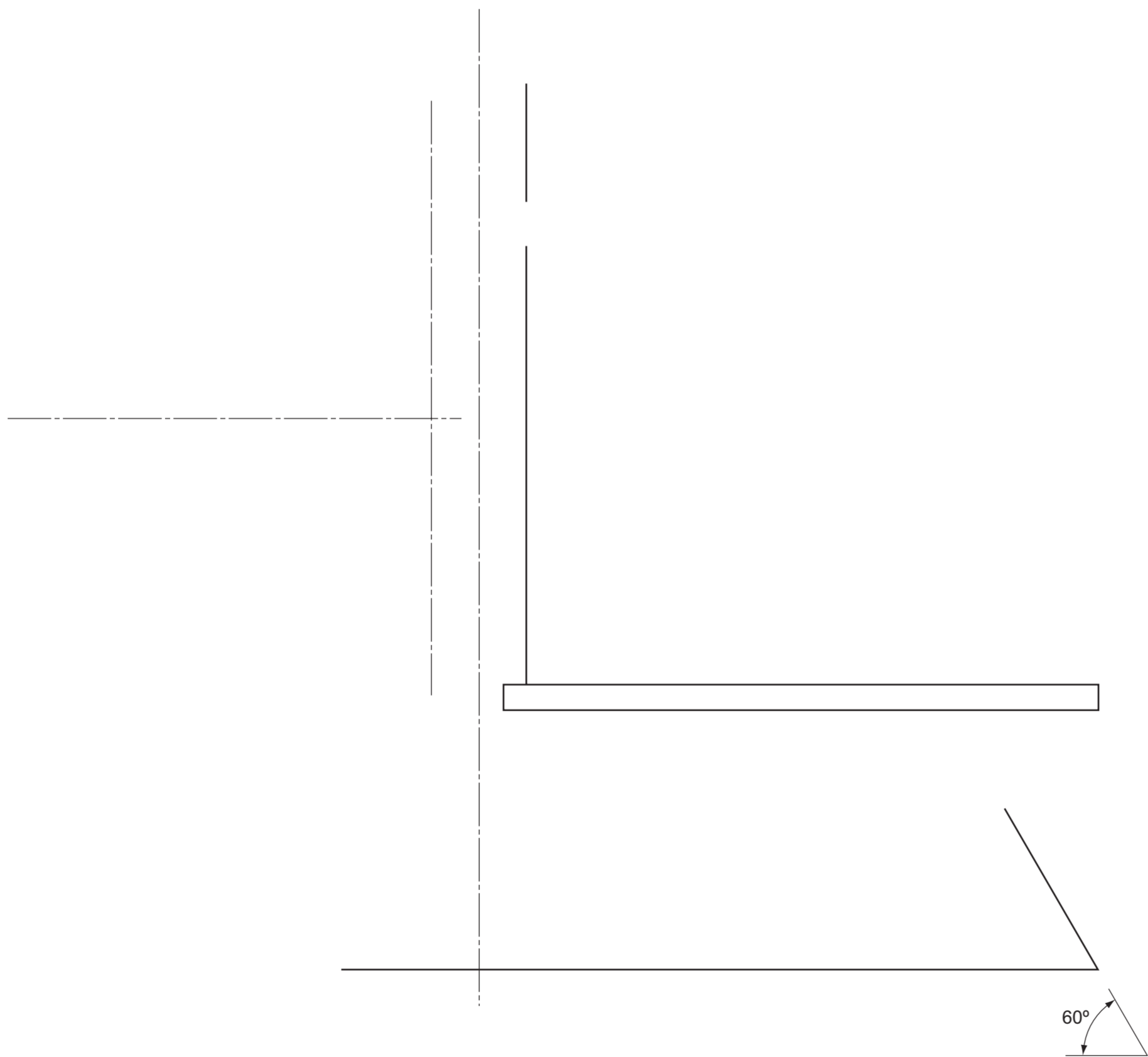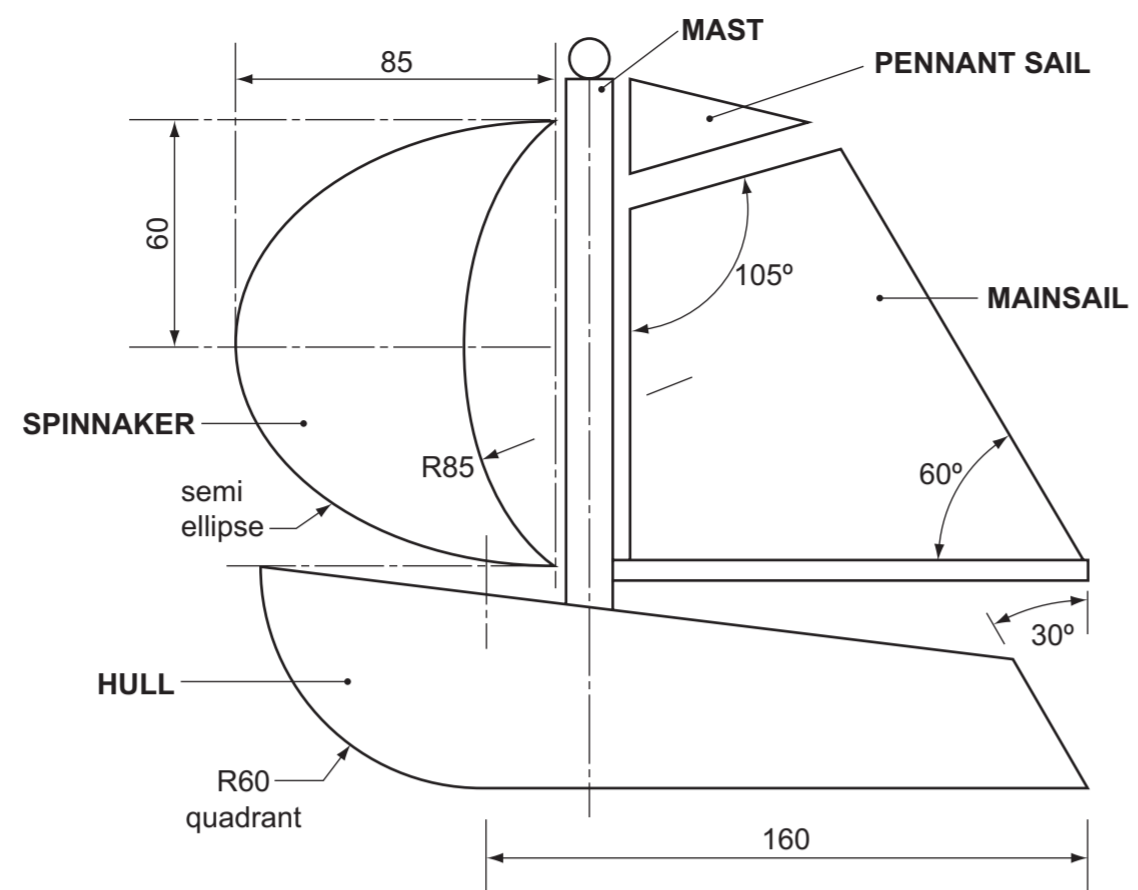1 A National Sailing Club has a sailing boat logo that appears as part of its national identity on all the club merchandise. Details of the sailing boat logo are shown to the right.

