

Candidate Name	Centre Number	Candidate Number

WELSH JOINT EDUCATION COMMITTEE
General Certificate of Secondary Education



CYD-BWYLLGOR ADDYSG CYMRU
Tystysgrif Gyffredinol Addysg Uwchradd

140/04

DESIGN AND TECHNOLOGY

PAPER 2

FOCUS AREA: GRAPHIC PRODUCTS

(Higher Tier – Grades D to A*)

P.M. TUESDAY, 6 June 2006

(1½ hours)

	Leave Blank
Question 1	
Question 2	
Question 3	
Question 4	
Question 5	
TOTAL MARK	

ADDITIONAL MATERIALS

You will need basic drawing equipment and coloured pencils for this examination.

INSTRUCTIONS TO CANDIDATES

Write your name, centre number and candidate number in the spaces at the top of this page.

Answer **all** questions.

Write your answers in the spaces provided in this booklet. Where the space is not sufficient for your answer, continue the answer at the back of the book, taking care to number the continuation correctly.

INFORMATION FOR CANDIDATES

The number of marks is given in brackets at the end of each question or part-question.

No certificate will be awarded to a candidate detected in any unfair practice during the examination.

Answer **all** questions in the spaces provided.

1. The photograph shows a children's jigsaw puzzle that includes a "MAGIC" element.

The jigsaw puzzle is made from 2000 micron **greyboard** with the printed full colour picture bonded onto one side of the board and a plain sheet of paper, with the maker's name printed on it, stuck onto the back.

Black **thermochromic** ink is printed onto the picture to provide the "MAGIC" element of the jigsaw puzzle. The picture surface of the jigsaw puzzle is **laminated** with a gloss film and the pieces are **die cut**.

The box is made of 700 micron **greyboard** covered with glossy paper printed with an image of the jigsaw puzzle and information about the product.

Study the photographs and then answer the questions that follow.



(a) Complete the sentences that follow:

(i) Full colour printing uses , ,
..... and inks. [4]

(ii) Thermochromic ink is referred to as a *smart material* because it
.....
..... [2]

(iii) The jigsaw puzzle is laminated because
..... [2]

(iv) One of the **main** advantages of using *die cutting* to produce the jigsaw pieces is
.....
..... [2]

(b) Give **two** properties (**other than cost**) that make **greyboard** a suitable material for the manufacture of the jigsaw puzzle.

Property 1:
..... [2]

Property 2:
..... [2]

- (c) Two of the images printed on the jigsaw box are shown below.
Circle the correct word and complete the sentence that follows.

(i)



This symbol indicates that the product can be **Recycled / Reduced**.

It means that

..... [2]

(ii)

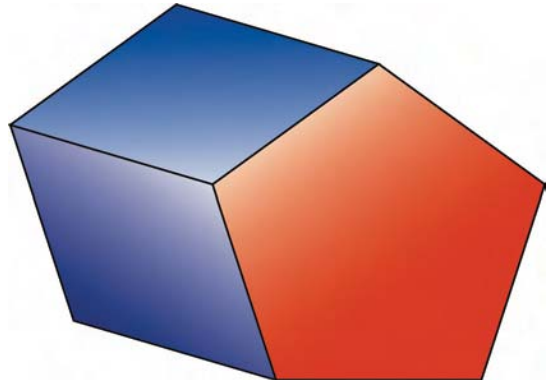
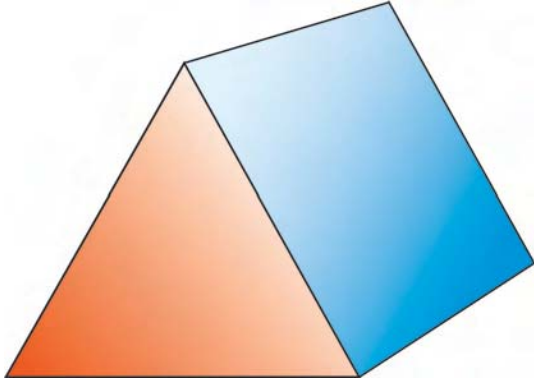


This symbol shows a **Bar Graph / Bar Chart / Bar Code**.

