

# GCSE DESIGN AND TECHNOLOGY GRAPHIC PRODUCTS

45501 – Unit 1  
Mark scheme

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4550  
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Mark schemes are prepared by the Lead Assessment Writer 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 associates participate in and is the scheme which was used by them in this examination. The standardisation process ensures that the mark scheme covers the students' responses to questions and that every associate understands and applies it in the same correct way. As preparation for standardisation each associate analyses a number of students' scripts: alternative answers not already covered by the mark scheme are discussed and legislated for. If, after the standardisation process, associates encounter unusual answers which have not been raised they are required to refer these to the Lead Assessment Writer.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of students' 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)

## Section A

1 Study the following Design brief and Design criteria below.

### Design Brief

The Fire Service wants to start a firework safety campaign in primary schools.

### Design Criteria

You have been asked to design a leaflet about being safe around fireworks.

The leaflet must:

- highlight the slogan '**Be Safe**' in a suitable letter style (typeface)
- show suitable relevant images
- be suitable to primary school

1 (a)(i) *In the boxes below, sketch **two** different letter styles (typeface) for the slogan '**Be Safe**'.*

High Level: Excellent letter style, double line, evidence of construction and spacing. Relates to context. 2

Low Level: Single line construction. Repetitive. 1

No attempt or scribble or wrong slogan 0

**2**  
**2**

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1 (a)(ii) In the box below, develop your chosen letter style. Indicate colour.  
(mark what you see) (4 marks)

High Level: Excellent development-sequence of sketching showing clear progression and well communicated including colour can be indicated.  
(sequence is more than a single sketch) 4

Medium Level: Moderate development-some progression towards the final idea and moderate level of sketching. No sequence or single design. 3

Low Level: Poor development-single idea or little progression or poorly communicated or a different idea from (i). 2

An attempt. 1

No attempt or not relevant or not answering the question. 0 4

1 (b) *Develop with notes two creative ideas for a leaflet.  
Your sketches and notes should explain the appearance and layout of the leaflet.*

*Marks will be awarded for:*

- *two different ideas that meet the design criteria*
- *quality of sketching*
- *creative ideas for a fireworks safety leaflet*
- *notes explaining ideas.*

**Design Criteria (Evidenced on one or two ideas or both)**

Highlights the slogan 'Be Safe' in a suitable letter style. 1

Evidence of appropriate Bonfire/Firework images. 1

Be suitable for primary school children. 1 3

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**Quality of sketching (overall impression):**

High Level: Excellent quality and effective, flair, impact, well communicated with indication of colour.	4	
High Level: Good quality and effective, flair, impact, well communicated with/without indication of colour.	3	
Medium Level: Adequate quality some omissions. Possible indication of colour.	2	
Low Level: Low/poor quality, difficult to interpret, inadequate communication. With or without colour.	1	
Not attempted.	0	<b>4</b>

**Creative ideas (overall impression):**

High Level: Original/creative/imaginative solutions e.g. Good proportion/layout. Eye catching.	4- <u>5</u>	
Medium Level: Some creativity ( <u>max of 3 marks for one idea</u> ).	2- <u>3</u>	
Low Level: Basic designs or not realistic.	1	
No attempt/No creativity	0	<b>5</b>

**Notes explaining the ideas:**

High Level: Excellent explanation of overall appearance and layout. Reference to design criteria bullet points.	3	
Medium Level: Clear annotation, mainly descriptive.	2	
Low Level: Labelling or minimal explanation.	1	
No annotation.	0	<b>3</b>

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1 (c) *Produce a coloured presentation drawing of your final leaflet.*

*Marks will be awarded for:*

- *visual impact*
- *layout*
- *use of colour.*

**Visual Impact:**

High Level: High visual impact, immediate understanding of message, attractive, eye catching.	3	
Medium Level: Some visual impact, some interpretation required or minor errors/omissions.	2	
Low Level: Limited visual impact.	1	
No impact.	0	<b>3</b>

