

General Certificate of Secondary Education

A534

**Design and Technology
Graphics**

Unit A534: Technical aspects of designing and making

Specimen Paper

Time: 1 hour 15 minutes

Candidates answer on the question paper.

Additional materials:

Candidate
Forename

Candidate
Surname

Centre
Number

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Candidate
Number

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INSTRUCTIONS TO CANDIDATES

- Write your name in capital letters, your Centre Number and Candidate Number in the boxes above.
- Use black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully and make sure you know what you have to do before starting your answer.
- Answer **all** the questions.
- Do not write in the bar codes.
- Do not write outside the box bordering each page.
- Write your answer to each question in the space provided.

INFORMATION FOR CANDIDATES

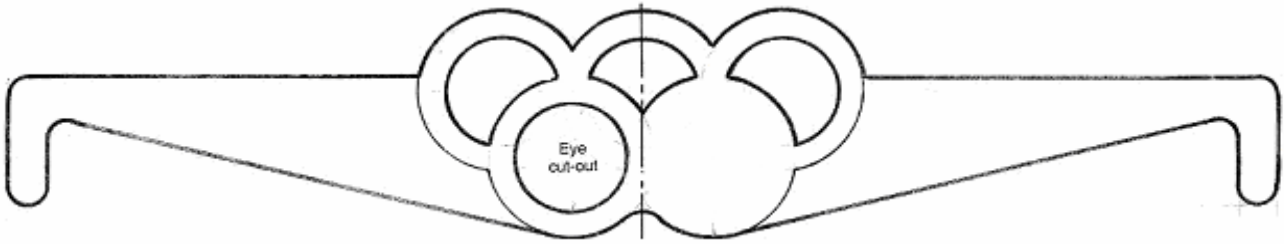
- The number of marks for each question is given in brackets [] at the end of each question or part question.
- Your Quality of Written Communication is assessed in questions marked with an asterisk (*).
- The total number of marks for this paper is 60.

FOR EXAMINER'S USE	
1	
2	
3	
4	
5	
TOTAL	

This document consists of **11** printed pages and **1** blank page.

Answer **all** questions

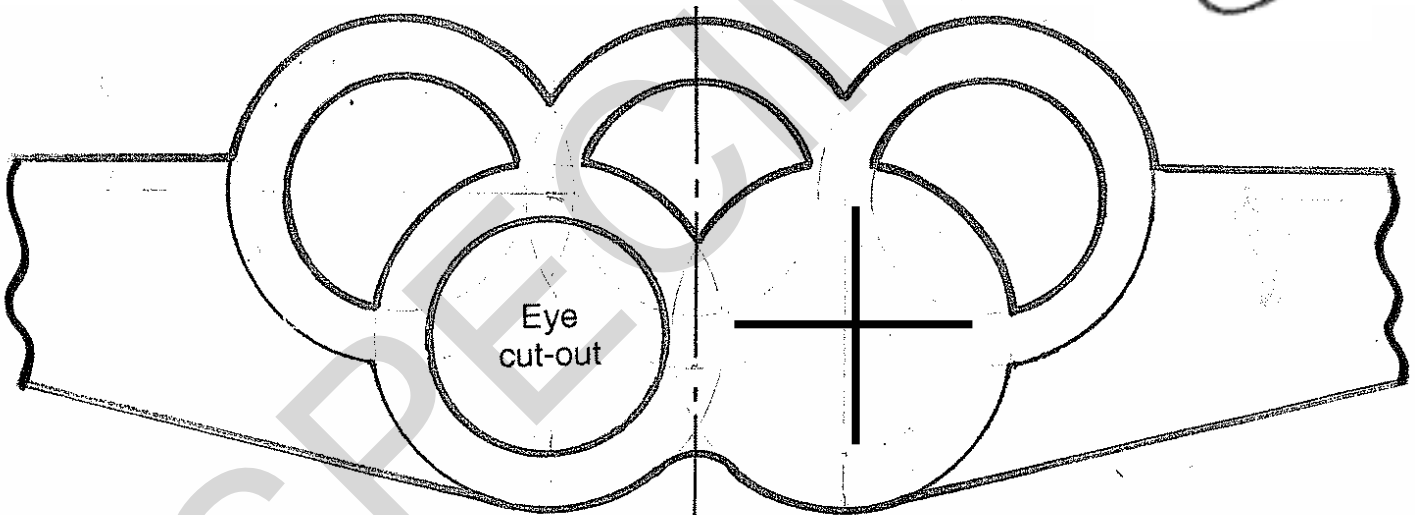
- 1 The drawing below shows the development (net) of a pair of children's novelty sunglasses made from thin sheet plastic. The sunglasses will be given away at the 2012 Olympic Games to be held in London.