It is used by shops for

..... [2]

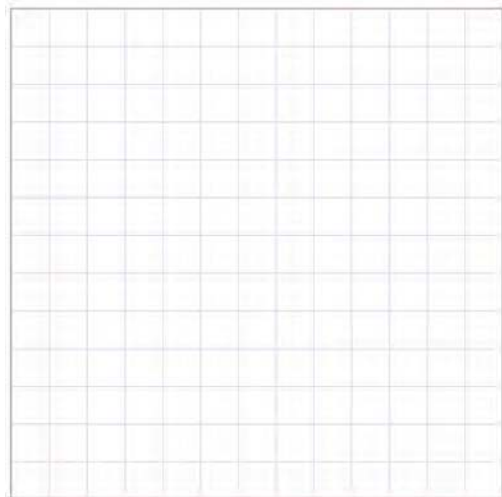
2. Packaging boxes for sweets are made in different shapes and sizes. Two are shown below. One is a triangular prism and the other a pentagonal prism.



- (a) **Geometrically construct** the shape of the ends of the prisms on the grids below.
Show ALL your work for the construction of the shapes.

- (i) Geometrically construct the end shape of the triangular prism.

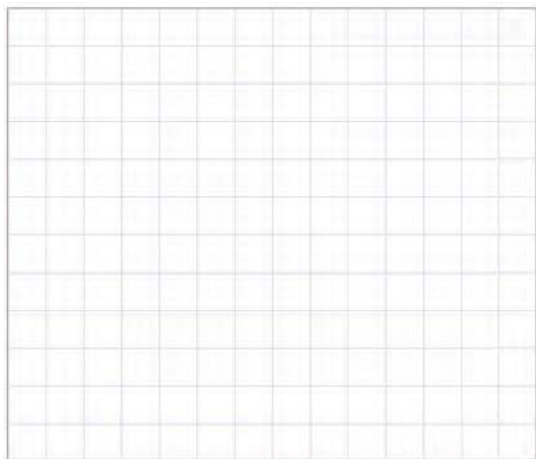
It is an equilateral triangle with sides of 40mm.



[4]

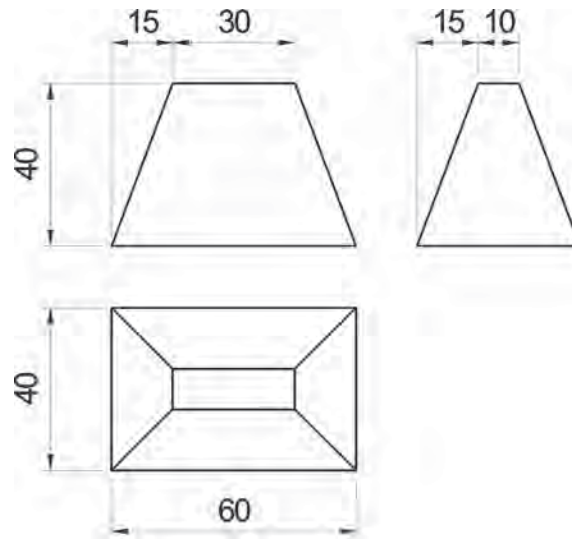
- (ii) Geometrically construct the end shape of the pentagonal prism.

It is a regular pentagon with sides of 30mm.



[6]

(b) An orthographic drawing of a *different* box is shown below.