**Quality of Layout:**

High Level: Good proportions and balance. Not cluttered. Possible evidence of construction.	3	
Medium Level: Attempt at above. Some errors/omissions.	2	
Low Level: Limited evidence or attention to layout.	1	
No evidence or logic to layout.	0	<b>3</b>

**Use of colour:**

High Level: Good solid block colouring or tonal shading.	3	
Medium Level: Attempt at block colouring or tonal shading.	2	
Low Level: low or monochrome or poor attempt.	1	
No colour or scribble.	0	<b>3</b>

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1 (d) Evaluate your final leaflet in part (c) above against one of the design criteria points given on page 2

High Level: Analytical/critical including justification. 3

Medium Level: Mainly descriptive, weak justification. 2

Low Level: Mainly self-congratulation. 1

No attempt or not relevant or not answering the question. 0

3

**Total 35  
marks**

2 (a) Complete the paragraph by adding the missing words from the list below.

A barcode consists of a series of **black strips** of different **widths** with spaces between each strip. A **laser beam** scans the strips and line widths, converting these to **numerical** values which are recognised by a computer **program**.

5 correct responses	4	
3 correct responses	3	
2 correct responses	2	
1 correct responses	1	
0 correct responses	0	4

2 (b) Explain why barcodes are useful.

Give an example to support your answer.

- Keeping track of the large number of items in a store.
- Tracking of item movement, including rental cars, airline luggage, nuclear waste, mail and parcels.
- Tickets which allow the holder to enter sports arenas, cinemas, theatres, fairgrounds, transportation etc.
- For advertisement, information services etc. (for mobile tagging).
- Save time at the till self-service. Eg. Identifies the product and price.
- Tracking stock.
- Identify product and manufacturer.
- Security
- Accuracy-addition at the till.

High level: Good explanation, clear understanding.	2	
Medium level: Some understanding, confused.	1	
Low level: Poor or no understanding. (quick and easy without justification is zero marks)	0	

Appropriate example to support answer eg refer to product or manufacturer or retailer	1	
No or not relevant example.	0	

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2 (c) (i) *In the spaces below, sketch **two** different ideas for a **fun sporting barcode** in the same style as Figure 1*

<u>Two</u> identifiably different barcodes on the theme	1	
Evidence of Block solid colour on either.	1	
Simplified and stylised	2	
An attempt at stylised shape	1	
No attempt	0	
Neat pen work	1	<b>5</b>

2 (c) (ii) Use the best parts from both ideas above to produce a final drawing of your fun sporting barcode. (mark what you see even if not a sporting theme-do not penalise again).

High level: High quality. A good clear, self-explanatory fun/unique sporting themed barcode.	3	
Medium level: Good quality possibly some errors or omissions.	2	
Low level: Poor quality, difficult to interpret. Not in the style of the examples.	1	
Not attempted.	0	<b>3</b>

**Total 15 marks**

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3 (a) (i) Which of the following designers is best known for designing the London Underground Map in Figure below?

Harry Beck 1

3 (a) (ii) Describe the differences between the two maps.

*(Max 3 marks)*

Non geographical, lines straightened, unnecessary detail removed, standard symbols, concise, clear on white background, not accurate representation of distance for schematic, simplified. Different colour for different routes.

High level: Full description or understanding	3
Medium level: Some understanding	2
Low level: Basic-single point	1
Not attempted or not relevant	0

**3**

3 (a) (iii) Give **two** advantages of a modern schematic map.