development (net) of sunglasses not to scale

- (a) Complete the full size part development shown below by adding:

- (i) the missing eye cut-out; [1]
- (ii) the fold lines that would be required for the sunglasses to fit the child shown on the right. [2]



full size part development (net) of sunglasses

- (b) Give **two** advantages of making the sunglasses from thin sheet plastic rather than card.

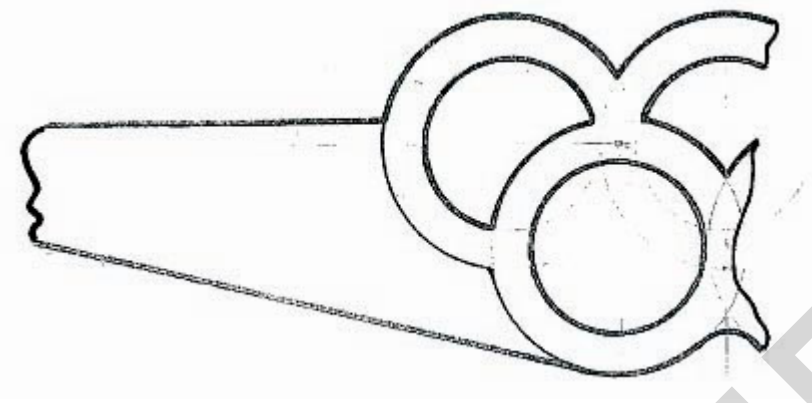
Advantage 1 [1]
 Advantage 2 [1]

- (c) Name a suitable plastic for making the sunglasses.

Material [1]

- (d) Two pieces of thin coloured plastic are to be glued in place over the eye cut-outs to make coloured lenses.

Sketch on the drawing of the sunglasses shown below a suitable shape for one lens. [1]



- (e) Quality control checks have shown that the coloured lenses soon peel off.

Use a sketch and notes to show how the design could be improved to stop the lenses falling off.

[3]

- (f) Use a sketch and notes to show how thermochromic inks could be used to add interest to the sunglasses.

[2]

Total [12]

2 The Javelin Train Service will take 25,000 people per hour from central London to the Olympic Park.

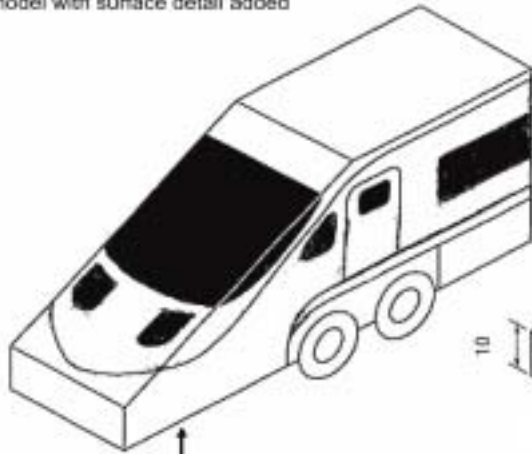


The Javelin Train

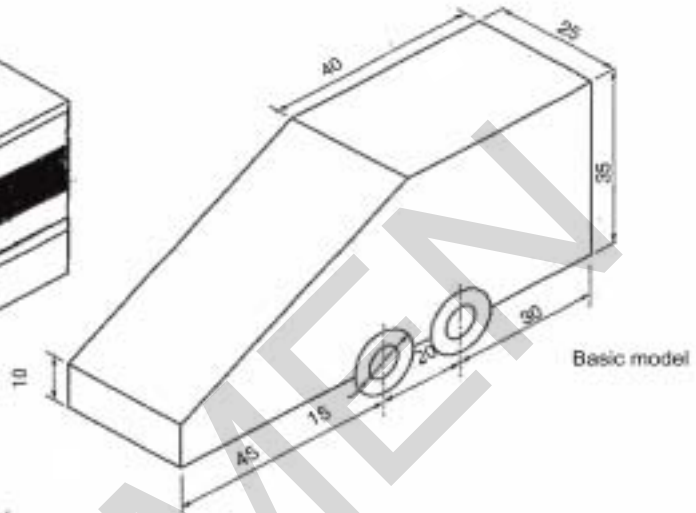
As part of the campaign to promote this service, card models of the train will be produced.