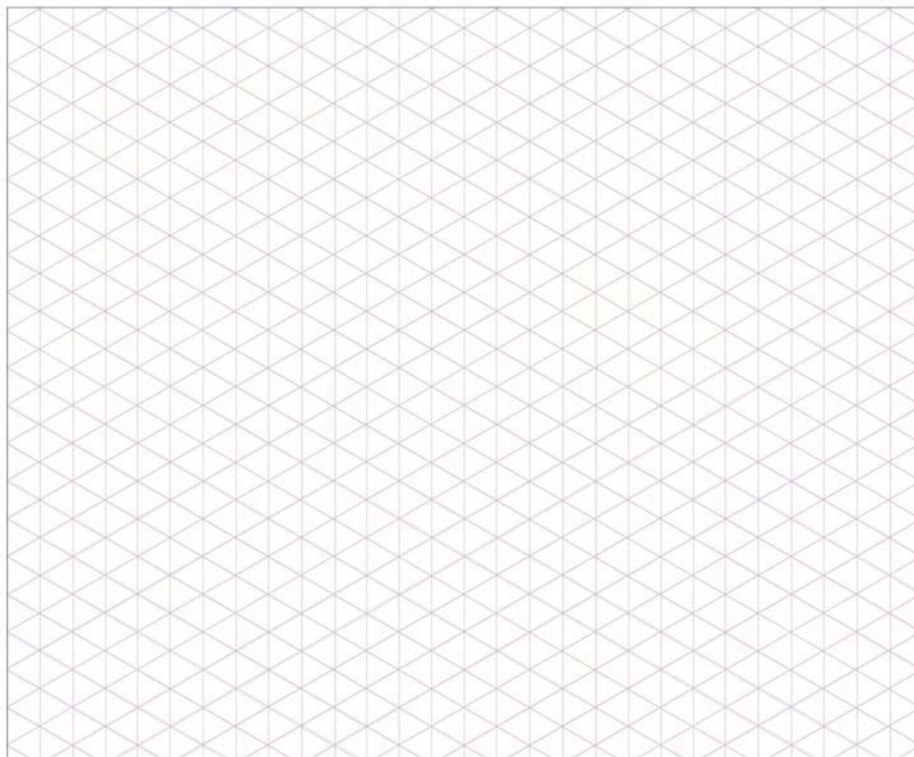
(i) State the name of the projection system used in the orthographic drawing. [1]

.....

(ii) Using the grid below, make an accurate ISOMETRIC drawing of the box shown. Use WEIGHTED LINES in your answer.

Marks will be awarded for:

- an accurate full size outline of the shape; [5]
- using weighted lines to make your isometric drawing look more like a solid object. [4]



3. An advertising leaflet for holiday accommodation has been designed. The leaflet is 200mm square when folded. Photographs of a colour proof of the leaflet are shown below.



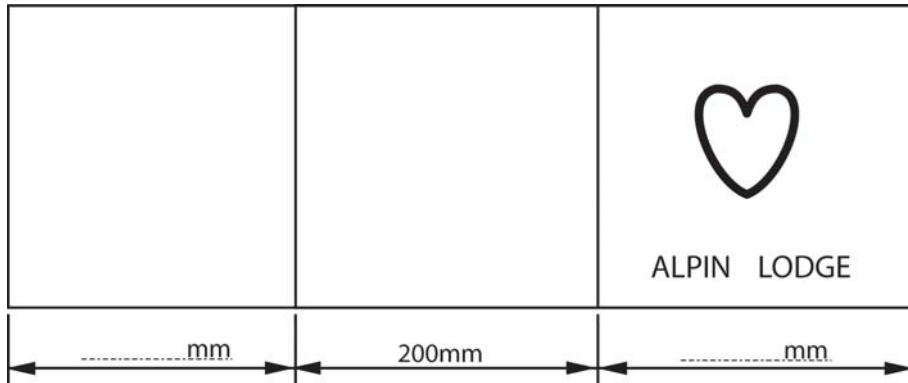
- (a) The leaflet is folded as shown alongside.

State the name of this type of fold. [2]

.....



- (b) For the leaflet to fold correctly, each page has to be a different width. Complete the sketch below by inserting the correct dimension for each of the folding pages. The centre dimension has been done for you. [4]



- (c) The leaflet has to be printed on material that will allow it to stand up on its own when displayed.

- (i) From the list below, tick (✓) the most appropriate material for making the leaflet and then give **one** reason for your choice.

Material	Tick (✓)
40 gsm white detail paper	
80 gsm white wove paper	
160 gsm white coated paper	
1200 micron white duplex board	

Reason

..... [2]

- (ii) State the meaning of **gsm** in the table above. [1]

.....

- (iii) State what the term **1200 micron** tells you about the duplex board. [1]

.....

- (iv) Convert **1200 micron** into millimetres (mm). [1]

.....

- (d) The leaflet uses photographs to give the reader an impression of the accommodation. Some of the photographs have been manipulated so that they fade into each other. This process is carried out using computer software.



From the list below, underline which type of software package you would use and give a reason for your choice. [1]

A Bitmap editing package / A vector drawing package / A video editing package.

Reason [2]

- (e) It is decided to put the photographs of the accommodation onto a web site. State what would be the most appropriate file format in which to save the images and give **one** reason for your choice.