**Award one mark for each:**

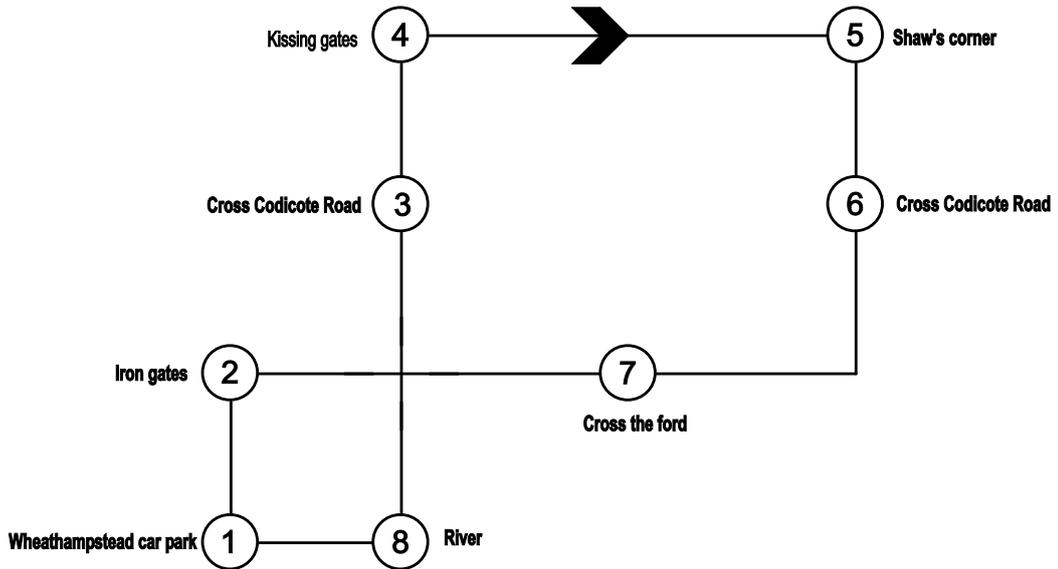
Easy to interpret, quick to interpretate, unnecessary detail removed, less confusing, no loss of detail if scaled down. Reference to colour.

**2**

3 (b) (i) *In the space below draw a schematic map of this walk in the style of the London Underground Map.*

E.g. Non geographical, equidistant stops, straight lines, symbols, one colour, circled number, labelled and/or direction indicated,

Possibly numbers or arrows to show direction of walk.

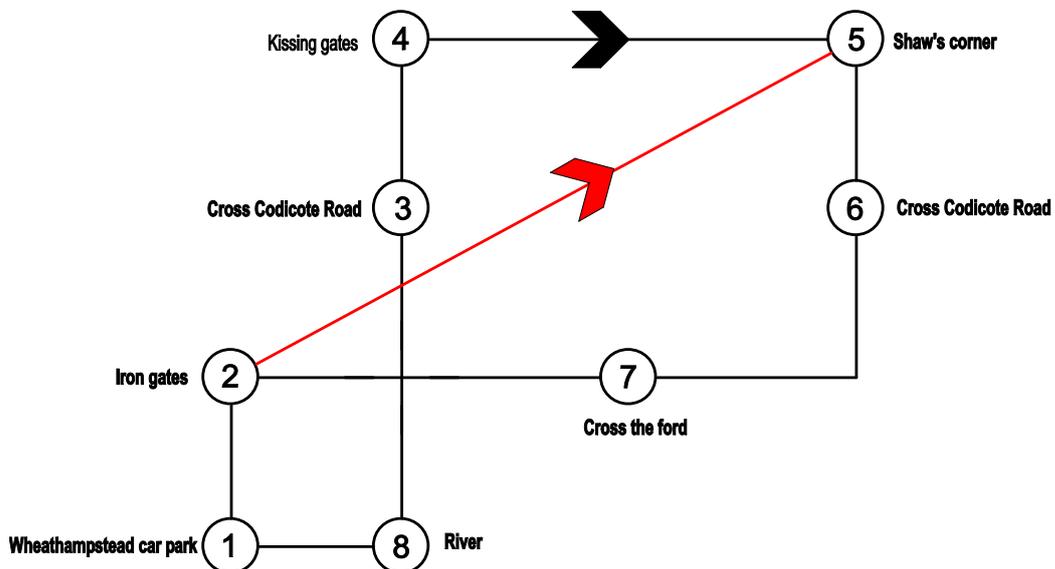


Good presentation of style, neat, all distinctive features	4-5
correct resembles the example	
Adequate representation, most features used	3
Limited use of features, some inaccuracies	2
An attempt, vague, a copy	1
Not attempted	0

5

3 (b) (ii)

Possibly numbers or arrows to show direction of walk.



