



Rewarding Learning

General Certificate of Secondary Education

Physical Education

Paper 2

Developing Performance

[G9772]

Assessment

**MARK
SCHEME**

General Marking Instructions

Introduction

Mark schemes are intended to ensure that the GCSE examinations are marked consistently and fairly. The mark schemes provide markers with an indication of the nature and range of candidates' responses likely to be worthy of credit. They also set out the criteria which they should apply in allocating marks to candidates' responses.

Assessment objectives

Below are the assessment objectives for Physical Education which are assessed in examination paper 1 and paper 2.

Candidates must:

- AO1** be able to recall knowledge and demonstrate understanding of the concepts, facts, terminology, principles and methods relating to the subject content;
- AO2** be able to apply effectively the concepts, facts, terminology, principles and methods relating to the subject content;
- AO3** be able to analyse, interpret and evaluate information and data relating to the subject content.

Quality of candidates' responses

In marking the examination papers, examiners should be looking for a quality of response reflecting the level of maturity which may reasonably be expected of a 16-year-old which is the age at which the majority of candidates sit their GCSE examinations.

Flexibility in marking

Mark schemes are not intended to be totally prescriptive. No mark scheme can cover all the responses which candidates may produce. In the event of unanticipated answers, examiners are expected to use their professional judgement to assess the validity of answers. If an answer is particularly problematic, then examiners should seek the guidance of the Supervising Examiner.

Positive marking

Examiners are encouraged to be positive in their marking, giving appropriate credit for what candidates know, understand and can do rather than penalising candidates for errors or omissions. Examiners should make use of the whole of the available mark range for any particular question and be prepared to award full marks for a response which is as good as might reasonably be expected of a 16-year-old GCSE candidate.

Awarding zero marks

Marks should only be awarded for valid responses and no marks should be awarded for an answer which is completely incorrect or inappropriate.

Marking Calculations

In marking answers involving calculations, examiners should apply the 'own figure rule' so that candidates are not penalised more than once for a computational error.

Types of mark schemes

Mark schemes for tasks or questions which require candidates to respond in extended written form are marked on the basis of levels of response which take account of the quality of written communication. Other questions which require only short answers are marked on a point for point basis with marks awarded for each valid piece of information provided.

Levels of response

Tasks and questions requiring candidates to respond in extended writing are marked in terms of levels of response. In deciding which level of response to award, examiners should look for the 'best fit' bearing in mind that weakness in one area may be compensated for by strength in another. In deciding which mark within a particular level to award to any response, examiners are expected to use their professional judgement. The following guidance is provided to assist examiners.

Threshold performance: Response which just merits inclusion in the level and should be awarded a mark at or near the bottom of the range.

Intermediate performance: Response which clearly merits inclusion in the level and should be awarded a mark at or near the middle of the range.

High performance: Response which fully satisfies the level description and should be awarded a mark at or near the top of the range.

Quality of written communication

Quality of written communication is taken into account in assessing candidates' responses to all tasks and questions that require them to respond in extended written form. These tasks and questions are marked on the basis of levels of response. The description for each level of response includes reference to the quality of written communication.

For conciseness, quality of written communication is distinguished within levels of response as follows:

Level 1: Quality of written communication is basic.

Level 2: Quality of written communication is good.

Level 3: Quality of written communication is excellent.

In interpreting these level descriptions, examiners should refer to the more detailed guidance provided below:

Level 1 (Basic): The candidate makes only a limited selection and use of an appropriate form and style of writing. The organisation of material may lack clarity and coherence. There is little use of specialist vocabulary. Presentation, spelling, punctuation and grammar may be such that intended meaning is not clear.

Level 2 (Good): The candidate makes a reasonable selection and use of an appropriate form and style of writing. Relevant material is organised with some clarity and coherence. There is some use of appropriate specialist vocabulary. Presentation, spelling, punctuation and grammar are sufficiently competent to make meaning clear.

Level 3 (Excellent): The candidate successfully selects and uses the most appropriate form and style of writing. Relevant material is organised with a high degree of clarity and coherence. There is widespread and accurate use of appropriate specialist vocabulary. Presentation, spelling, punctuation and grammar are of a sufficiently high standard to make meaning clear.