The pictorial views shown below give details of the model.

model with surface detail added



there is no bottom on the model



Basic model

(a) Explain why, when designing the model the shape of the train was simplified.

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..... [2]

(b) Use a drawing and notes to explain how die cutting would be used in the manufacture of the models to cut out the developments and crease the fold lines.

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[3]

(c) Name a piece of CAM equipment that could be used in school to cut out developments.

..... [1]

(d) One surface of the development (net) required to make the basic model has been drawn below.

Complete the full size development (net) by adding:

(i) the other **five** surfaces;

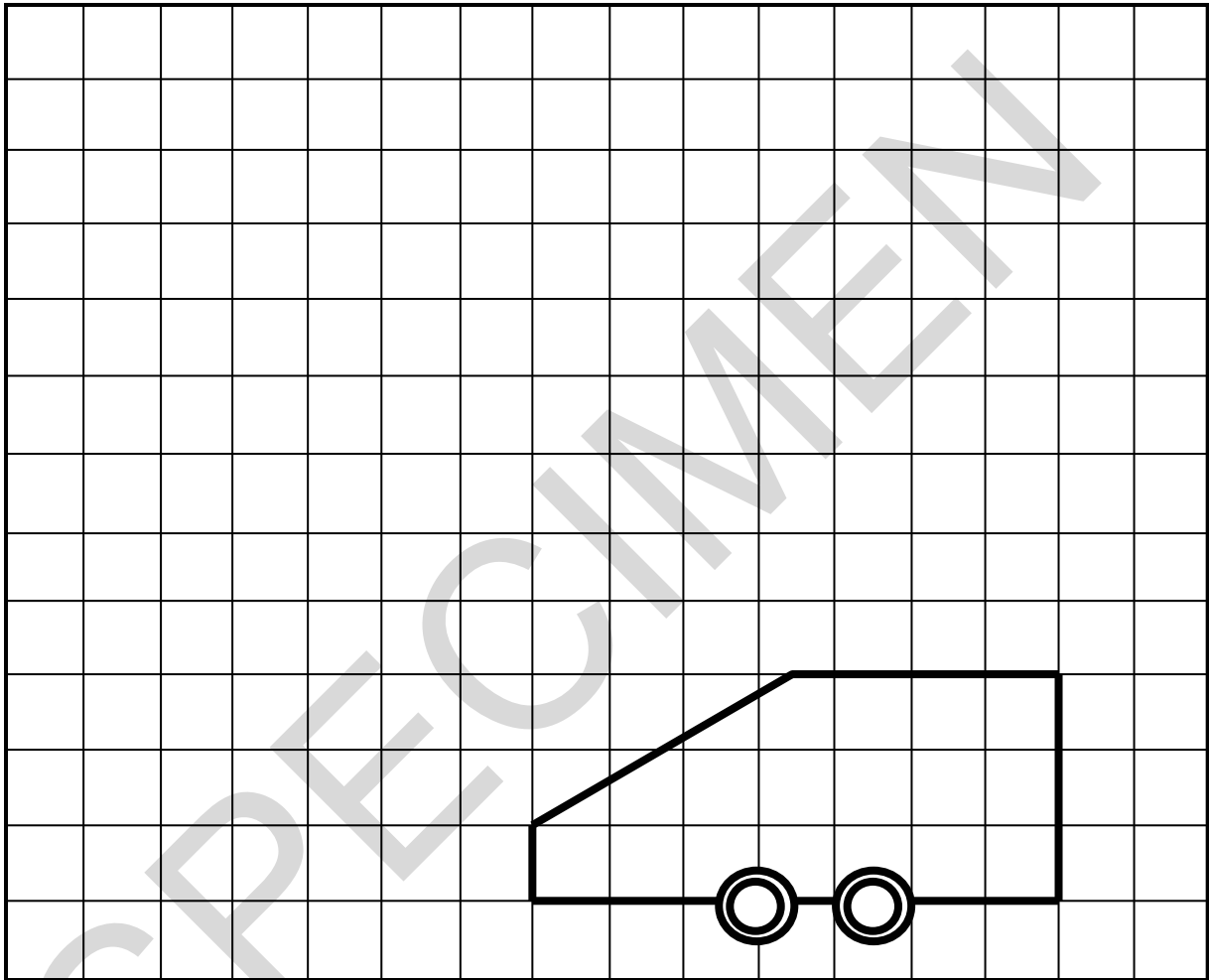
[5]

(ii) the glue tabs.

