



**General Certificate of Education (A-level) Applied  
June 2011**

**Health and Social Care**

**HC13**

**(Specification  
8621/8623/8626/8627/8629)**

**Unit 13: The Role of Exercise in Maintaining  
Health and Well-Being**

**Final**

***Mark Scheme***

---

Mark schemes are prepared by the Principal Examiner and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation events which all examiners participate in and is the scheme which was used by them in this examination. The standardisation process ensures that the mark scheme covers the candidates' responses to questions and that every examiner understands and applies it in the same correct way. As preparation for standardisation each examiner analyses a number of candidates' scripts: alternative answers not already covered by the mark scheme are discussed and legislated for. If, after the standardisation process, examiners encounter unusual answers which have not been raised they are required to refer these to the Principal Examiner.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of candidates' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

Further copies of this Mark Scheme are available from: [aqa.org.uk](http://aqa.org.uk)

Copyright © 2011 AQA and its licensors. All rights reserved.

**Copyright**

AQA retains the copyright on all its publications. However, registered centres for AQA are permitted to copy material from this booklet for their own internal use, with the following important exception: AQA cannot give permission to centres to photocopy any material that is acknowledged to a third party even for internal use within the centre.

Set and published by the Assessment and Qualifications Alliance.

For this mark scheme a / (slash mark) indicates a point worthy of a mark, a – (dash) shows alternative ways to gain that mark. AW stands for alternative wording.

**Question 1**

Question	Part	Sub Part	Marking Guidance	Mark	Comments
1	01		Good aerobic fitness is the ability to breathe in – out large amounts of air/to transport large amounts of oxygen (in blood)/use effectively this amount of oxygen in cells – tissues - for respiration and energy release/which gives Naomi the ability to endure AW – sustain work/for more than 12 minutes/without tiring/allow example of everyday activity – housework – carrying – walking max 4	4	Allow effective external respiration – uptake of oxygen for first mark.
1	02		VO2 max	1	
1	03		The short-term effects of training on Naomi’s aerobic fitness will include: fall in blood pH/ as more CO2 released/causing increased ventilation - breathing rate AW/deeper breaths - more air breathed through the mouth/increase in heart - pulse rate/stroke volume increases/(and therefore) increases cardiac output/blood vessels supplying muscles dilate/blood pressure increases/more oxygen delivered – oxygen delivered faster to muscles – cells max 6	6	
1	04		Different aspects of muscular fitness include – dynamic strength or power/stamina or endurance/maximum strength/mobility/flexibility max 3 3 marks plus any 3 of: dynamic strength: training will develop Naomi’s (skeletal muscles) increasing AW her ability to exert force/at speed/allow example – throwing – sprinting max 2 2 marks maximum strength: training will develop Naomi’s (skeletal muscles) increasing AW the greatest force that Naomi can exert/in a single contraction max 2 2 marks stamina – endurance: training will increase AW Naomi’s (skeletal muscles) ability to exert power over longer periods/without tiring AW max 2 2 marks mobility: training will increase AW Naomi’s muscular strength/and flexibility/to move quickly – with balance – for longer periods max 2 2 marks flexibility: training will increase AW Naomi’s range of movement/of her whole body or individual joints/by developing muscles – ligaments – tendons max 2 2 marks	9	1 mark for name 1 mark for definition 1 mark for how it improves <b>NOT</b> just “better” must qualify 3+2+2+2 = 9 marks