Complete the full size drawing of the sailing boat logo below by:

(a) adding the R60 quadrant and the missing line to form the hull; [6]

(b) constructing the semi ellipse and the R85 curve to form the spinnaker; [10]

(c) drawing the remaining part of the mainsail and the triangular pennant sail; [4]

(d) drawing the Ø10 mast to the correct height with the Ø10 ball on the mast top; [4]

(e) adding the letters NSC to the hull of the sailing boat logo; [3]

(f) colouring **part (e)** only. [3]

MAST
PENNANT SAIL
MAINSAIL
85
60
105°
60°
SPINNAKER
R85
30°
semi ellipse
HULL
R60 quadrant
160

60°
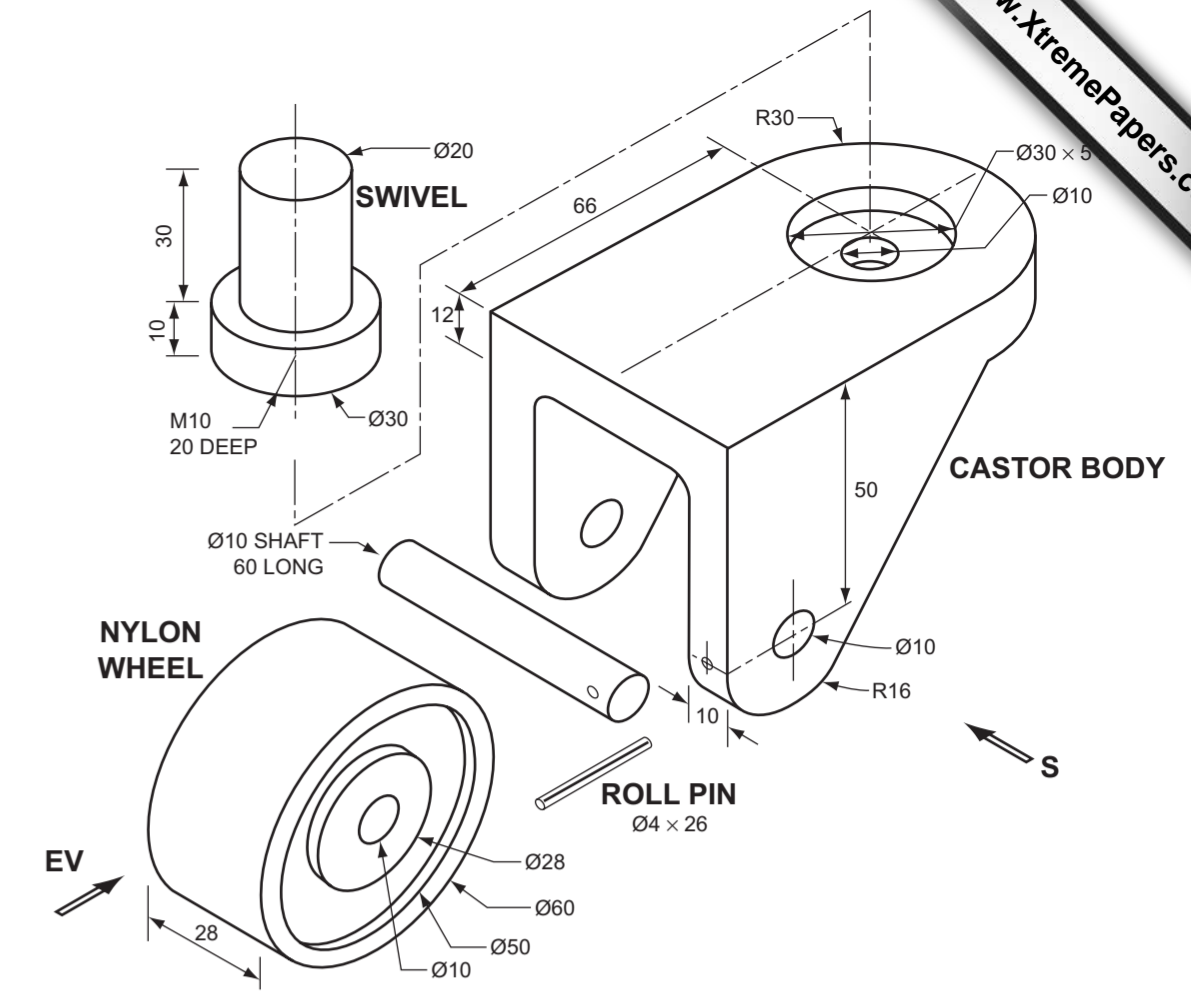
2 An exploded pictorial view of a castor for a supermarket trolley is shown to the right. The nylon wheel rotates on a Ø10 shaft that is held in place in the castor body by a roll pin.
The swivel sits in a Ø30 recess in the castor body and is secured by a M10 HEX HD bolt 25 long.