[1]

Do not show any of the surface detail.

Total [12]



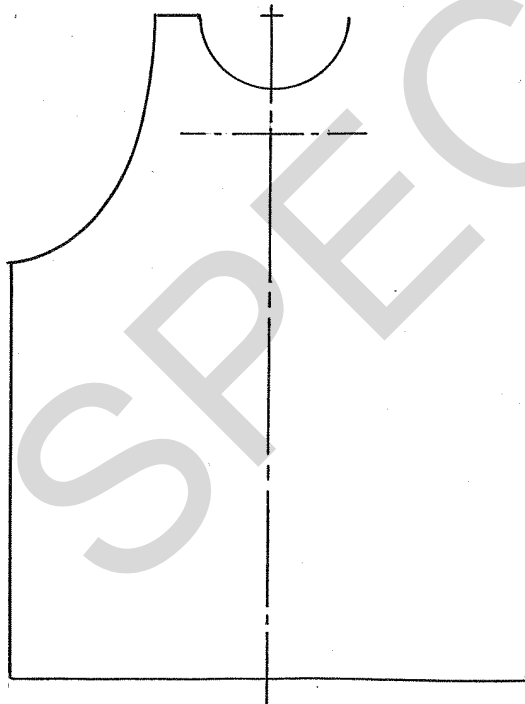
full size development (net) of model train

3 The freehand sketch below shows a ticket for the athletic events at the 2012 Olympic Games.



(a) The ticket is being produced using CAD and CAM. Part of the drawing has been completed. List the steps needed to complete the drawing using CAD.

Construction for the quarter ellipse must be clearly shown.

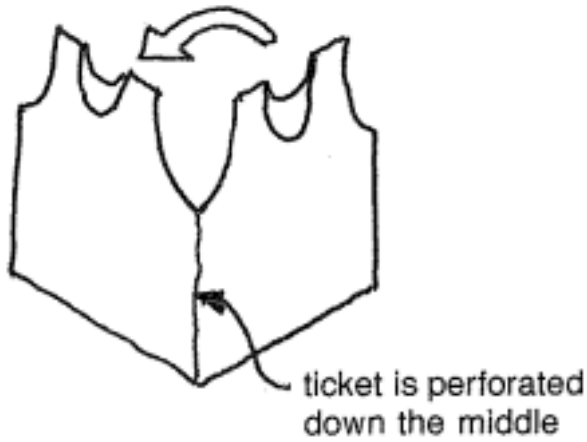


enlarged view of ticket

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[5]

- (b) The ticket opens out as shown in the sketch below and is perforated down the middle.
Use a sketch and notes to explain what is meant by perforated. [2]



- (c) *Discuss how the production of this printed ticket could take into account environmental issues.

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[5]
Total [12]

