

# AERONAUTICAL ENGINEERING

## MECHANICAL TASK

### SHEET METAL REPAIR

**Objective:** To produce a riveted plate as per drawing requirements.

**Time allotted:** 3 hours

#### COMPETITOR INSTRUCTIONS

1. The timing for the task will commence immediately after the judges Health & Safety brief.
2. Plan your time carefully to ensure that you are able to complete the task within the allotted time.
3. Ensure that you have read and fully understood the task objective, the time allocated for the task and all supporting resource material provided within this Competitor Brief.
4. If you are unsure about any aspect of the task then you may ask the task judge for guidance. It is important to note that depending on the nature of the question asked the judge may decide that guidance is not appropriate in the interest of the competition.
5. When you are content with what is required you should commence your work.
6. Should you sustain an injury which requires first aid treatment then you are to bring it immediately to the attention of the task judge who will determine the course of action required.

## HEALTH & SAFETY

A Health & Safety brief will be conducted immediately prior to the task commencing. It is the individual's responsibility to take reasonable care of themselves and others whilst at work. This includes the correct wearing of appropriate clothing and footwear for the activity being undertaken. Any specialised Personal Protective Equipment required for an activity will be made available by the competition host. Judges are to provide direction on any actions that are in contravention of the Health & Safety regulations and where appropriate they may deduct marks for such non-compliances. Continual disregard for Health & Safety by a competitor during a task may result in the task being terminated prematurely.

## Competitor Brief – SHEET METAL

### Scenario

This task involves the skill of hand required for aviation sheet metal work. The task consists of two plates riveted together using a selection of rivets.

### Equipment:

- Sheet metal tool kit
- Rivets
- Pneumatic drill
- Riveting gun
- Skin pins
- 2 Plates
- Jointing compounds.
- Drawing
- Precision marking out instruments

### Warning:

Ensure all personnel are aware of all health and safety aspects for this task.

Carry out the task as detailed on the following sheets.

**You have 3.0 hours to complete the task**

**Marks will be awarded as follows:**

- A Preparation
- B Marking out
- C Correct sizing
- D Hole position and size
- E Radii
- F Squareness of plates on final assembly
- G Surface finish

## Maintenance Procedure

### Preparation

- 1.1 Read and understand drawing.
- 1.2 Wear and use appropriate PPE.
- 1.3 Check tools and Material.

### Manufacture

- 2.1 Cut and file plates to size.
- 2.2 Mark out rivet positions on both plates.
- 2.3 Mark out corner radius and angled corner.
- 2.4 Cut and clean both corners to the correct requirement
- 2.5 Drill pilot holes in both plates.
- 2.6 Open up holes to final size.
- 2.7 Debur Holes and Edges