			AVAILABLE MARKS
1	<p>C (Physical fitness is the ability to perform physical tasks efficiently and effectively.)</p> <p>Award [0] for an answer not worthy of credit. Award [1] for identifying the correct definition of physical fitness. [1]</p>		1
2	<p>(a) Figure 1 is developing physical fitness for health. Award [0] for an answer not worthy of credit. Award [1] for correctly identifying Figure 1 as developing physical fitness for health. Award [1] for correctly identifying Figure 2 as developing physical fitness for performance. (2 × [1]) [2]</p> <p>(b) Figure 1 is developing physical fitness for performance.</p> <p>Figure 1 shows a person who would perform a baseline of appropriate and sufficient exercise or physical activity to keep the body in reasonable working order. However, Figure 2 shows a group of people who want to perform a higher baseline of regular and appropriate exercise so that the body is in the best shape possible to perform the physical requirements of the sport/ event as efficiently or effectively as possible.</p> <p>Award [0] for an answer not worthy of credit. Award [1] for clearly explaining physical fitness for health involves the person performing a baseline of appropriate and sufficient exercise or physical activity to keep the body in reasonable working order. Award [1] for clearly explaining physical fitness for performance involves the person performing a higher baseline of regular and appropriate exercise so that the body is in the best shape possible to perform the physical requirements of the sport/event as efficiently or effectively as possible. (2 × [1]) [2]</p>		4
3	<p>(a) <i>Example answers:</i> Aerobic energy is produced with the use of oxygen; anaerobic energy is produced without the use of oxygen. Aerobic fitness enables a person to keep going for a long period of time without getting tired; anaerobic fitness enables a person to perform at a high intensity/maximum effort for a short period of time.</p> <p>Award [0] for an answer not worthy of credit. Award [1] for a clear example of a difference between aerobic and anaerobic energy production. (2 × [1]) [2]</p> <p>(b) A person's potential anaerobic energy production is determined by the ability of the muscles and liver to store fuel and the ability of the muscles to utilise this fuel.</p> <p>Award [0] for an answer not worthy of credit. Award [1] for a moderate understanding of what determines a person's potential anaerobic energy production. Award [2] for a competent understanding of what determines a person's potential anaerobic energy production. Award [3] for a highly competent understanding of what determines a person's potential anaerobic energy production. [3]</p>		5

4 (a) **Muscular strength**

Justification: The muscles are producing near maximum force to pull the heavy weight of the tug of war rope over the agreed line.

Award **[0]** for an answer not worthy of credit.

Award **[1]** for identifying the correct component of fitness.

Award **[2]** for identifying the correct component of fitness **and** providing a moderate explanation of the relative importance of the component of fitness to the physical activity.

Award **[3]** for identifying the correct component of fitness **and** providing a detailed explanation of the relative importance of the component of fitness to the physical activity. [3]

(b) **Flexibility**

Justification: The gymnast's muscles and ligaments have to be able to stretch to allow the full range of movement to perform the splits.

Award **[0]** for an answer not worthy of credit.

Award **[1]** for identifying the correct component of fitness.

Award **[2]** for identifying the correct component of fitness **and** providing a moderate explanation of the relative importance of the component of fitness to the physical activity.

Award **[3]** for identifying the correct component of fitness **and** providing a detailed explanation of the relative importance of the component of fitness to the physical activity. [3]

(c) **Muscular endurance**

Justification: The netballer will have to keep repeating the movements of the game for a long period of time/at less than maximum effort.

Award **[0]** for an answer not worthy of credit.

Award **[1]** for identifying the correct component of fitness.

Award **[2]** for identifying the correct component of fitness **and** providing a moderate explanation of the relative importance of the component of fitness to the physical activity.

Award **[3]** for identifying the correct component of fitness **and** providing a detailed explanation of the relative importance of the component of fitness to the physical activity. [3]

5 *Example answers:*

- Make the type of **exercise** specific.
- Make the **training method** specific.
- Train the specific **components of fitness** to match the physical demands for the event, sport or position.

Award **[0]** for an answer not worthy of credit.

Award **[1]** for identifying one area of training that needs to be specific for training to be effective.