(a) Draw to a scale of 1:1 in either first or third angle orthographic projection, the following views of the assembled parts:

(i) a sectional view taken through the centre of the castor body looking in the direction of the arrow **S**; [12]

(ii) the end view looking in the direction of the arrow **EV**; [10]

(iii) the plan. [6]

Show the M10 threaded hole and the machine screw in the sectional view **(i) only**.
Hidden detail is not required in any view.
Dimensions not shown are left for you to decide.

(b) In the space indicated, draw the symbol for the angle of projection you have used for your drawing. [2]

Ø20
SWIVEL
R30
Ø30 × 9
Ø10
30
66
10
12
M10 20 DEEP
Ø30
50
CASTOR BODY
Ø10 SHAFT 60 LONG
NYLON WHEEL
ROLL PIN Ø4 × 26
Ø10
R16
10
S
EV
Ø28
Ø60
28
Ø50
Ø10

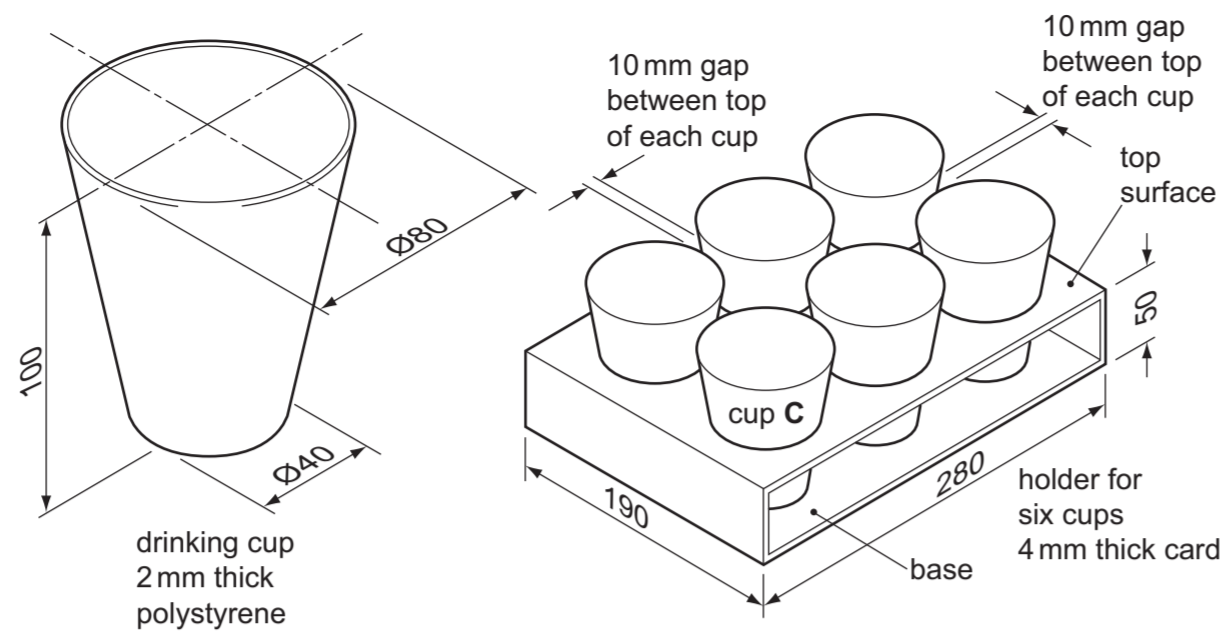DRAW THE SYMBOL FOR THE ANGLE OF PROJECTION USED HERE

Write your surname, other names, Centre number and candidate number in the spaces provided.