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High level-Shortcut from stop 2 to 5, angled line, Possible arrow.	3	
Medium Level-two of the above only, possibly not a straight line	2	
An attempt.	1	
Not attempted	0	3

**Total 14  
marks**

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4 (a) (i) The surface development (net) is a 'star shape'.

On the grid opposite use the key to complete a full size surface development (net) of the pyramid shaped container. Your surface development (net) should be clearly drawn so that someone else could assemble the container.

Do not include any surface decoration.

**Surface Development:**

One mark for each correct triangle      2x1 marks  
(2 squares in from edge)

Gusset:

All correct	2
Some Correct or not complete	1
None	0

**Line convention**

All correct	2
Some correct or not complete	1
None	0

**6**

4 (a) (ii) Add the window opening to the front panel of your drawing.(any panel)  
The window size is:

30mm perpendicular height  
30mm wide at the base

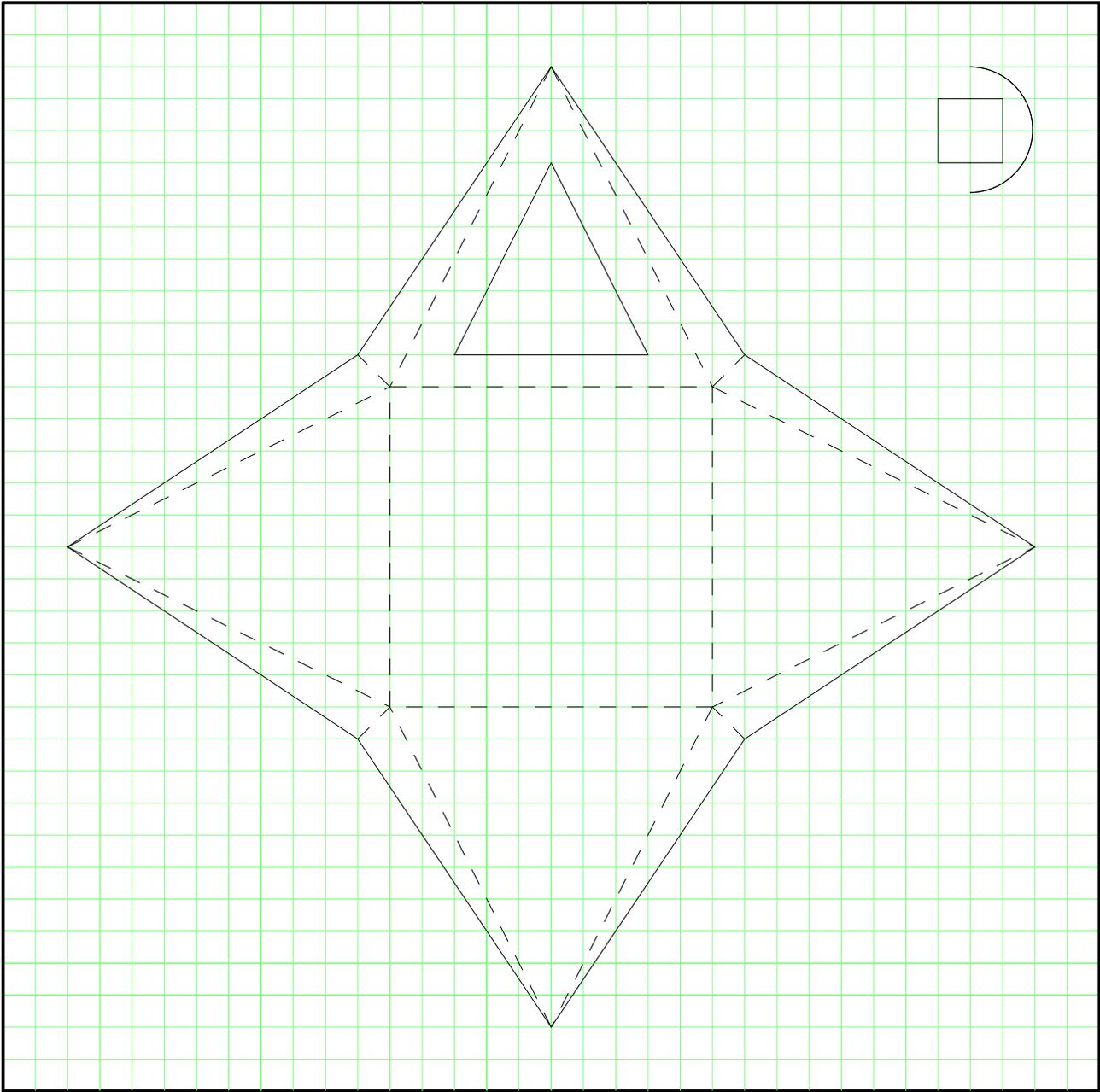
Correct position(5mm above base)	1
Correct width(30mm-6 squares)	1
Correct perpendicular height(30mm-6 squares)	1