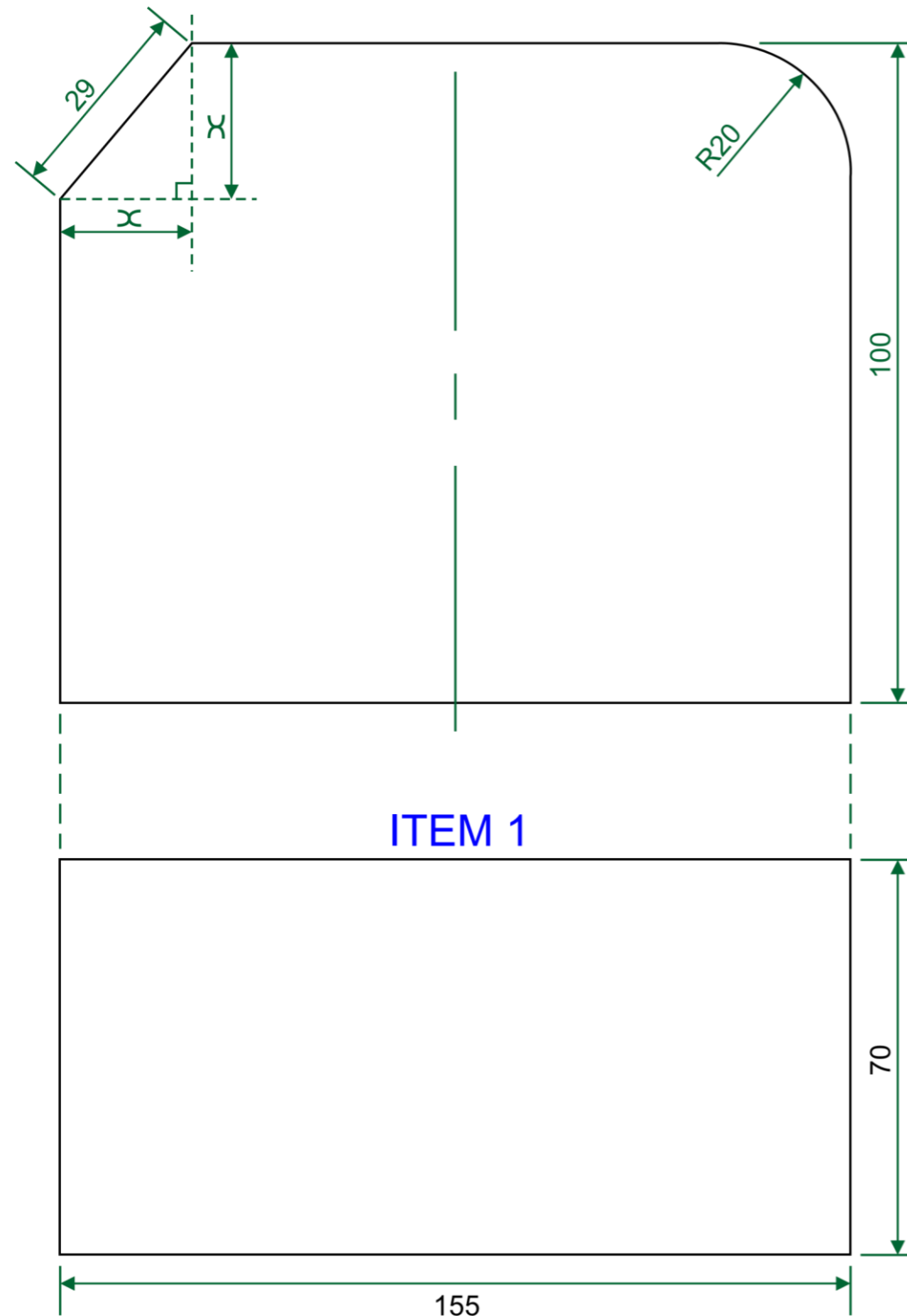
#### **2.8 Stage check.**

### Assembly

- 3.1 Assemble components using skin pins
- 3.2 Drill holes with a clearance drill 0.1mm larger than final hole size.
- 3.3 Rivet with correct rivet selection.