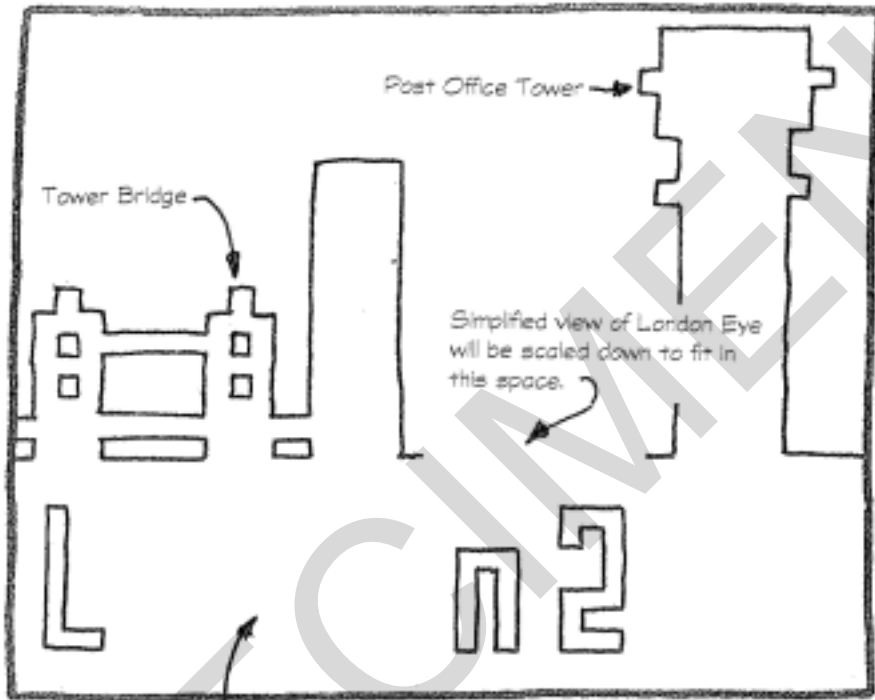
Section B

Answer **all** questions

- 4 Large electronic dot matrix screens will be put up in public places to give information about the 2012 Olympic Games.

The sketch below shows an incomplete design for one of the images that will be shown on the screens.

One big advantage of dot matrix screens is that images and information can be changed and updated.



- (a) Name **one** other method of mass communication that could be used and easily updated to give information about the 2012 Olympics.

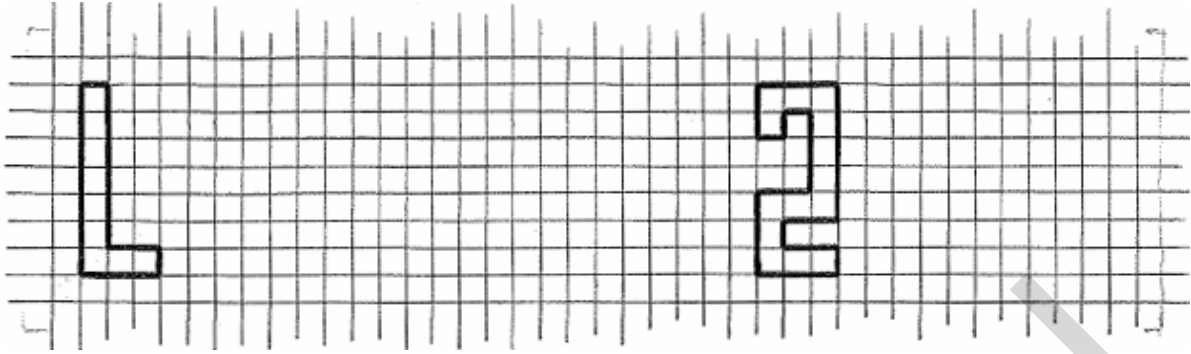
..... [1]

- (b) Explain why using these screens to communicate information is more environmentally friendly than producing and distributing leaflets.

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..... [2]

(c) Complete the lettering design shown below so that it reads **London 2012**.

The missing letters must be drawn in the same style and to the same size and proportion as the given letters



