7**, the **most likely** trend in the number of sports injuries for the year 2020.

(1)

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(b) Identify, using the data in **Figure 7**, the **year** with the greatest number of sports injuries.

(1)

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The enforcement of safety rules in sports and the correct application of the principles of training are methods to help reduce injury.

(c) Explain, using an example, **one other** method to reduce sports injuries.

(3)

(d) Describe how **one** of the principles of training can reduce the risk of injury.

(3)

Basketball and cycling have the highest injury rates for the sports shown in **Figure 7**.

Complete **Table 6** by:

(e) Stating **one different type** of sports injury that could occur in each sport.

(f) Stating how the type of sports injury might occur.

Sport	(e) Type of sports injury	(f) How sports injury might occur
Basketball	**(1)**	**(1)**
Cycling	**(1)**	**(1)**

Table 6

(g) Explain **one** reason why an elite athlete may be tempted to take narcotic analgesics if they become injured.

(2)

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An elite gymnast will spend a long time stretching as part of their warm-up, to help reduce the risk of injury.

(h) Explain **one other** reason why an elite gymnast will spend a long time stretching during their warm-up.

(2)

(Total for Question 9 = 16 marks)

10 The functions of the skeleton make it possible to play sports such as rugby.

Figure 8 shows Pete playing rugby.

(Source: © PhotoStock10/Shutterstock)

Figure 8

The functions of the skeleton include red and white blood cell production and providing joints for movement.

Evaluate the importance of **three other** functions of the skeleton in allowing Pete to participate in rugby.

(9)

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(Total for Question 10 = 9 marks)

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11 Lola is a triathlete. To complete a triathlon Lola needs to swim 1.5 km, cycle 40 km and run 10 km.

Lola completes the fitness tests shown in **Table 7**.

Lola's fitness tests
One-minute press-up test
Cooper 12 minute swim test
Grip dynamometer test

Table 7

Evaluate the suitability of the fitness tests in **Table 7** to assess Lola's fitness for the triathlon.

(9)

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(Total for Question 11 = 9 marks)

TOTAL FOR PAPER = 90 MARKS

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