(3 × [1]) [3]

AVAILABLE
MARKS

9

3

6 *Example answers:*

- Having a **specific** target; will give the athlete a clear focus to work towards improving/area of improvement to develop/makes the target very clear and related directly to the task.
- By making the target **measurable**; the athlete will be able to monitor progress/identify if training is effective.
- By ensuring the target is **achievable** or realistic; the athlete will be motivated that they can do it/the target is not too easy but challenging within the athlete's capacity.
- By **recording** the target; this gives the target more purpose/less of a wish/ helps towards keeping a training diary.
- **Timed** targets; state when the target will be achieved/set a time limit for completion.

Award **[0]** for an answer not worthy of credit.

Award **[1]** for correctly identifying an appropriate principle of SMART target setting or a clear and competent understanding of how the principle could help an athlete improve performance.

Award **[2]** for correctly identifying an appropriate principle of SMART target setting **and** a clear and competent understanding of how the principle could help an athlete improve performance. [2] 2

7 (a) The training method is **Fartlek**.

Award **[0]** for an answer not worthy of credit.

Award **[1]** for naming the correct method of training. [1]

(b) *Example answers:*

- The training session involves working continuously, i.e. 25 minutes.
- The training session includes working the body at high intensities for varying periods of time, for example, sprint 95% MHR, run 80% MHR.
- Periods of high intensity work are followed by periods of recovery, for example, sprint 95% MHR is followed by a fast walk.

Award **[0]** for an answer not worthy of credit.

Award **[1]** for one acceptable piece of evidence from the workout.

Award **[2]** for one acceptable piece of evidence from the workout **and** a clear explanation of the characteristic of the training method.

(2 × [2]) [4] 5

8 *Example answers:*

- Gradually bring the body back to its pre-exercise state/bring the pulse rate down to the pre-exercise state.
- To allow the person's body temperature to decrease gradually and return to normal.
- To allow the blood to be redirected back to internal organs from the working muscles.
- To speed up the recovery process by reducing the build-up of lactic acid/ lactic acid to be broken down and cleared from the muscles.

Award **[0]** for an answer not worthy of credit.

Award **[1]** for one clear purpose of a cool down.

(2 × [1]) [2] 2

AVAILABLE
MARKS

- 9 *Example answers:*
- This is not a suitable test as the Speed and Agility test involves running/it is not specific to swimming.
 - This is not a valid test of agility for swimmers as they rarely need to change direction/they usually swim in a straight line.

Accept any other suitable answer.

NB only credit 'not specific to swimming' as the explanation once.

Award **[0]** for an answer not worthy of credit.

Award **[1]** for a moderate explanation of the difference between the test protocol and requirements for swimming.

Award **[2]** for a clear explanation of the difference between the test protocol and requirements for swimming.

(2 × [2]) [4]

4

- 10 (a) Muscular power enables a person's muscles to **produce maximum force, with speed in an explosive effort.**

Award **[0]** for an answer not worthy of credit.

Award **[1]** for a competent understanding of the component of muscular power.

E.g. Muscular power enables a person's muscles to produce maximum force.

Award **[2]** for a highly competent understanding of the component of muscular power.

E.g. Muscular power enables a person's muscles to produce maximum force, with speed in an explosive effort. [2]

- (b) *Example answers:*

- Jump higher to catch a ball/to win a header
- Strike a ball further/greater chance of scoring/less chance of the ball being intercepted
- Sprint faster to beat a defender/score more runs

Any other acceptable answer.

NB Do not credit any repeated situation/technique. Answers must be specific to the team sport stated.

Award **[0]** for an answer not worthy of credit.

Award **[1]** for a clear example of the physical requirements of muscular power in a specific sport.

(3 × [1]) [3]

5

11 *Example answers:*

- Repetitions: With an appropriate weight for improving muscular strength 1, the number of **repetitions** is recommended as being **between 1–4**. **14 repetitions are not appropriate as it is not possible to lift a 4RM weight for 14 repetitions.**
- Sets: With an appropriate weight and number of repetitions for improving muscular strength 1, it is recommended that the number of **sets** completed should be **between 2–3**. **3 sets falls inside the boundary but are not appropriate for week 1 of the programme.** This could **put too much stress on the person's bodies** and cause fatigue or injury. For the programme to be effective it would be **more beneficial to start with 2 sets** and then apply progressive overload.
- Rest/recovery: Muscular strength 1 is working at maximum to near maximum force to overcome a resistance, therefore at a high intensity. **No rest between sets is not appropriate** as it does not let the person recover. It would be more effective if the person had **5–6 minutes rest between sets.**

Award **[0]** for an answer not worthy of credit.