**3**

4 (a) (iii) Complete the drawing of the locking ring for the top of the pyramid.  
(Allow for freehand drawing)

Complete circle	1
Complete square	1

**2**



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- 4 (b) (i) Name a suitable material for the manufacture in quantity of the pyramid shaped container

Card, board, corrugated card, fluted board, carton board (accept abbrev' FBB, SUB, SBB, or WLC) or polypropylene (PP).  
Solid white board.  
Paper board.  
Do not accept cardboard.

1

- 4 (b) (ii) Explain the property of this material that makes it suitable for this purpose.

(Do not double penalise if G.P. material)

**Award 2 marks for:**

Rigid, easy to fold/assemble, readily available, economical, low unit cost, good printing surface etc. Do not accept recycle or cheap.

High level: well explained, clear answer 2  
Low Level: some understanding, limited response 1  
Not attempted, unrelated or difficult to understand 0

2

**Total 14 marks**

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5 (a) What is the difference between Computer-Aided Design (CAD) and Computer-Aided Manufacture (CAM)?

*Input/output, design Vs manufacture, computer Vs CNC machines etc*

*Give an example to support your answer.*

High level: Thorough explanation of difference	3
Medium level: Some understanding	2
Low level: Limited understanding, confused	1
None	0

Supporting example eg.2D design, laser or laser printer or vinyl cutters, 3D printer etc.	1	4
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5 (b) Discuss how the use Computer-Aided Design (CAD) has helped graphic designers.

*Give examples to support your answer*

*Access to images, manipulation, differentiation of design, library, instant result, access to internet/CAM, proofs, virtual models, realism, storage space, ease of communication (email), editing for clients, flexible work space, accuracy to aid manufacture. Dimensional accuracy. (Accuracy needs justifying)*

*Give examples to support your answer.*

*You will be assessed on Quality of Written Communication in this question.*

A fully detailed and comprehensive response that includes details of most of the examples below. The answer is well-structured, with good use of appropriate design & technology terminology and showing a good grasp of grammar, punctuation and spelling.	7 – 8
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A detailed and comprehensive response that includes several of the examples below. The answer is well-structured, with good use of appropriate design & technology terminology and showing a good grasp of grammar, punctuation and spelling.	5 – 6
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A fairly detailed response which refers to some of the examples below. The answer is fairly well structured, with some use of design & technology terminology and with a small number of errors in grammar, punctuation and spelling. 3 – 4

A response which contains very limited reference to any of the examples below. The answer is vague or poorly structured, with little use of design & technology terminology and with a considerable number of errors in grammar, punctuation and spelling. 1 – 2

A response which is poorly structured with no relevant examples. There is very little or no use of design technology terminology and with many errors in grammar, punctuation and spelling. 0

Must tick relevant points

**8**

Max 2 marks for 2 relevant examples.