Answer any **two** questions.

Draw your answers in the spaces provided on the question paper.

All dimensions are in millimetres.

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

Candidate's Surname ....

Other Names ....

Centre Number ....

Candidate's Number ....
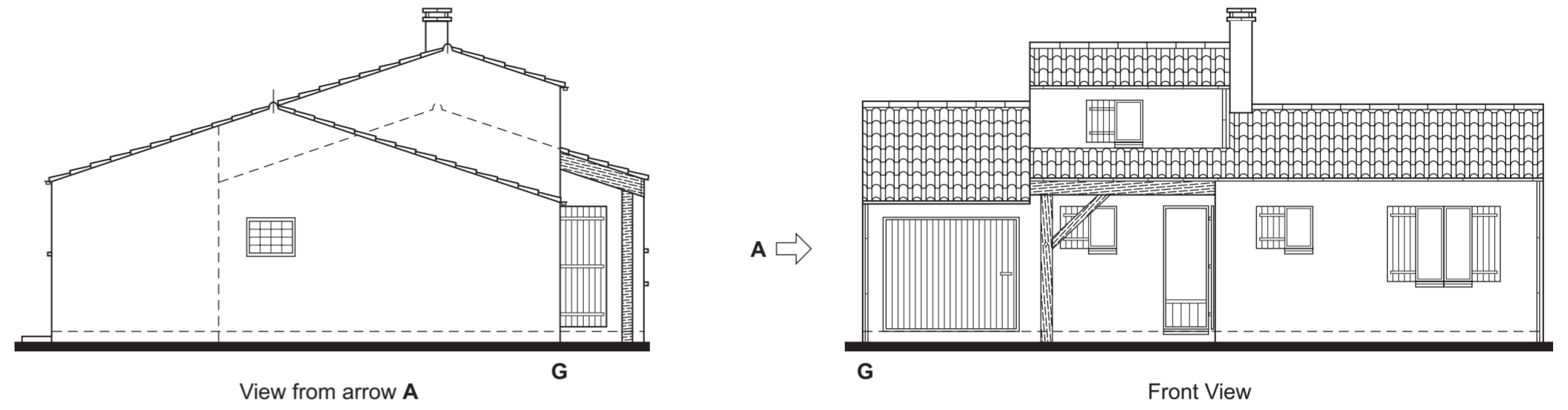
For Examiner's use

[Turn over

3 A pictorial view of a drinking cup and a holder made from card is shown to the right.
The drinking cups are made from 2 mm polystyrene and sit on the base of the card holder.
The drinks tray is made from 4 mm thick card.

(a) Draw to a scale of 1:2 in the space below:

    (i) a plan view and a front elevation of the drinks tray. Include a symbol to show what angle of orthographic projection you have used;   **[6]**

    (ii) the centre positions of the six holes with drinking cup **C** in position on the plan view;   **[15]**

    (iii) drinking cup **C** in position on the front elevation;   **[3]**

    (iv) the correct size hole that is needed in the top surface to support the drinking cup in one of the five remaining positions on the plan view.   **[2]**

(b) In the space indicated, draw a pictorial sketch of a modification to the tray that would make it easier to carry with one hand.   **[4]**

Ø80

100

Ø40

drinking cup
2 mm thick
polystyrene

10 mm gap between top of each cup

10 mm gap between top of each cup

top surface

50

cup **C**

190

280

holder for six cups
4 mm thick card

base

Answer part **(a)** here.

SCALE 1:2

Answer part **(b)** here.

4 Two orthographic views of a house design are given below. The Architect wants a pictorial sketch of the house design to show to clients.

In the space below the two orthographic views, **sketch freehand** approximately to the **same size** as the given views, an **isometric view**.

Do not include details of the roof tiles.
Windows, doors and shutters should be shown simply and clearly. The starting point **G** is given for you.   **[30]**

View from arrow **A**

G

A ⇨

G

Front View

G