Level 1 ([1]–[3])

Overall impression – basic

Basic to moderate understanding of analysing the appropriateness and effectiveness of isotonic weight training to develop muscular strength 1.

The quality of written communication is basic. The candidate makes only a limited selection and use of an appropriate form and style of writing. The organisation of material may lack clarity and coherence. There is little use of specialist vocabulary. Presentation, spelling, punctuation and grammar may be such that intended meaning is not clear.

Level 2 ([4]–[6])

Overall impression – good

Moderate to competent understanding of analysing the appropriateness and effectiveness of isotonic weight training to develop muscular strength 1.

The quality of written communication is good. The candidate makes a reasonable selection and use of an appropriate form and style of writing. Relevant material is organised with some clarity and coherence. There is some use of specialist vocabulary. Presentation, spelling, punctuation and grammar are sufficiently competent to make meaning clear.

Level 3 ([7]–[9])

Overall impression – excellent

A highly competent and detailed understanding of analysing the appropriateness and effectiveness of isotonic weight training to develop muscular strength 1.

The quality of written communication is excellent. The candidate successfully selects and uses the most appropriate form and style of writing. Relevant material is organised with a high degree of clarity and coherence. There is widespread and accurate use of appropriate specialist vocabulary. Presentation, spelling, punctuation and grammar are sufficiently are of a sufficiently high standard to make meaning clear.

[9]

9

12 (a) (i) *Example answers:*

Anaerobic energy requirements for 800m run:

The athlete will need to develop his anaerobic fitness as the 800m race requires the athlete to work with a **near sprint effort at the start to gain a position in the race**. Also, the athlete in the last section of the race needs to give **maximum effort to sprint to reach the finishing line**.

Aerobic energy requirements for 800m run:

After the initial near sprint start, the athlete will work aerobically for the next **600m to maintain a race pace**. Aerobic fitness is important to **prevent the athlete from tiring in the mid-section of the race**/to be able to reach the 600m point with the lowest level of lactic acid possible.

Award **[0]** for an answer not worthy of credit.

Award **[1]** for a basic understanding of the relative importance of physical fitness requirements for a sporting position.

Award **[2]** for a moderate understanding of the relative importance of physical fitness requirements for a sporting position.

Award **[3]** for a competent understanding of the relative importance of physical fitness requirements for a sporting position.

Award **[4]** for a highly competent understanding of the relative importance of physical fitness requirements for a sporting position. **[4]**

(ii) *Example answer:*

	Interval training session to develop AEROBIC FITNESS	Interval training session to develop ANAEROBIC FITNESS
Distance:	400m	200m
Time:	90 seconds (85–100 seconds)	32 seconds (30–35 seconds)
Recovery:	60 seconds (no less than 20 seconds) 1:1 ratio or less	128 seconds (120–140 seconds) 1:4 ratio
Number of repetitions:	8 (8–12)	5 (4–6)

Award **[0]** for an answer not worthy of credit.

Award **[1]** for a specific and appropriate application of interval training to develop the specific area of physical fitness.

(6 × [1]) **[6]**

(iii) *Example answers:*

- Intensity of each repetition to develop **aerobic fitness** should have the heart working between **80–90% MHR or 8–9 RPE out of 10** compared to **over 90% MHR or 9 RPE out of 10 to develop anaerobic fitness**. As there are periods of rest the person can work at the top end of the aerobic training threshold but to develop anaerobic fitness the person must be working close to maximum effort.
- Time for each repetition to develop **aerobic fitness** will be between **30 seconds to two minutes** compared to **10 seconds to one minute to develop anaerobic fitness**. As the person is **working at 90% MHR or 9 RPE out of 10**, near maximum effort, they **cannot maintain this for a long period of time**. However, as the

aerobic intensity is slightly lower the person will be able to work for a **longer period of time**.