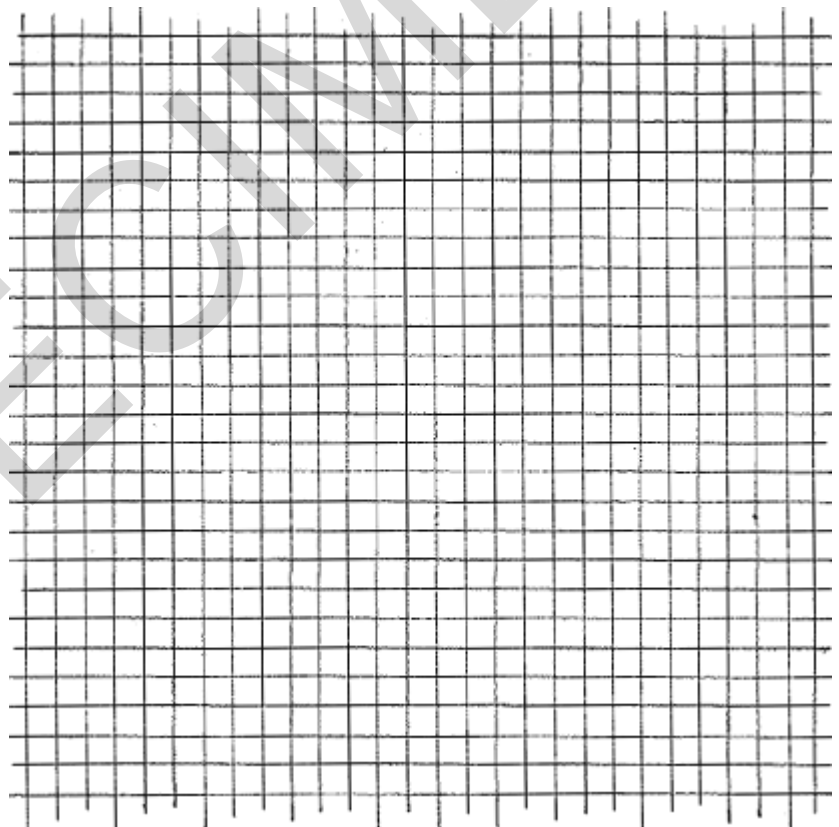
[4]

(d) On the grid shown below draw a simplified view of the London Eye that could be used to complete the London Skyline.

The drawing must be in the same style as the other buildings.



London Eye



[5]

Total [12]

5 A set of stamps will be issued to commemorate the 2012 Olympics.

Each stamp is to illustrate a different athletics event.

The design to be used on the stamp showing running events is shown on the right.

The other stamps are to show similar stylised athletes.



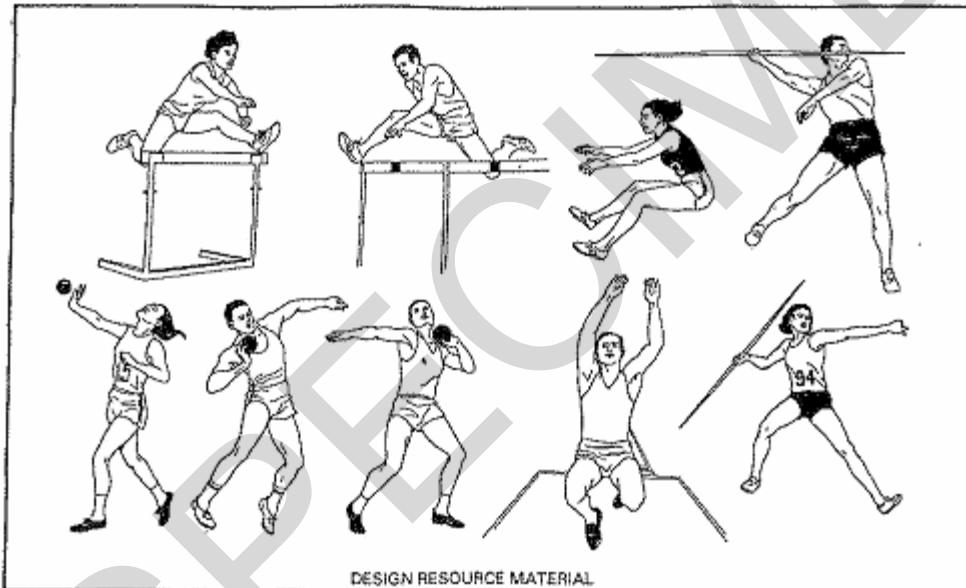
stylised athlete
to be used on
running events stamp

(a) Develop a design for a stamp based on the following specification.

The stamp must feature **one** of the following events:

- shot put
- long jump
- javelin
- hurdles

The design must include a **stylised** drawing of an athlete involved in the event that you have chosen.



Use this space for your design work

(b) Make a drawing of your chosen design within the outline of the stamp given below.

[4]



(c) Discuss why the designer of the stamps would have to consider copyright when downloading and exchanging images.