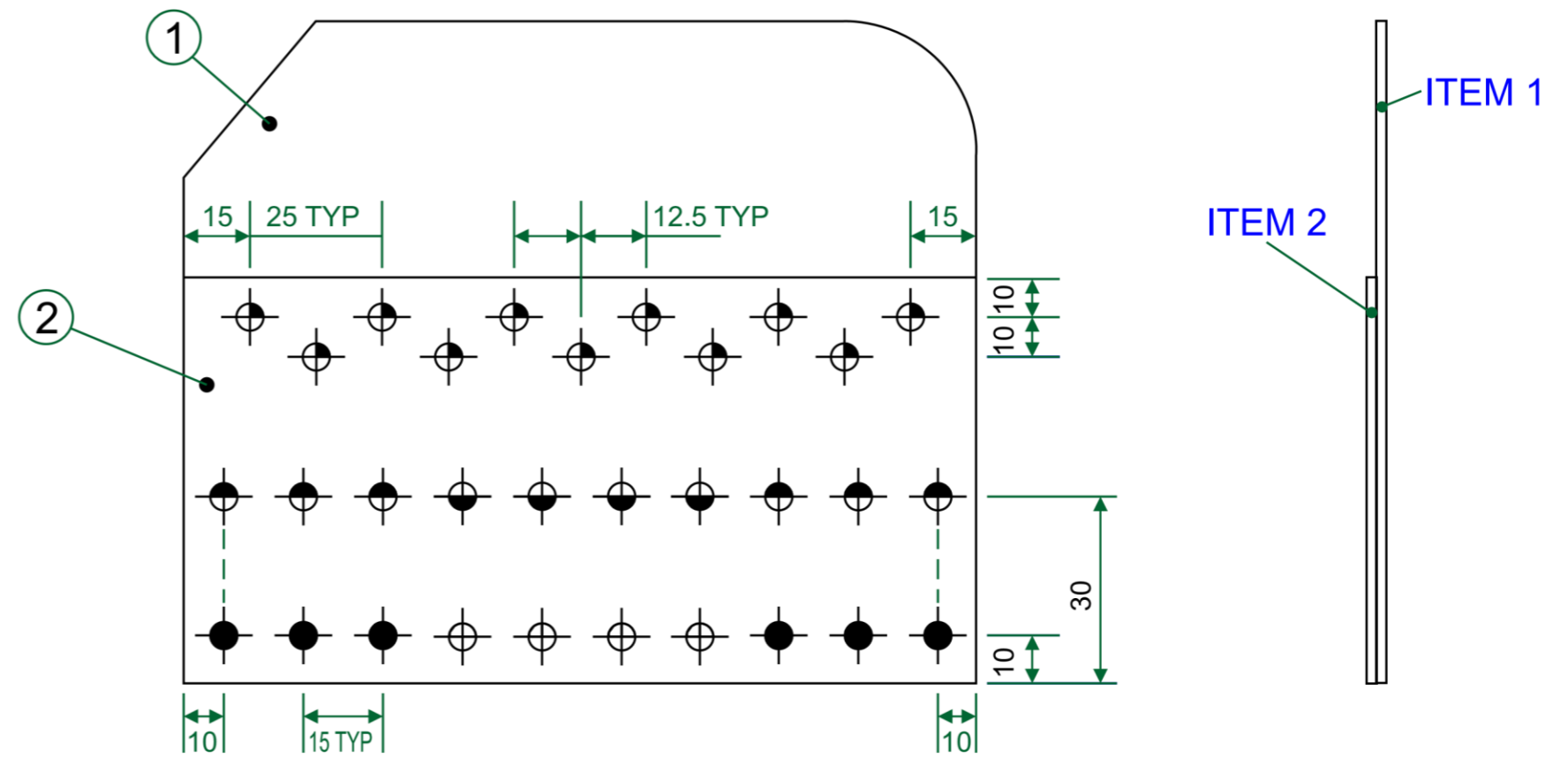
#### **3.4 Stage check**

DO NOT MEASURE OFF THIS DRAWING



ITEM 1

ITEM 2



SYMBOL	IDENT	DESCRIPTION	QTY
		1/8 TUCKER POP DOMED HD AL AL	11
	SP80 - 40X	1/8 SNAP HD L86	6
	SP71 - 40X	1/8 COUNTERSINK HD L86	6
	SP80 - 50X	5/32 SNAP HD L86	4
	SP71 - 50X	5/32 COUNTERSINK HD L86	4

Drawn By: Nige M	Date: 29-03-12			
Checked By: Stu B	Date: 29-03-12	Units: mm	Tolerance: ±0.25	Material: 18 SWG L165
		Scale: 1:1		

ukskills

RIVETTING EXERCISE

ATG 1

Edition  
1

Sheet  
1

## Marking Schedule Sheet Metal Task

Aspect ID	Aspect of Criterion - Description	Max Mark	Requirement or Nominal Size	Result or Actual Value	Mark Awarded
<b>1</b>	<b>PREPARATION</b>				
1.1	Does the candidate understand the drawing	0.5	0.1 marks off for each non conformity		
1.2	Correct PPE worn	0.5	0.1 marks off for each non conformity		
1.3	Correct usage of health and safety procedures applicable to this task.	0.5	0.1 marks off for each non conformity		
1.4	Prepare material and tools to carry out task	0.5	0.1 marks off for each non conformity		
<b>2</b>	<b>MANUFACTURE</b>				
2.1	Correct size of Items 1 & 2 (X and Y dimensions)	4.0	0.5 marks off for each non conformity		
2.2	Correct marking out of holes in Plates	3.1	0.1 mark off for each non conformity		
2.3	Correct utilisation of datum edge on plates	0.5	0.5 marks off for each non conformity		
2.4	Correct radii as per drawing	1.0	1.0 marks off for each non conformity		
2.5	Correct angle as per drawing	1.0	1.0 marks off for each non conformity		
2.6	Correct positioning of holes	3.1	0.1 marks off for each non conformity		
2.7	Correct size of holes	3.1	0.1 marks off for each non conformity		
2.8	Correctly deburred	4	0.5 marks off for each non conformity		
2.9	Items offered to Judge for Stage Check	0.4	0.4 marks off for each non conformity		
<b>3</b>	<b>ASSEMBLY</b>				
3.1	Correct use of skin pins	1.0	0.2 marks off for each non conformity		
3.2	Correct clearance holes drilled	3.1	0.1 marks off for each non conformity		
3.3	Correct rivet selection	3.1	0.1 marks off for each non conformity		
3.4	Forming of rivets-check marks around and on rivet head and tail	3.1	0.1 marks off for each non conformity		
3.5	Surface finish-scratches , scores marks and scribe lines	2.0	0.1 marks off for each non conformity		
3.6	Piece offered to Judge for Stage Check	0.4	0.4 marks off for each non conformity		
<b>4</b>	<b>WORKSHOP PRACTICES</b>				
4.1	Correct use of Pneumatic equipment	2.0	0.5 marks off for each non conformity		
4.2	Maintain safe working environment	2.0	0.5 marks off for each non conformity		
4.3	Using Precision instruments correctly	2.0	0.5 marks off for each non conformity		
<b>Total Marks</b>	<b>40.9</b>		<b>Actual marks Awarded</b>		

