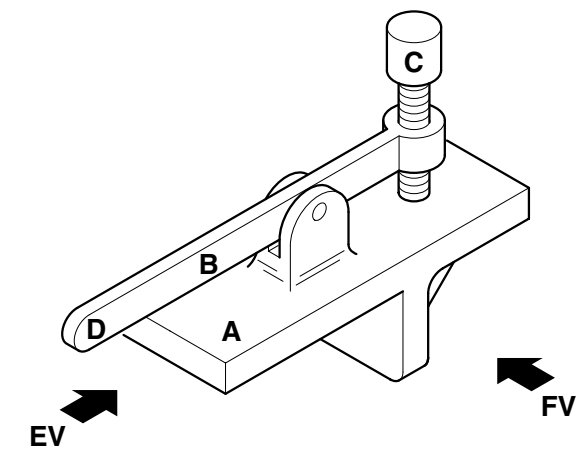
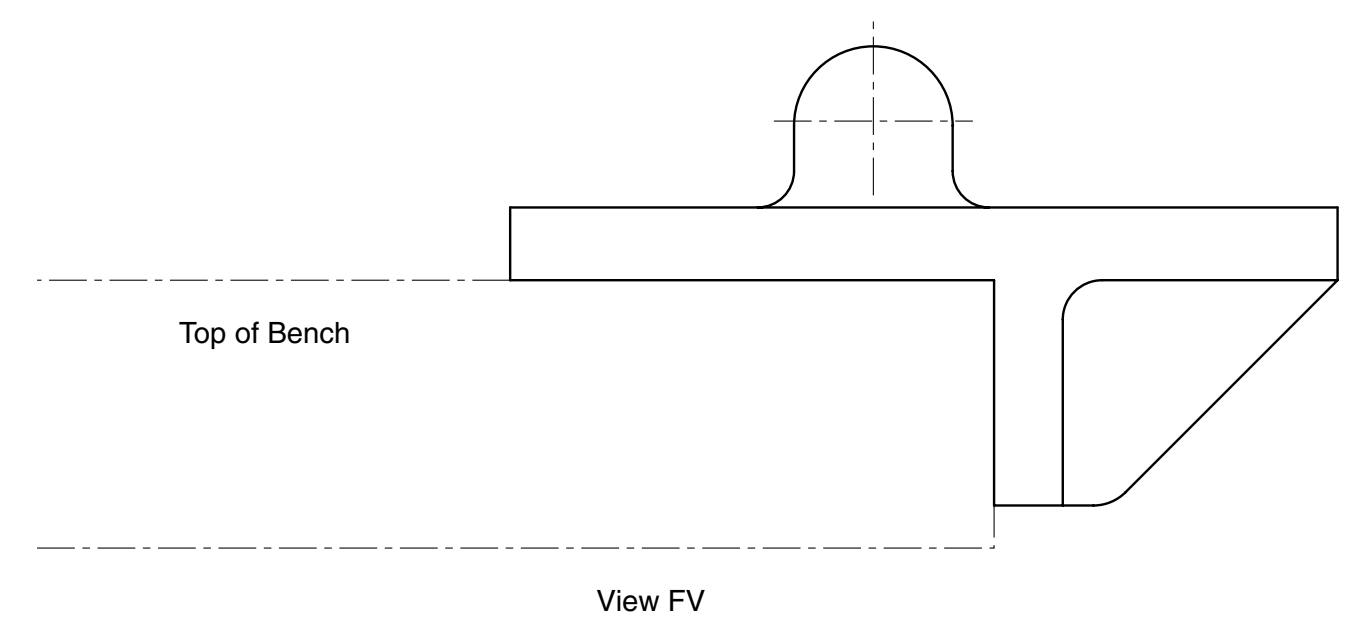
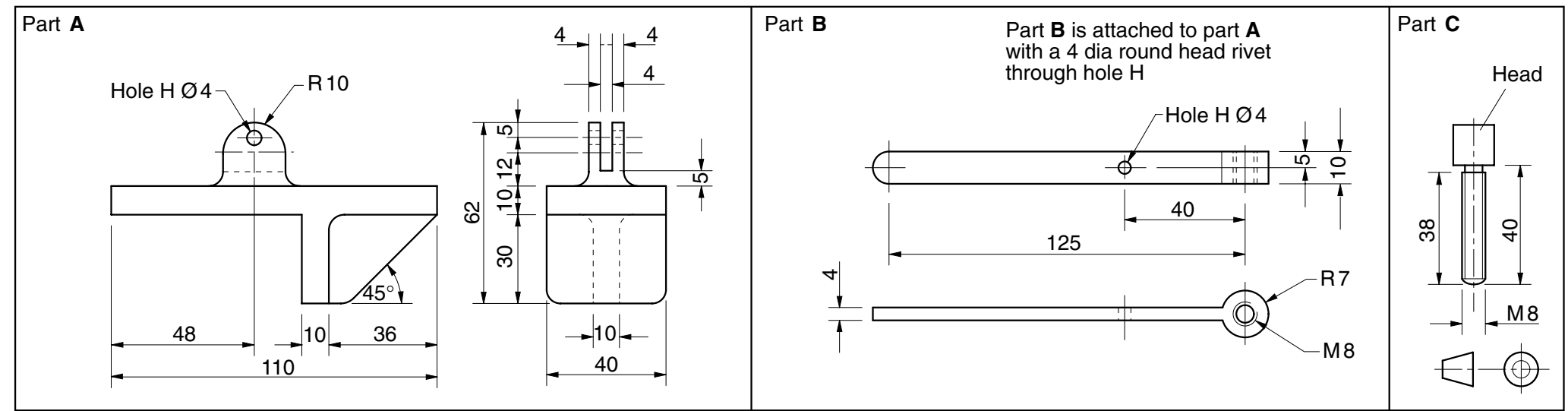


1 Read all parts of the question before starting to draw.  
 Part of a clamp for holding sheet metal onto a bench while it is being used, is shown to the right. Orthographic views of the three parts **A**, **B** and **C** are given below.