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[4]

Total [12]

Paper Total [60]

SPECIMEN

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SPECIMEN

Section A		
Question Number	Answer	Max Mark
1	The drawing below shows the development (net) of a pair of children's novelty sunglasses made from thin sheet plastic. The sunglasses will be given away at the 2012 Olympic Games to be held in London.	
1(a)(i)	Complete the full size part development shown below by adding: the missing eye cut-out; Eye cut-out drawn to correct size in correct position	[1]
1(a)(ii)	the fold lines that would be required for the sunglasses to fit the child shown on the right. Each fold line positioned 60mm-65mm either side of the centre line 1 mark	[2]
1(b)	Give <u>two</u> advantages of making the sunglasses from thin sheet plastic rather than card. Each appropriate advantage 1 mark e.g. stronger, last longer, waterproof.	[2]
1(c)	Name a suitable plastic for making the sunglasses. Appropriate material named 1 mark e.g. polystyrene.	[1]
1(d)	Two pieces of thin coloured plastic are to be glued in place over the eye cut-outs to make coloured lenses. Sketch on the drawing of the sunglasses shown below a suitable shape for one lens. Lens drawn slightly bigger than eye cut-out but not overlapping edges of sunglasses	[1]
1(e)	Quality control checks have shown that the coloured lenses soon peel off. Use a sketch and notes to show how the design could be improved to stop the lenses falling off. Following analysis of the method: Solution suggesting a stronger glue (1) OR Solution showing lens 'sandwiched' between two pieces of material (2) Quality/clarity of communication	[3]

Question Number	Answer	Max Mark
1(f)	<p>Use a sketch and notes to show how thermochromic inks could be used to add interest to the sunglasses.</p> <p>Appropriate design linked to Olympics (this could be just lettering) Notes that explain that design would change with changes in temperature</p>	[2]
2	<p>The Javelin Train Service will take 25,000 people per hour from central London to the Olympic Park.</p> <p>As part of the campaign to promote this service card models of the train will be produced.</p> <p>The pictorial views shown below give details of the model.</p>	
2(a)	<p>Explain why, when designing the model, the shape of the train was simplified.</p> <p>Following analysis of the drawing of the model train: Reference to lots of curves involved (1 mark) which would make the shape very difficult to make (1 mark).</p>	[2]
2(b)	<p>Use a drawing and notes to explain how die cutting would be used in the manufacture of the models to cut out the developments and crease the fold lines.</p> <p>Understanding of cutting knives (1 mark) Understanding of creasing blades (1 mark) Appropriate explanation of how they are used (1 mark).</p>	[3]
2(c)	<p>Name a piece of CAM equipment that could be used in school to cut out developments.</p> <p>Appropriate equipment named e.g. laser cutter, cutter plotter.</p>	[1]
2(d)	<p>One surface of the development (net) required to make the basic model has been drawn below.</p> <p>Complete the full size development (net) by adding: (Do not show any of the surface detail)</p>	
2(d)(i)	<p>the other <u>five</u> surfaces;</p> <p>Top and back correctly positioned Second side correctly positioned Wheels added Sloping surface and front correctly positioned Majority of sizes are correct</p>	[5]

Question Number	Answer	Max Mark
2(d)(ii)	<p>the glue tabs. At least four workable glue flaps correctly added.</p>	[1]
3 3(a)	<p>The freehand sketch below shows a ticket for the athletic events at the 2012 Olympic Games. The ticket is being produced using CAD and CAM. Part of the drawing has been completed. List the steps needed to complete the drawing using CAD. Steps to include: Cut and paste vertical and horizontal line Cut, mirror and paste quarter ellipse.</p>	[5]
3(b)	<p>The ticket opens out as shown in the sketch below and is perforated down the middle. Use a sketch and notes to explain what is meant by perforated. Sketch shows series of dashes or small holes Notes explain that this makes it easier to tear ticket</p>	[2]
3(c)*	<p>Discuss how the production of this printed ticket could take into account environmental issues. Level 1 (0-2 marks) Basic discussion, showing limited understanding of environmental issues to consider. There will be little or no use of specialist terms. Answers may be ambiguous or disorganised. Errors of grammar, punctuation and spelling may be intrusive. Level 2 (3-4 marks) Adequate discussion, showing some understanding of the environmental issues to consider and how they can take account of them. There will be some use of specialist terms, although these may not always be used appropriately. The information will be presented for the most part in a structured format. There may be occasional errors in spelling, grammar and punctuation Level 3 (5 marks) Thorough discussion, showing detailed understanding of the environmental issues to consider and how they can take account of them. Specialist terms will be used appropriately and correctly. The information will be presented in a structured format. The candidate can demonstrate the accurate use of spelling, punctuation and grammar. Discussion could include: More complex shape that creates waste material that the manufacturer has to dispose of waste</p>	