Chosen file format: [1]

Reason for choice:..... [2]

- (f) Colour separations are made before printing the leaflet. State what the colour separation process does. [2]

.....
.....

4. Graphs and charts are often used to make numerical data easier to understand.

- (a) Listed below are the descriptions of three common types of graph.
In the space provided, state the type of graph that is described.

[3]

DESCRIPTION	TYPE OF GRAPH
A division of a whole into its parts, usually percentages.	
Quantities that are plotted over a period of time.	
Quantities that are represented by height or length.	

- (b) Bottled water is a popular drink. The price of a bottle of water is 48 pence.
This is broken down as shown in the table below.

Manufacturer's Profit	2.4p
VAT	8.4p
Advertising	6p
Costs of Packaging	12p
Processing Water	3.6p
Transport Costs	6p
Retail Mark Up	9.6p

Draw a graph or chart in the space below to illustrate the information in the table.

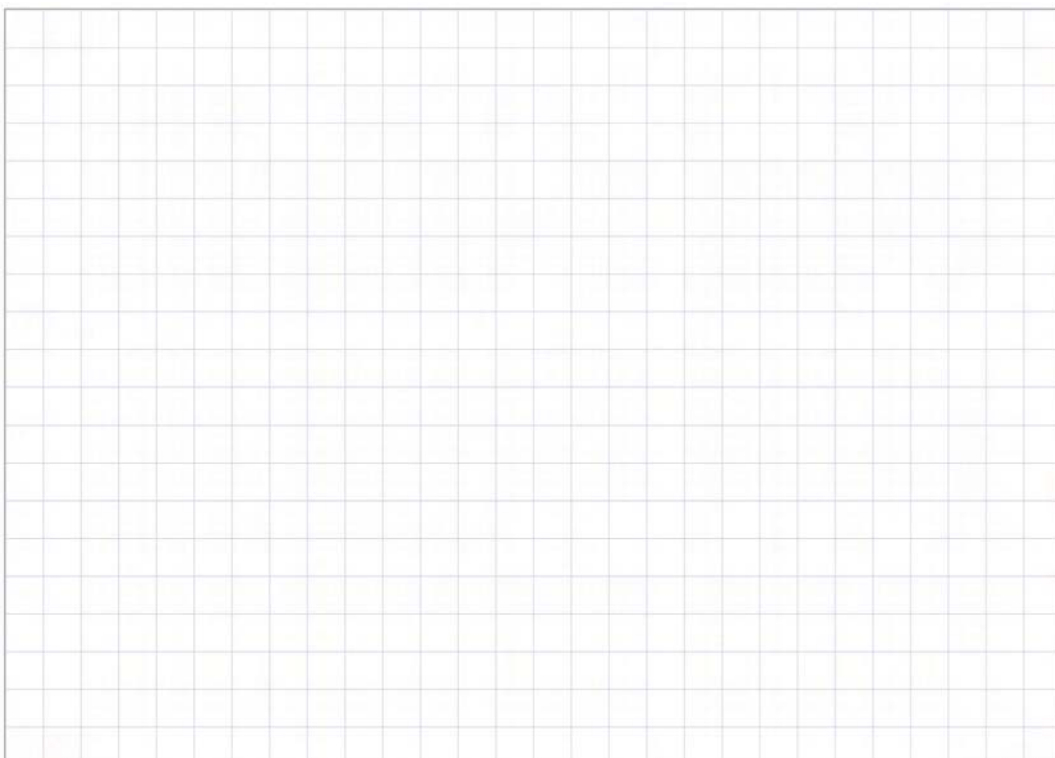
Marks will be awarded for:

- imaginative representation of the data;
- representing the data accurately;
- quality of drawing.

[2]

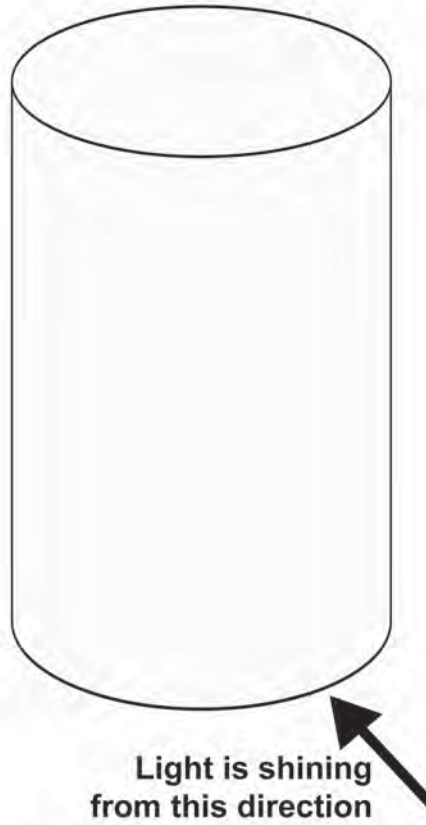
[4]

