

# Virtual Integrated Design Project

## Mechanical documentation: L102, Team Root g

### Material choice

- 6mm plywood

### Manufacturing techniques

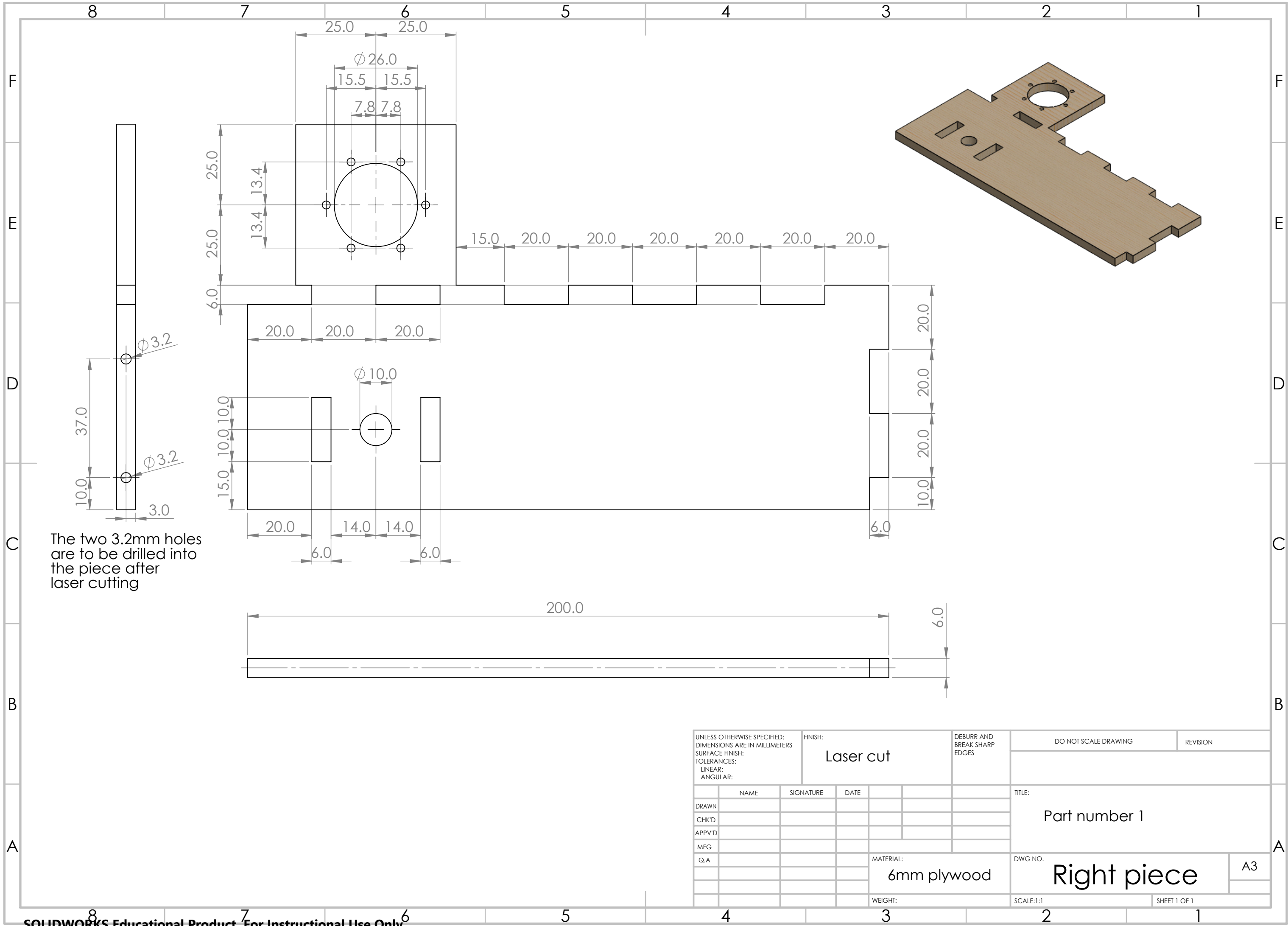
- The majority of the robot is laser cut from the 6mm plywood
- Some additional holes will need to be drilled and tapped
- The plywood will then be glued together using wood glue
- The arduino, battery box and IR sensor are attached to the robot using nuts and bolts and washers where appropriate