**Question 2**

Question	Part	Sub Part	Marking Guidance	Mark	Comments
2	05		<p>Likely points may include: regular exercise will help Paul reduce the effect of stress/such as reducing his blood pressure/reducing risk of cardiac arrest AW/improve his concentration span/improved decision making/helping him cope better at work/may help him sleep better AW/so he feels less tired/lower his anxiety levels -feel calmer/also less likely to have indigestion/palpitations/'muscular' aches and pains/reference to endorphins AW/developing feed good factor – (self) confidence – self esteem/but may add another 'burden' – demand/increase pressure on Paul if cannot find time AW</p> <p><b>Mark Ranges</b>            Candidates who display appropriate knowledge and understanding and display higher QWC skills should be rewarded at the top of the mark band.            Conversely, those who display some confusion and weakness in QWC supporting knowledge and understanding should be placed at the bottom of the mark band.</p> <p>Band 1    0 marks        No response worthy of credit.</p> <p>Band 2    1-3 marks        Generally vague and repetitive answers covering 1-5 points with little reasoning. There will be little use of appropriate terminology.</p> <p>Band 3    4-6 marks        More detailed responses covering 6-9 points with some reasoning and use of appropriate terminology. Answers may lack precision but are organised.</p> <p>Band 4    7-8 marks        Answers cover 10 or more points and are well structured and reasoned. There will be good use of appropriate terminology.</p>	8	Quality of reasoning determined by clarity and detail of how effects brought about.

2	06	<p>Likely points covering the three areas: Appetite – Energy Equation – Food types may include: regular exercise will help suppress Paul’s appetite/helping his appetite/in his hypothalamus – brain/less risk of him overeating/storing excess food/and gaining weight/Paul will be less stimulated psychologically/by smell, sight – taste of food/also regular exercise will help Paul use up energy/shift energy equation to the right – achieve a negative balance/help Paul lose weight/also will help increase Paul’s metabolic rate/reducing fat stores/glycogen storage/as glucose – carbohydrate – sugars/supply him with the extra energy needed/ but may increase appetite in short term/may not overcome effect of inheritance – all people different.</p> <p><b>Mark Ranges</b></p> <p>Candidates who display appropriate knowledge and understanding and display higher QWC skills should be rewarded at the top of the mark band. Conversely, those who display some confusion and weakness in QWC supporting knowledge and understanding should be placed at the bottom of the mark band.</p> <p>Band 1    0 marks        No response worthy of credit.</p> <p>Band 2    1-3 marks        Generally vague and repetitive answers covering 1-5 points with little reasoning. There will be little use of appropriate terminology.</p> <p>Band 3    4-6 marks        More detailed responses covering 6-9 points with some reasoning and use of appropriate terminology. Answers may lack precision but are organised.</p> <p>Band 4    7-8 marks        Answers cover 10 or more points and are well structured and reasoned. There will be good use of appropriate terminology.</p>	8	<p>Maybe be focussed on 1 area or 2 in less detail.</p> <p>May list most points but not reason them. Probably covers 2 areas or 3 in less detail.</p> <p>Must cover all 3 areas well including how effects are brought about</p>
2	07	<p>Paul needs to see his G.P. for expert advice/to be checked for underlying health problems/which exercise may worsen/to help determine his personal exercise limits/prevent over exertion/injury</p> <p style="text-align: right;">max 4</p>	4	<p>Allow: “check if fit enough” for check underlying health problems mark.</p>

**Question 3**

Question	Part	Sub Part	Marking Guidance	Mark	Comments
3	08		Ref BMI: Female P is overweight AW Female Q is underweight AW Female R is in the normal (range) Female S is obese AW – very overweight	4	Any average/healthy reference incorrect even if with correct response. Female S – <b>NOT</b> just overweight
3	09		Ref Peak flow: Female P is in the normal range Female Q is below normal/maybe asthmatic/small size/have respiratory disease Female R is in the normal range Female S is in the normal range	4	Any average/healthy reference incorrect even with correct response
3	10		Ref Perceived Exertion Scales: Any 4 of <ul style="list-style-type: none"> <li>• Female R seems to find strenuous exercise least demanding/as she has the smallest <b>rise</b> in recorded scores/female R fittest. (1)</li> <li>• Female S finds strenuous exercise very difficult AW – near to maximum exertion/has the greatest <b>rise</b> in recorded scores/female S least fit AW (1)</li> <li>• Females P and Q have similar <b>risers</b> in effort AW/generally find strenuous exercise similarly demanding AW (1)</li> <li>• Females P and Q similar fitness (1)</li> <li>• Females P and/or Q less fit than Female R - fitter than Female S (1)      max 4</li> </ul>	4	<b>Not</b> just goes up by 5 <b>Not</b> just goes up by 13
3	11		Ref to peak flow meter – spirometer/clean-disposable mouth piece/single exhalation-hard exhalation/pointer set at zero/scale read – recorded <b>OR</b> line graph trace – kymograph or table data displayed      max 4	4	
3	12		Strength of peak flow – simple to use/easily portable/objective      max 1 Limitation of peak flow – limited to one aspect of fitness only AW/respiratory problems only      max 1	2	