**Examples: Any relevant example to support answer, eg design of newspapers/magazines (possibly not graphic products).**

**Total 12 marks**

6 (a) Complete the orthographic drawing of the box by adding the missing lines.

Award 1 mark for each horizontal (3) and vertical (1) lines in the correct position. 4

**Award 1 mark for:**

The correct size circle (freehand or compass) 1  
 Correct position 1

6

6 (b) The dimensions for one side are shown using British standard conventions.

Add the following dimensions to the drawing:

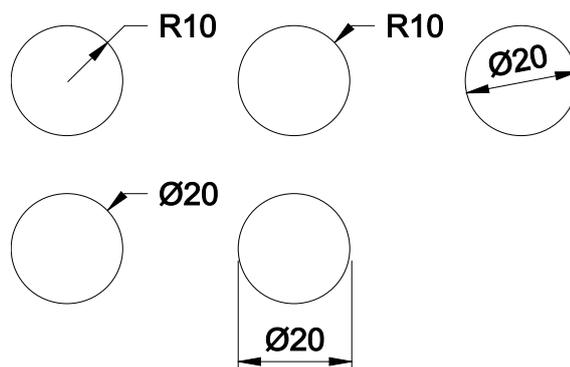
- the length of the chocolate box.
- the height of the chocolate box.
- The size of the circular window.

**Length:**

Correct projection and dimension lines 1  
 Correct dimension – 80 above line ( $\pm 1\text{mm}$ ) 1  
 (No dimensional line no mark)

**Height:**

Correct projection and dimension lines 1  
 Correct dimension – 52 above line ( $\pm 1\text{mm}$ ) 1  
 (No dimension line no mark)



Any of the above (compass or freehand)

Correct dimensioning technique 1  
 Correct dimension ( $\pm 1\text{ mm}$ ) 1

6

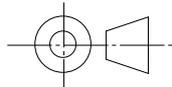
6 (c) Explain the meaning of 'Scale 1:1' shown in the drawing.

Full size or 1mm on paper is 1mm in real life (or similar).

Good, clear understanding reference to full or actual size and 1mm on paper is 1mm in real life.	2
Limited understanding-reference to either full size or 1mm on paper is 1mm in real life.	1
Not attempted or incorrect	0