- Recovery when developing **aerobic fitness** the recovery will be **no more than, and preferably less than**, the time set to complete the repetition. However, when developing **anaerobic fitness** the recovery will be **four times the repetition work time**. The difference in recovery time is because of the **principle of rest when the harder you work the longer you need to recover**. To develop anaerobic fitness you need to work at a higher intensity.

Level 1 ([1]–[3])

Overall impression – basic

Basic to moderate understanding of how interval training can be planned to develop aerobic and anaerobic fitness.

The quality of written communication is basic. The candidate makes only a limited selection and use of an appropriate form and style of writing. The organisation of material may lack clarity and coherence. There is little use of specialist vocabulary. Presentation, spelling, punctuation and grammar may be such that intended meaning is not clear.

Level 2 ([4]–[6])

Overall impression – good

Moderate to competent understanding of how interval training can be planned to develop aerobic and anaerobic fitness.

The quality of written communication is good. The candidate makes a reasonable selection and use of an appropriate form and style of writing. Relevant material is organised with some clarity and coherence. There is some use of specialist vocabulary. Presentation, spelling, punctuation and grammar are sufficiently competent to make meaning clear.

Level 3 ([7]–[9])

Overall impression – excellent

A highly competent understanding of how interval training can be planned to develop aerobic and anaerobic fitness.

The quality of written communication is excellent. The candidate successfully selects and uses the most appropriate form and style of writing. Relevant material is organised with a high degree of clarity and coherence. There is widespread and accurate use of appropriate specialist vocabulary. Presentation, spelling, punctuation and grammar are sufficiently are of a sufficiently high standard to make meaning clear. [9]

(b) (i) Example answers:

Training should be varied to maintain interest; keep enthusiasm high/motivate; avoid boredom; avoid fitness plateauing/reversibility in fitness.

Award **[0]** for an answer not worthy of credit.

Award **[1]** for a moderate understanding of the principle of variety.

Award **[2]** for a competent understanding of the principle of variety. [2]

(ii) Example answer:

The athlete should run continuously for 5 kilometres with no rest or recovery periods. The athlete should build up their run to a steady pace of 4 minutes 30 seconds and maintain this. The athlete will run for a total work time of 22 minutes 30 seconds.

Award [0] for an answer not worthy of credit.

Award [1] for a specific and appropriate moderate application of continuous steady pace training to develop aerobic physical fitness. E.g. the athlete should run continuously for 5 kilometres with no rest or recovery periods.

Award [2] for a specific and appropriate competent application of continuous steady pace training to develop aerobic physical fitness. E.g. the athlete should run continuously for 5 kilometres with no rest or recovery periods. The athlete should build up their run to a steady pace of 4 minutes 30 seconds and maintain this.

Award [3] for a specific and appropriate highly competent application of continuous steady pace training to develop aerobic physical fitness. E.g. the athlete should run continuously for 5 kilometres with no rest or recovery periods. The athlete should build up their run to a steady pace of 4 minutes 30 seconds and maintain this. The athlete will run for a total work time of 22 minutes 30 seconds. [3]

24

13 (a) *Example answers:*

- Penalty kick
- Weight lifting
- Throwing a dart/punch/ball/javelin
- Swinging a golf club
- Kicking a ball
- Serving

This is a discrete skill because it has a **definite beginning and end**.

Award [0] for an answer not worthy of credit.

Award [1] for an accurate example of a discrete skill.

Award [1] for a clear description of a discrete skill.

(2 × [1])

[2]

(b) *Example answers:*

- Sequence of skills of the high jump/triple jump
- Pass and attack sequence
- Volleyball rally
- Gymnastic routine

This is a serial skill because it has a **number of discrete elements linked together/to make a new and more complex movement**.

Award [0] for an answer not worthy of credit.

Award [1] for an accurate example of a serial skill.

Award [1] for a clear description of a serial skill.

(2 × [1])

[2]

(c) *Example answers:*

- Swimming
- Running
- Cycling
- Skipping
- Walking

This is a continuous skill because it has **no obvious/distinct beginning or end**; the end of one cycle of movement is the beginning of the next/the skill is repeated continuously unbroken in a cycle/the skill could be stopped at any moment during the performance of the skill.

Award [0] for an answer not worthy of credit.
 Award [1] for an accurate example of a continuous skill.
 Award [1] for a clear description of a continuous skill.
 (2 × [1]) [2]

AVAILABLE
MARKS

6

14 (a) The player's level of coordination is categorised as **good**.