[2]



(c) Rendering or shading is often used to make a drawing look more solid and three-dimensional.

(i) Use rendering/shading to make the drawing below look like a solid cylinder. [3]



(ii) State **two** other reasons for rendering a drawing.

Reason 1: [2]

Reason 2: [2]

5. A wrist-watch manufacturer is introducing a new watch aimed at young people who take part in sports. The watch will have sporting functions, (stop watch, heart rate monitor and be waterproof).

(a) A name and a logo for the new watch are required.
The name must appeal to young sporty people and be short and easy to remember.
The logo must fit in a circle of 80mm diameter.

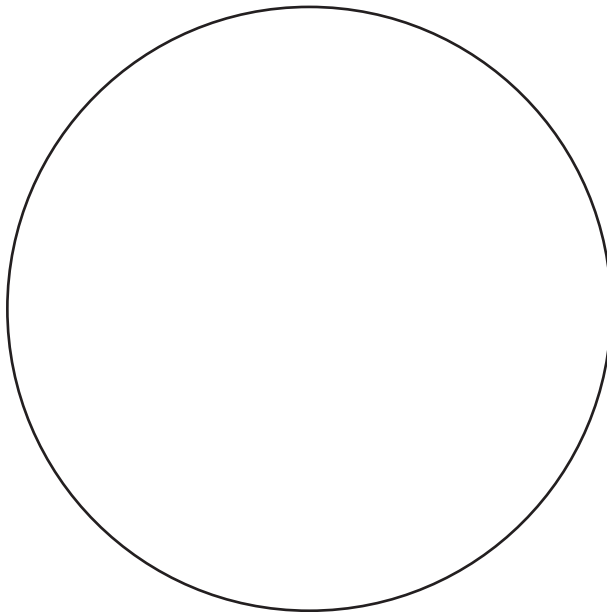
(i) On the line below, write down the name you are going to use.

Chosen name for the watch: [1]

(ii) In the circle drawn below, design a logo using the name of the watch.

Marks will be awarded for:

- designing a logo that uses the chosen name or an abbreviation; [3]
- using all the space available; [1]
- quality of drawing; [2]
- quality of use of colour. [2]

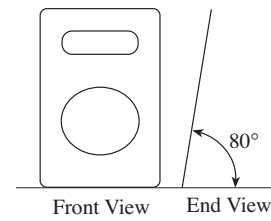
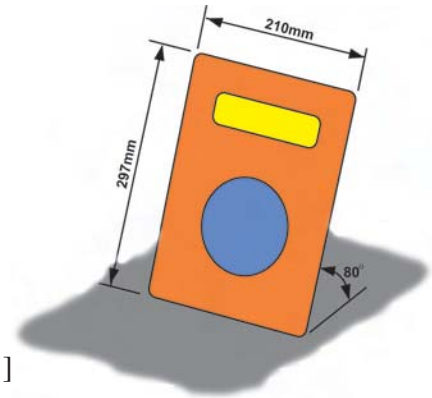


- (b) An A4 sized point of sale display for a shop counter is required.
The image on the right shows the graphic to be used on the point of sale display.

Design a supporting stand that will hold this graphic in position on the counter.

Marks will be awarded for:

- (i) designing a stand that:
- holds the graphic securely in place; [1]
 - holds the graphic at approximately 80 degrees to the horizontal; [2]
 - is stable and hard to knock over; [1]
 - folds flat for posting to the shop; [2]
 - locks in place to stop it folding up in use. [2]
- (ii) stating a suitable material to be used to make the stand. [2]



- (c) Make an **orthographic drawing** to show the details of your design for the stand. You should use only as many views as are needed to give the information. You must add the **three (3)** most important dimensions to your drawing.

[6]