**2**

6 (d) *What meaning of the symbol below:*

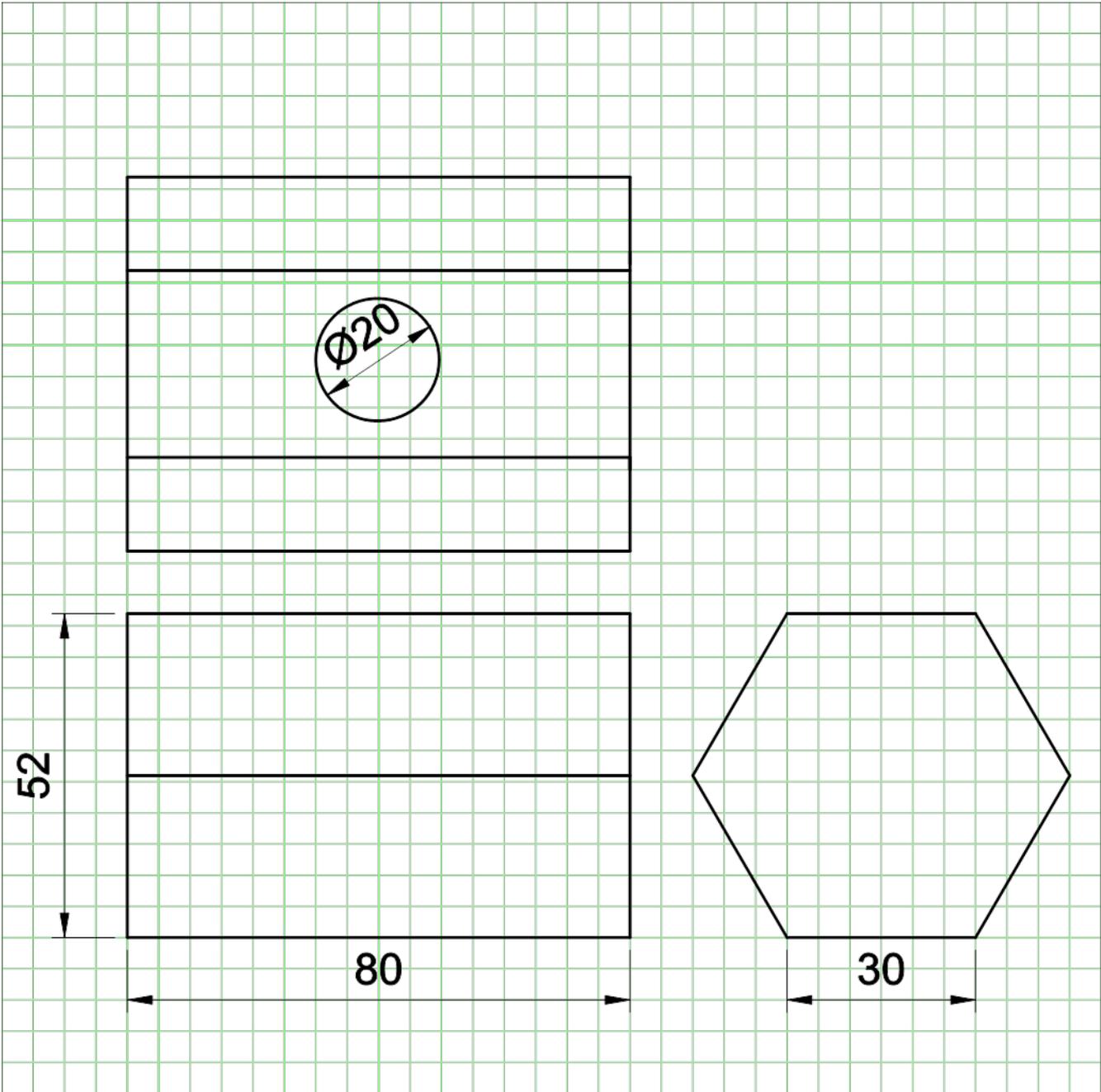


3<sup>rd</sup> Angle Projection Symbol which allows the person using the drawing to understand the system being used.