Award [0] for an answer not worthy of credit.
 Award [1] for accurately categorising the player's result as good. [1]

(b) *Example answer:*

The alternative hand wall toss test is a valid measure of the tennis player's hand-eye coordination, however, it is not a measure of the tennis player's overall coordination, e.g. footwork.

Award [0] for an answer not worthy of credit.
 Award [1] for a moderate evaluation of the method of assessment being valid for assessing coordination.
 Award [2] for a clear evaluation of the method of assessment being valid for assessing coordination. [2]

(c) *Example answer:*

- The reliability of the alternative hand wall toss test to measure the tennis player's coordination could be affected if the protocol is not correctly and consistently maintained throughout, e.g. the player remains two metres away from the wall; continues to throw and catch with the opposite hands; time is accurately measured as 30 seconds.
- The administrator could affect the reliability of the test depending on how strictly the test is conducted.
- The player's motivation to perform the test could affect the reliability of the test, e.g. if the player is highly motivated they will be focussed to perform better.
- The reliability of the test could depend on the amount of warm up or practice time the player was given prior to the assessment.

Award [0] for an answer not worthy of credit.
 Award [1] for a moderate explanation of the method of assessment being a reliable assessment for assessing coordination.
 Award [2] for a clear explanation of the method of assessment being a reliable assessment for assessing coordination. [2]

5

- 15 (a) The eight-year-old is at the **cognitive** stage of learning in gymnastics as this is the **beginners**/thinking stage.

Award **[0]** for an answer not worthy of credit.

Award **[1]** for correctly identifying the cognitive stage of learning.

Award **[1]** for a clear understanding that it is the beginners stage.

(2 × [1])

[2]

- (b) *Example answers:*

- The verbal guidance is **too technical/complex** for a cognitive learner; the verbal guidance needs to be **simple instructions**. For example, instead of begin in deep hip and knee flexion the coaching point could be start by bending your knees.
- **Too many coaching points were given** for a cognitive learner which will lead to them forgetting some vital aspects of the technique; **one or two key coaching points to focus on for a short period of time** would be better.
- The coaching points are too detailed this could lead to the gymnast given up or becoming bored; one or two key coaching points to focus on for a short period of time would be better.

Award **[0]** for an answer not worthy of credit.

Award **[1]** for a clear evaluation of the appropriateness of the verbal guidance.

Award **[2]** for a clear evaluation of the appropriateness of the verbal guidance **and** a suitable recommendation to make the verbal guidance more effective.

(2 × [2])

[4]

- (c) *Example answers:*

- **Visual** guidance.
The coach could show the gymnast a good demonstration; in real life/ video clip or picture on a tablet; this will give a clear mental image for the gymnast of the movement required to be successful.
- **Physical/Manual** guidance.
The coach could support/guide the gymnast through the movement; e.g. the coach physically lifts the gymnast to support their weight to allow them to get the feeling of bending the knees up to the chest; this will help the gymnast feel safe and give them confidence when first trying a new skill.

Award **[0]** for an answer not worthy of credit.

Award **[1]** for correctly identifying an appropriate method of guidance.

Award **[2]** for correctly identifying an appropriate method of guidance **and** a moderate understanding of how it could be used to improve performance.

Award **[3]** for correctly identifying an appropriate method of guidance **and** a clear and competent understanding of how it could be used to improve performance.

(2 × [3])

[6]

(d) *Example answers:*

The 30 minutes practice time given to the gymnast is too long, especially as the gymnast is working on their own:

- The gymnast will get bored; lose concentration on practising the task given.
- The gymnast will get tired; could lead to injury.
- The gymnast will make mistakes that they cannot correct themselves; this could develop bad habits that will be harder to correct.
- The gymnast could become frustrated as they did not understand the verbal guidance/this could put them off returning the following week.

Award **[0]** for an answer not worthy of credit.

Award **[1]** for a moderate evaluation of the appropriateness of the timing of the practice.

Award **[2]** for a clear and competent evaluation of the appropriateness of the timing of the practice.

(2 × [2])

[4]

Total

**AVAILABLE
MARKS**

16

100