Question Number	Answer	Max Mark
	Shapes that tessellate How the ticket is printed Nature of the chemicals used in the print process Material produced from	[5]
4(a)	<p>Large electronic dot matrix screens will be put up in public places to give information about the 2012 Olympic Games.</p> <p>The sketch below shows an incomplete design for one of the images that will be shown on the screens.</p> <p>One big advantage of dot matrix screens is that images and information can be changed and updated.</p> <p>Name <u>one</u> other method of mass communication that could be used and easily updated to give information about the 2012 Olympics.</p> <p>Appropriate communication method named e.g. internet, television or radio.</p>	[1]
4(b)	<p>Explain why using these screens to communicate information is more environmentally friendly than producing and distributing leaflets.</p> <p>Reference to less resources and/or materials being used in production process (1 mark) resulting in less pollution and/or problems relating to disposal of leaflets (1 mark).</p>	[2]
4(c)	<p>Complete the lettering design shown below so that it reads <u>London 2012</u>.</p> <p>The missing letters must be drawn in the same style and to the same size and proportion as the given letters</p> <p>All letters and numbers have same thickness and are correctly positioned</p> <p>Consistent thickness (1 square) used on all letters and numbers</p> <p>Letters are consistent height (5 or 6 squares) and numbers are all 7 squares high</p> <p>All letters and numbers are a consistent width of 3 squares</p>	[4]
4(d)	<p>On the grid shown below draw a simplified view of the London Eye that could be used to complete the London Skyline.</p> <p>The drawing must be in the same style as the other buildings.</p> <p>Design shows the 'ring' shape</p> <p>Design shows the 'pods'</p> <p>Design shows the support</p> <p>Some attempt has been made to simplify the shape using mainly vertical and horizontal lines (1 mark)</p> <p>OR</p> <p>Shape has been simplified using only vertical and horizontal lines</p>	[5]

Question Number	Answer	Max Mark
5	<p>A set of stamps will be issued to commemorate the 2012 Olympics. Each stamp is to illustrate a different athletics event. The design to be used on the stamp showing running events is shown on the right. The other stamps are to show similar stylised athletes.</p>	
5(a)	<p>Develop a design for a stamp based on the following specification. The stamp must feature <u>one</u> of the following events:</p> <ul style="list-style-type: none"> • shot put; • long jump; • javelin; • hurdles. <p>The design must include a <u>stylised</u> drawing of an athlete involved in the event that you have chosen.</p> <p>Design has been developed using notes and several sketches Design shows some attempt to stylise chosen athlete (2) A good stylised design has been produced (2)</p>	[4]
5(b)	<p>Make a drawing of your chosen design within the outline of the stamp given below.</p> <p>Design is drawn to an appropriate size and proportion to fit the given space Consistent use has been made of vertical, horizontal and 45 degree lines Consistent thickness/size of various body parts Drawing shows a high degree of accuracy</p>	[4]
5(c)	<p>Discuss why the designer of the stamps would have to consider copyright.</p> <p>Basic discussion, showing limited understanding of why the designer of the stamps would have to consider copyright (0-2 marks) Adequate discussion, showing some understanding of why the designer of the stamps would have to consider copyright (3 marks) Thorough discussion, showing detailed understanding of why the designer of the stamps would have to consider copyright and the issues involved (4 marks)</p> <p>Discussion to include reference to an analysis of the stamp Copying of Queen's Head Copying of title Use of any further images on the stamp Forgeries</p>	[4]
Paper Total		[60]

Assessment Objectives Grid (includes QWC)

Question	AO1	AO2	AO3	Total
1(a)(i)	1			1
1(a)(ii)	2			2
1(b)	2			2
1(c)	1			1
1(d)	1			1
1(e)	3			3
1(f)	2			2
2(a)	2			2
2(b)	3			3
2(c)	1			1
2(d)(i)	5			5
2(d)(ii)	1			1
3(a)	5			5
3(b)	2			2
3(c)*			5	5
4(a)	1			1
4(b)	2			2
4(c)	4			4
4(d)	5			5
5(a)	4			4
5(b)	4			4
5(c)			4	4
Totals	51		9	60