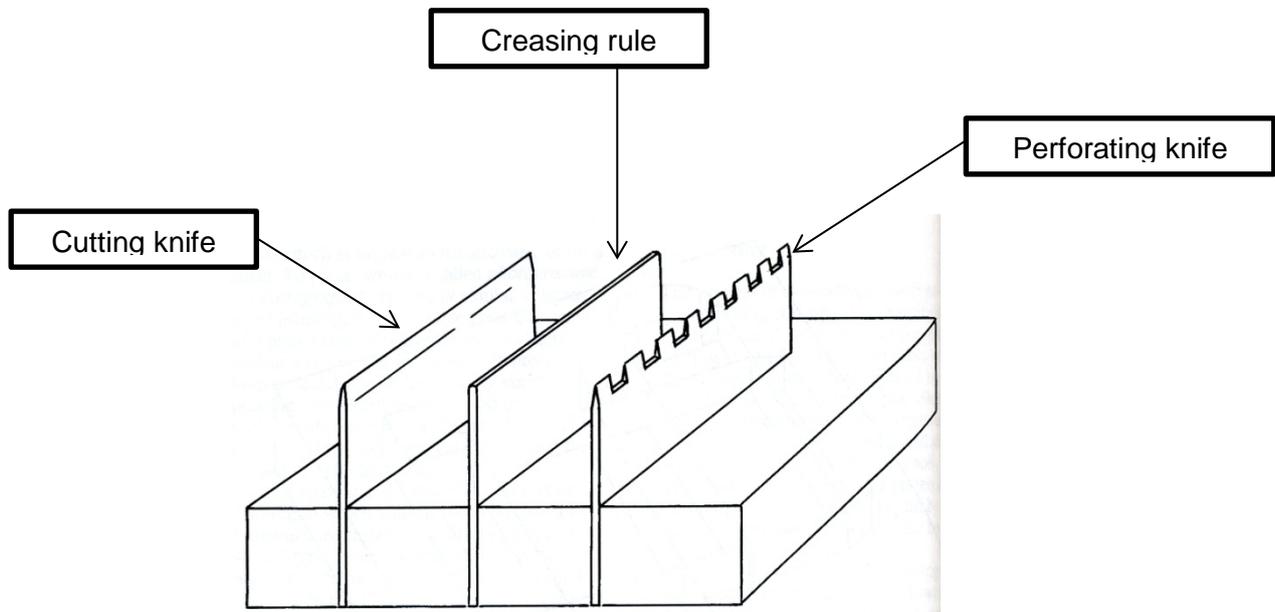
Good, clear understanding of name and/or meaning	2
Limited understanding of name or meaning eg orthographic drawing.	1
Not attempted or incorrect	0

**2**  
**Total 16**  
**marks**

Answer:



- 7 (a) A diagram of a simple die is shown below  
Label the diagram by selecting from the following terms..



3 correct responses	2	
1 correct responses	1	
0 correct responses	0	2

- 7 (b) *The coloured envelope was manufactured on a die cutting machine using a die or forme in the shape of the envelope.*

*Complete the table opposite (page 23) by:*

- 7 (b) (i) *Describing the stages of making the envelope;*  
Tick in red pen- see MMS

**Stage 3: Folding**

Card folded along crease or perforated lines or score line/edges	2
High Level: Clear description	1
Low Level: Difficult to understand the stage, needs interpretation	0
Not attempted or incorrect	

**Stage 4: Gluing**

Card glued on flaps / tabs only and envelope assembled	2	
High Level: Clear description	1	<b>4</b>
Low Level: Difficult to understand the stage, needs interpretation, no reference to flaps/tabs.	0	
Not attempted or incorrect		

- 7 (b) (ii) *Naming one item of equipment for each stage;*  
Tick in red pen-see MMS

**Stage 3: Folding**

Embossing tool, bone folder, ruler, rule, old ball point pen, creasing bar/tool, back of scissors, folding jig	1	
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**Stage 4: Gluing**

PVA, Pritt stick, double sided tape, spray glue, glue gun, glue stick	1	<b>2</b>
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No mark for glue or adhesive or super glue.

- 7 (b) (iii) *Drawing diagrams to show how you would make this envelope in your classroom using a die cutting machine.*

Tick in red pen-see MMS.(Tick means a mark on this question only).

**Mark ( 3 x 2 marks):**

High Level: Well communicated, easy to follow the order of making. Self-explanatory.	2	
Low Level: Difficult to understand the order of making. Needs interpretation or <b>used an alternative method or machine to the die cutting machine</b>	1	
Not attempted.	0	<b>6</b>
Eg Stage 2-Image of die cutter/die		<b>Total 14</b>
Stage 3-Image of folding using correct tool		<b>marks</b>
Stage 4-Applying correct adhesive to flap/tabs		

**Total 120**  
**marks**