### Material justification

- The main goal of our design process was to create a simple and reliable robot
- This is why we went for the cheap and easy to handle plywood as an alternative to sheet metal
- The parts can all be very easily and quickly laser cut out of a single sheet of plywood
- The use of comb joints ensures strength and makes the assembly process fast as pieces slot together only in their correct positions
- We are using 6mm plywood as it is the thickest available and will help make the robot more robust
- The use predominantly of wood also reduces the environmental impact of our robot as it is a sustainable resource

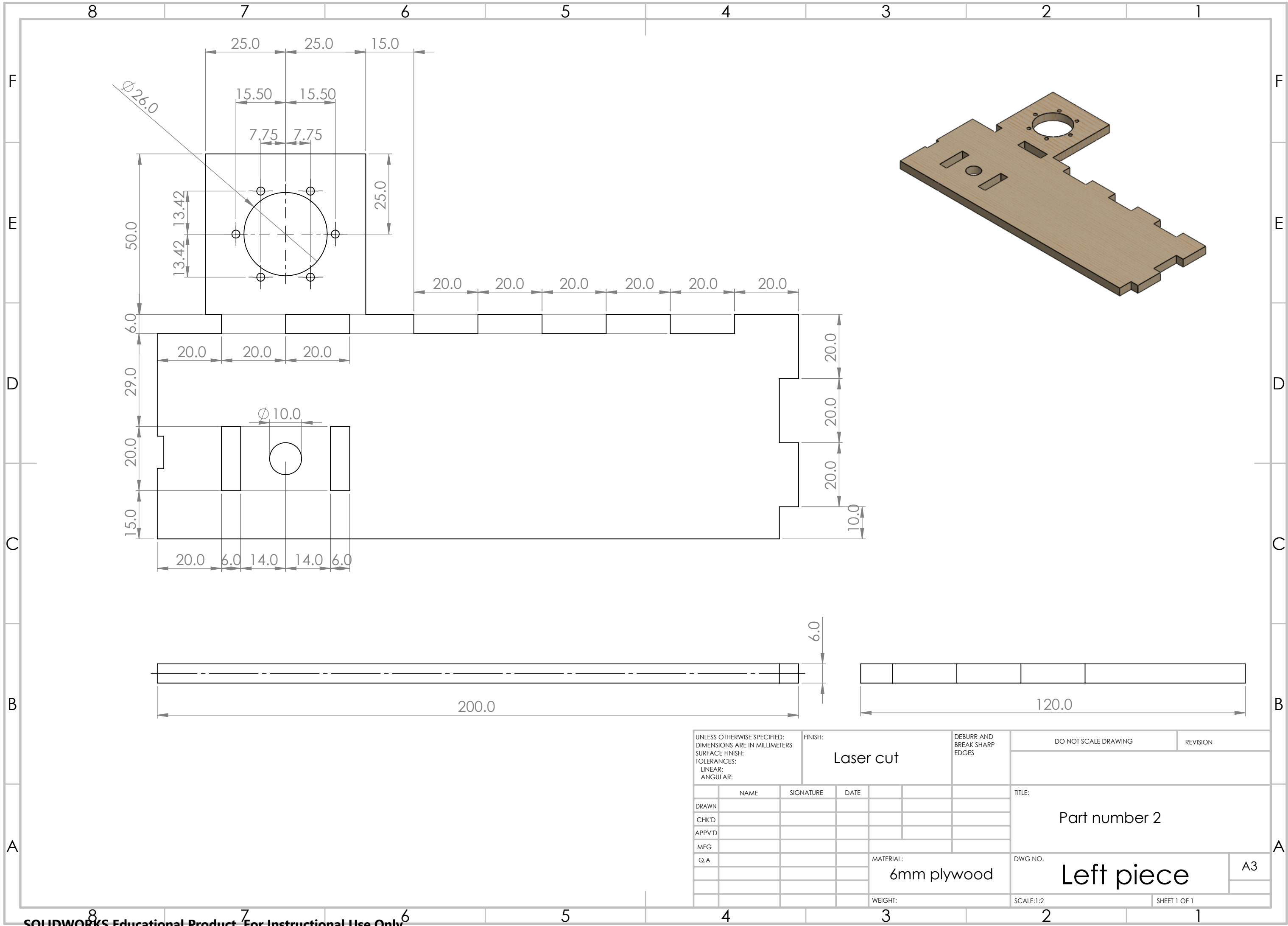
What follows are technical drawings for all of the laser cut parts along with an overall assembly drawing. At the very end is a template with all the parts in their required quantities on a 300mm x 600mm sheet, the same size as the plywood available to us. This is the template that would be used to laser cut the parts