3	13	Strength of perceived exertion scale – simple to do/useful over time for progression – safety – setting limits max 1 Limitation of perceived exertion scale – subjective AW/limited when used for comparisons between individuals max 1	2	
---	----	--	---	--

**Question 4**

Question	Part	Sub Part	Marking Guidance	Mark	Comments
4	14		<p>Likely points may include: Lucy’s osteoporosis will be helped by improved bone density/if Lucy does weight bearing exercise – or example – dancing – walking/slowly calcium loss from bone/stimulates bone growth/will also strengthen muscles/lessen risk of Lucy falling/ breaking brittle bones.</p> <p>Lucy’s hypertension will be helped as she may lose weight/artery walls are stretched/by changing blood pressures/further atherosclerosis-plaque AW prevented/ref to HDL: LDL/as regular exercise uses up cholesterol in blood/makes more HDL – improves ratio/through low – moderate intensity exercise/heart muscle not stressed.</p> <p>Lucy’s risk of a cerebral infarction AW will be lessened if her blood pressure is reduced/arterial wall elasticity is maintained/reducing risk of a ‘bleed’/from burst blood vessel/or ‘clot’ forming/by maintaining good circulation.</p> <p><b>Mark Ranges</b> Candidates who display appropriate knowledge and understanding and display higher QWC skills should be rewarded at the top of the mark band. Conversely, those who display some confusion and weakness in QWC supporting knowledge and understanding should be placed at the bottom of the mark band.</p> <p>Band 1    0 marks    No response worthy of credit</p> <p>Band 2    1-4 marks    Answers will be vague and repetitive covering 1-6 points with little physiological detail. There may be inaccuracies and little use of appropriate terminology.</p> <p>Band 3    5-8 marks    More detailed responses covering 7-10 appropriate points in some physiological detail with few inaccuracies. Answers will be organised but lack precision.</p>	11	<p>May cover 1 disorder in some detail or 2 in less detail. Little if any reasoning</p> <p>Covers 2 disorders in some detail or 3 in less detail but detail variable.</p>

			Band 4 11 or more marks Answers cover 9 or more points and are well structured in good physiological detail with very few, if any inaccuracies. There will be good use of appropriate terminology throughout.		All 3 disorders covered in good detail. Reasoned coherently – how effects caused.
4	15		Lucy will need a low intensity gentle exercise initially AW/with <b>gradual – small</b> incremental progression AW/using weight bearing exercise/examples walking – dancing – keep fit/but low impact/Lucy needs progress monitoring/to prevent over-exertion – damage. max 5	5	Not jogging – running unless appropriate increase mark Allow actual programme if clearly indicates marking points
4	16		Any two of: costs/skills or fitness levels/facility locations/work and family commitments/cultural attitudes max 2 2 marks for costs/facility locations/work and family commitments could exercise at home – housework/ walk – jog for skills or fitness levels could join a beginners' class/exercise with a friend/use a fitness video – CD – DVD for cultural attitudes could join a single gender class/change social environment AW 1 mark for appropriate link x 2 max 2 2 marks	4	Embarrassment by itself not enough. Can be qualified as skill – fitness mark. Mark first <b>two</b> only.