Draw full size in third angle orthographic projection, the following views of the **assembled** tool:  
**(a)** the view **FV**. Some of part **A** has been drawn for you. Include in your answer an alternative design for the head of the screw, part **C**, that will make it easier to tighten.  
 Part **B** is to be drawn in the horizontal position with the bottom of screw **C** touching part **A**;  
**(b)** a plan in projection with **(a)**.  
 Include hidden detail in both views.  
 Do not colour your answer. Dimensions not given are left for you to decide.

[15]  
[15]



2 A newspaper advertisement for a Do-it-Yourself store uses symbols to inform customers of the services offered. The symbol for *Free Designing and Planning* is given to the right. Three other symbols are needed for:  
 • Garden Centre;  
 • Tools for Sale and Hire;  
 • Carry to the Car Service.  
 In the spaces indicated:  
**(a)** sketch **two** different ideas for each of the three symbols required;  
**(b)** draw accurately your chosen idea for each symbol.

[9]  
[21]

ANSWER PART (a) HERE

**FREE DESIGNING AND PLANNING**

ANSWER PART (b) HERE

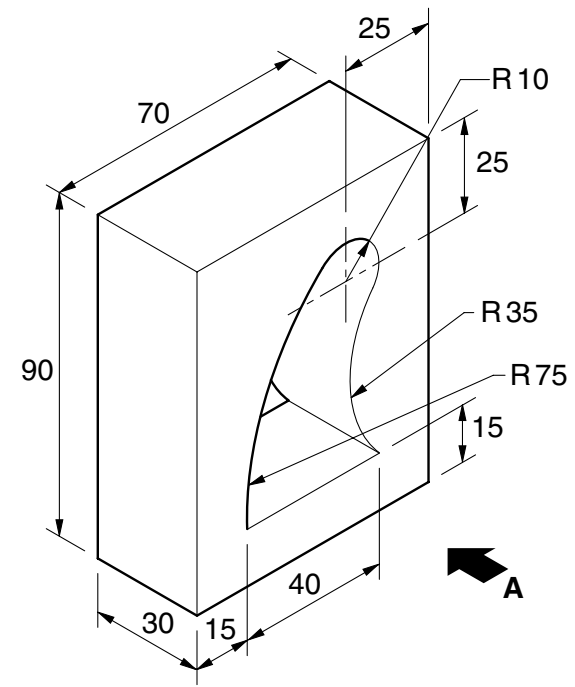
**GARDEN CENTRE**

**TOOLS FOR SALE AND HIRE**

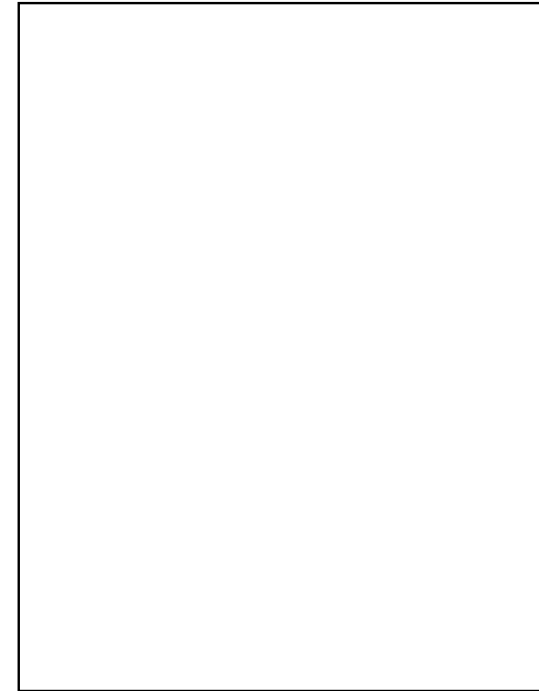
**CARRY TO THE CAR SERVICE**

3

A package is needed for a piece of delicate glassware. The package is to consist of a block of expanded polystyrene with a hole into which the glassware fits, contained in a box made from thin card. The polystyrene block must fit tightly in the box. A sketch of the polystyrene block is given to the right.



ANSWER PART (a) HERE  
Construct the outline of the hole correctly positioned in the front view **A** of the polystyrene block below.



VIEW A

In the positions indicated:

- (a) complete the front view of the polystyrene block looking in the direction of the arrow **A**. Geometrical constructions must be used for the outline of the hole; [11]
- (b) draw, full size, a one piece development of the box. Include in the development:
  - (i) all gluing and other flaps;
  - (ii) a regular octagonal hole, centrally placed in the **front** of the container through which the glassware can be seen. The octagon is to be 60mm across the flats. [19]

ANSWER PART (b) IN THE SPACE BELOW

4

An idea for a wooden kitchen-roll holder is shown in the orthographic views to the right.

In the positions indicated:

- (a) sketch modifications to the given shape of the parts of the kitchen-roll holder that would make it easier to use and more attractive to look at; [4]
- (b) (i) draw **freehand**, approximately half full size, an **exploded pictorial** view of the kitchen-roll holder showing how the parts are assembled. Include your chosen modifications for (a) in your drawing; [22]
- (ii) use colour and shading to show that the kitchen-roll holder is made from wood. [4]

ANSWER PART (a) HERE

ANSWER PART (b)(i) AND (ii) HERE