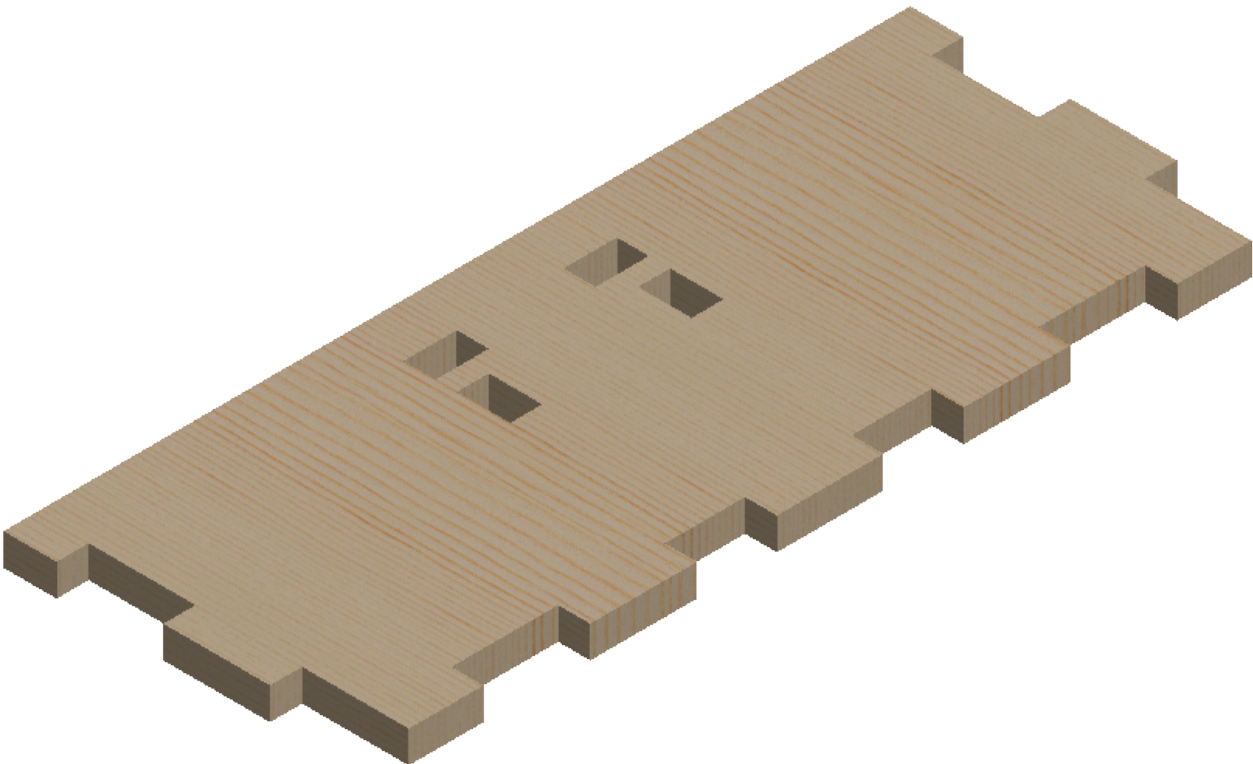


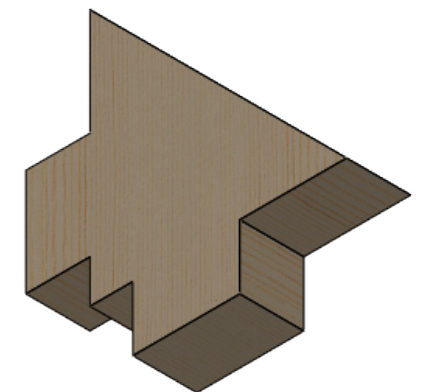
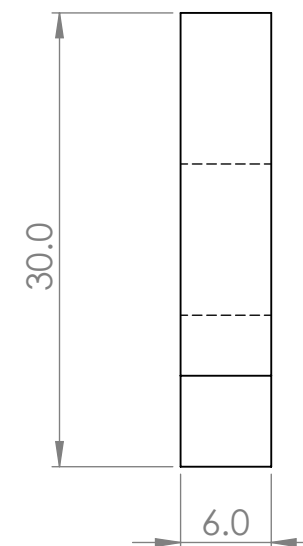
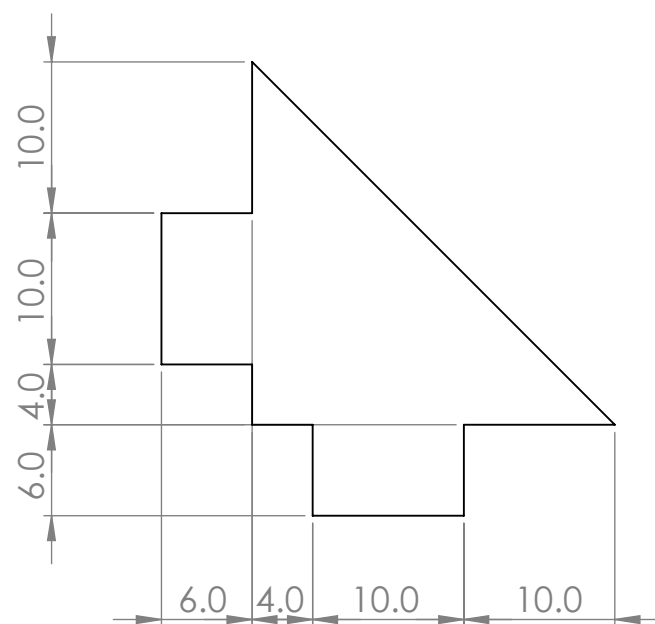
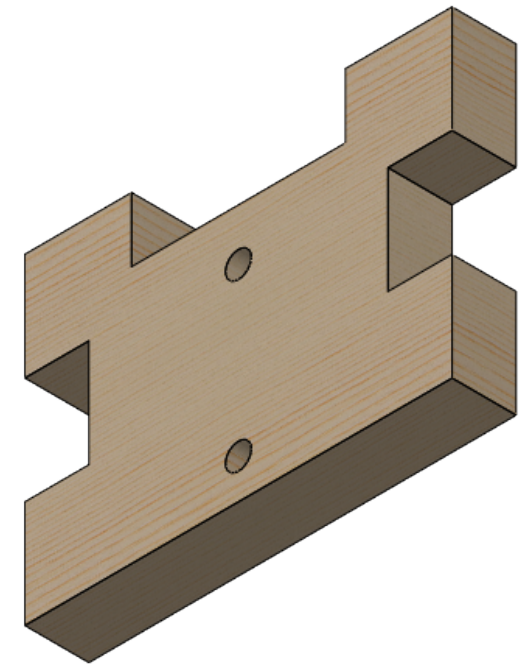
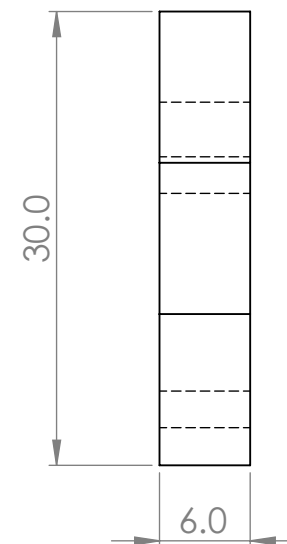
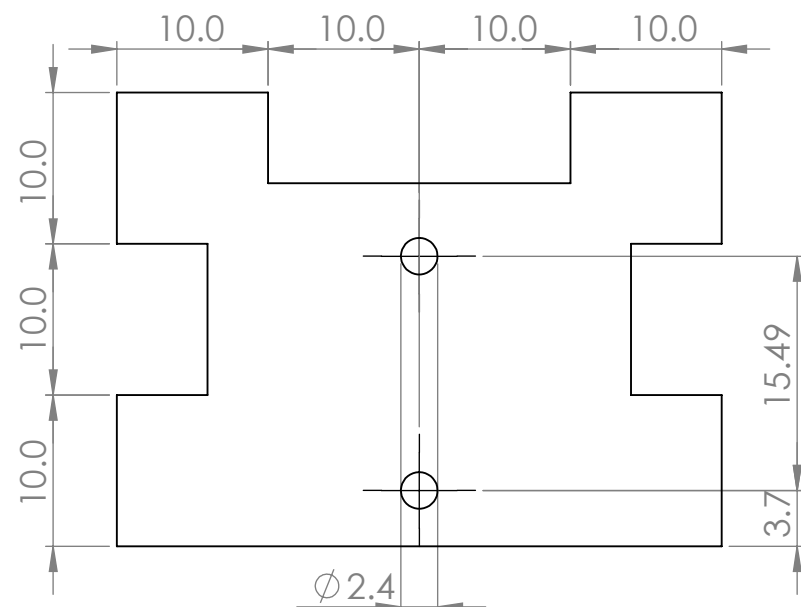
The two 3.2mm holes are to be drilled into the piece after laser cutting

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH: TOLERANCES: LINEAR: ANGULAR:				FINISH:  Laser cut		DEBURR AND BREAK SHARP EDGES	DO NOT SCALE DRAWING	REVISION
DRAWN	NAME	SIGNATURE	DATE				TITLE:  Part number 1	
CHK'D								
APPV'D								
MFG								
Q.A							DWG NO.	A3
						MATERIAL:  6mm plywood	Right piece	
						WEIGHT:		
							SCALE:1:1	SHEET 1 OF 1



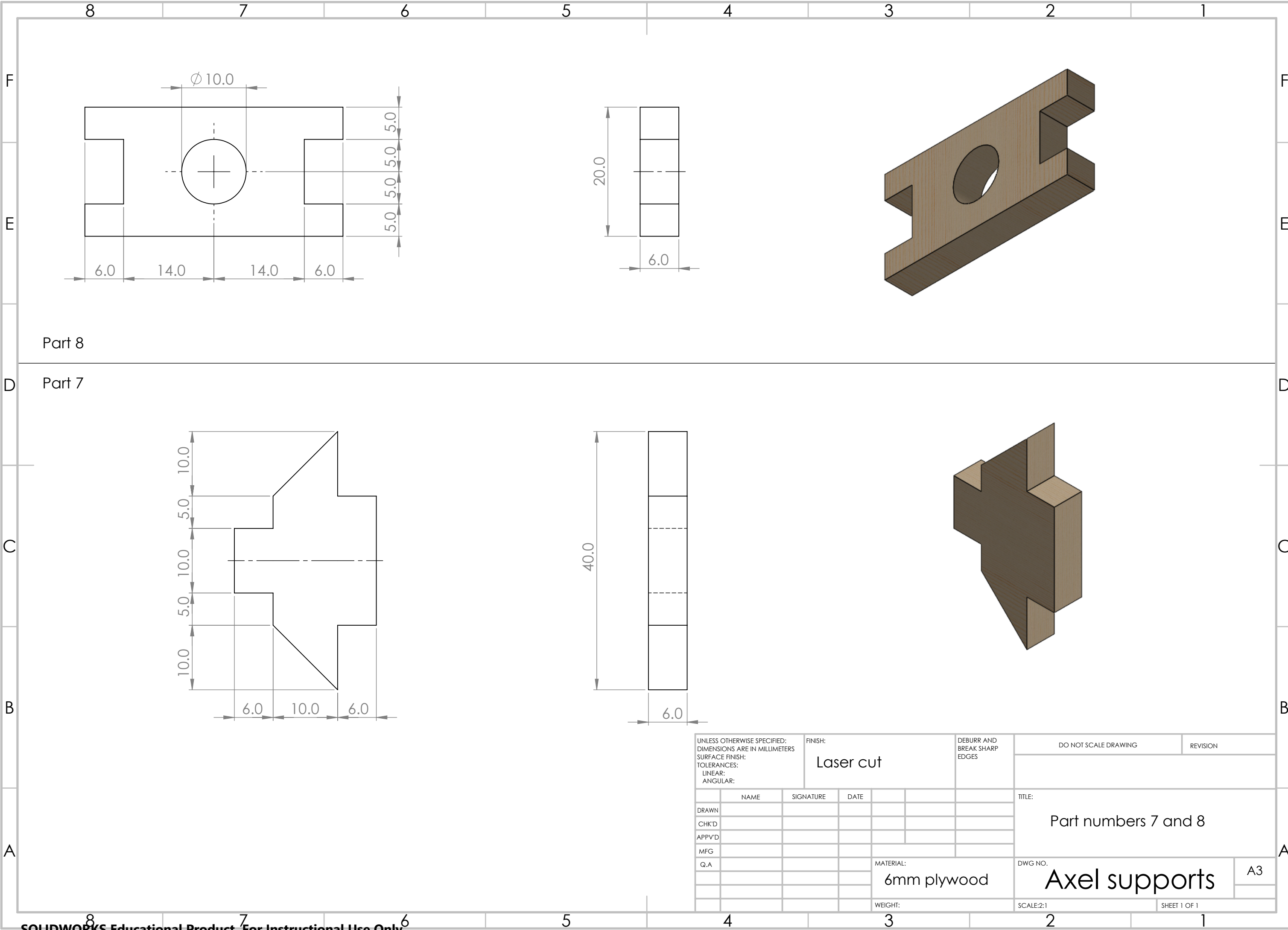
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH: TOLERANCES: LINEAR: ANGULAR:				FINISH:  Laser cut		DEBURR AND BREAK SHARP EDGES	DO NOT SCALE DRAWING		REVISION			
	NAME	SIGNATURE	DATE				TITLE:  Part number 2					
DRAWN												
CHK'D												
APPV'D												
MFG												
Q.A						MATERIAL:  6mm plywood	DWG NO.				A3	
							Left piece					
						WEIGHT:	SCALE:1:2				SHEET 1 OF 1	





UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH: TOLERANCES: LINEAR: ANGULAR:		FINISH:  Laser cut		DEBURR AND BREAK SHARP EDGES		DO NOT SCALE DRAWING		REVISION	
	NAME	SIGNATURE	DATE			TITLE:  Part numbers 4 and 5			
DRAWN									
CHK'D									
APPV'D									
MFG									
Q.A				MATERIAL: 6mm plywood		DWG NO.		A3	
						Caster supports			
				WEIGHT:		SCALE:2:1		SHEET 1 OF 1	





Part 8

Part 7

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH: TOLERANCES: LINEAR: ANGULAR:						FINISH:		DEBURR AND BREAK SHARP EDGES		DO NOT SCALE DRAWING		REVISION	
						Laser cut							
		NAME		SIGNATURE		DATE						TITLE:  Part numbers 7 and 8	
DRAWN													
CHK'D													
APP'V'D													
MFG													
Q.A								MATERIAL:  6mm plywood		DWG NO.  Axel supports		A3	
										SCALE:2:1		SHEET 1 OF 1	







