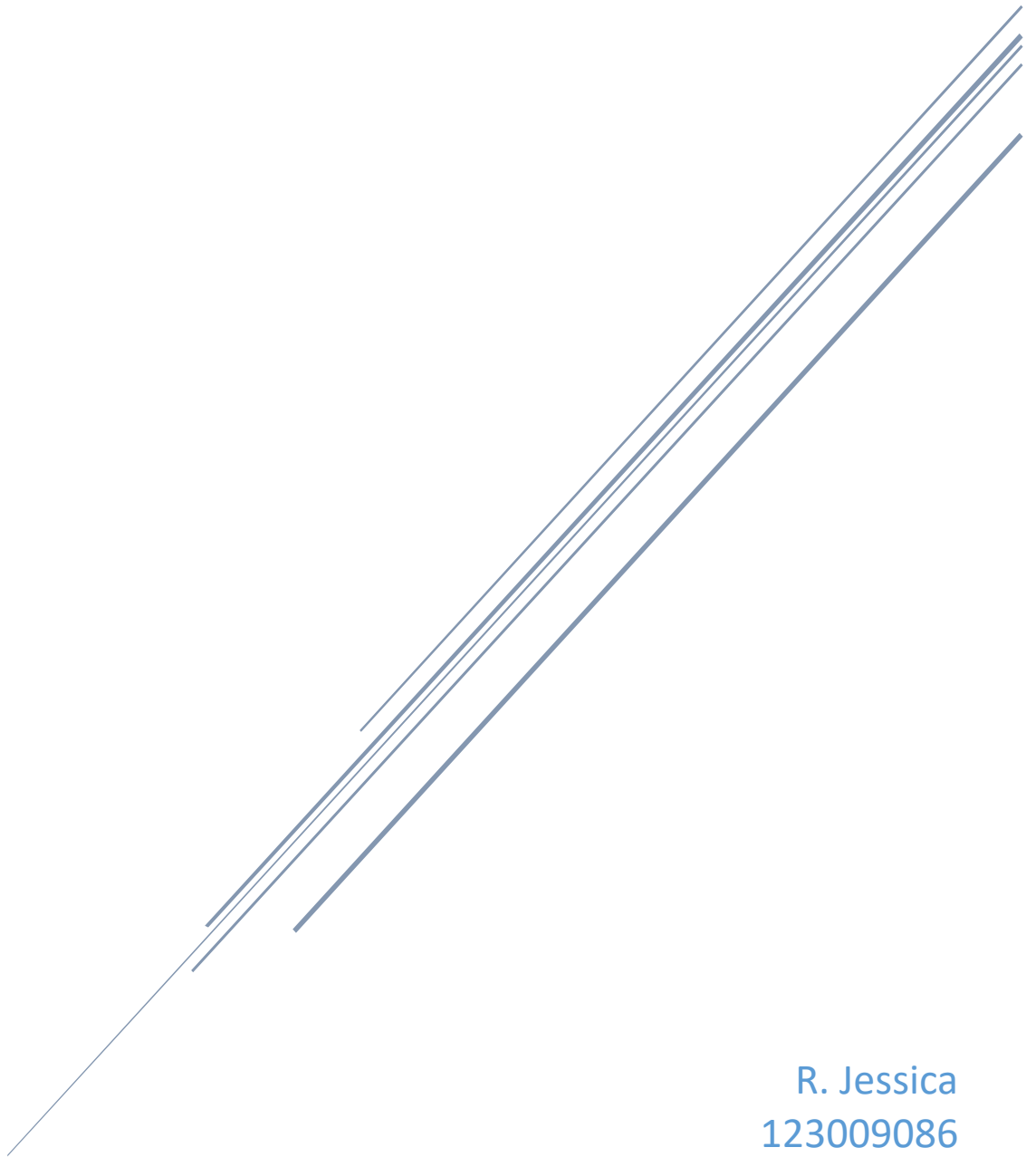


ADDITIVE MANUFACTURING

Open Ended Exercise



R. Jessica
123009086

Product name:

Spoon set with a yolk separator. It is a modified product.

Product description:

There are different sizes of spoons available for different purposes. However, here I have combined different sizes of spoon into a single gadget so that searching for spoons each time is avoided. In addition to the different sizes of spoons an egg yolk separator and Bread spread knife is also attached.

Parts:

1. Spoon - 1 Tablespoon
2. Spoon - 1 Teaspoon
3. Spoon - ½ Tea spoon
4. Spoon - ¼ Tea spoon
5. Yolk separator
6. Bread spread knife

Product application:

This gadget would be very useful in the kitchen and hotels for scooping different items in different and accurate measurements. Apart from that the yolk separator helps in separating egg's yolk and the bread spreader helps in applying jam or butter to the bread. Having all these items in a single gadget would be more helpful and avoid searching for each item without delay.

Software used: Solid works 2021

Modelled parts:



Egg separator



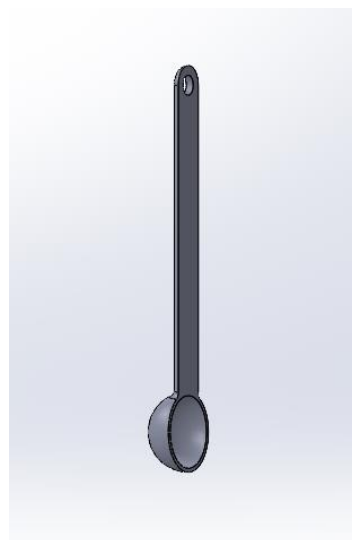
1tbsp



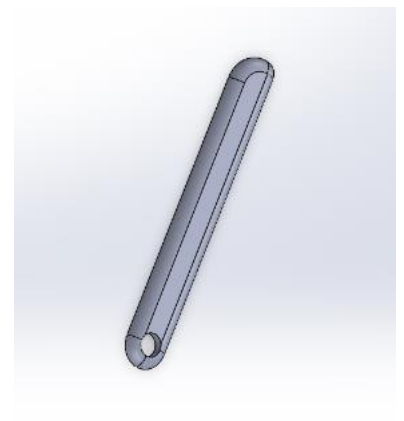
1tsp



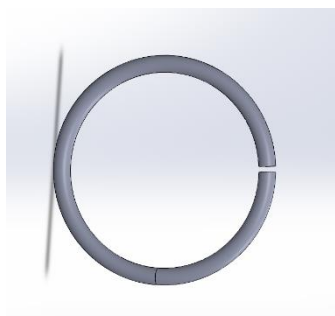
$\frac{1}{2}$ tsp



$\frac{1}{4}$ tsp



Bread knife



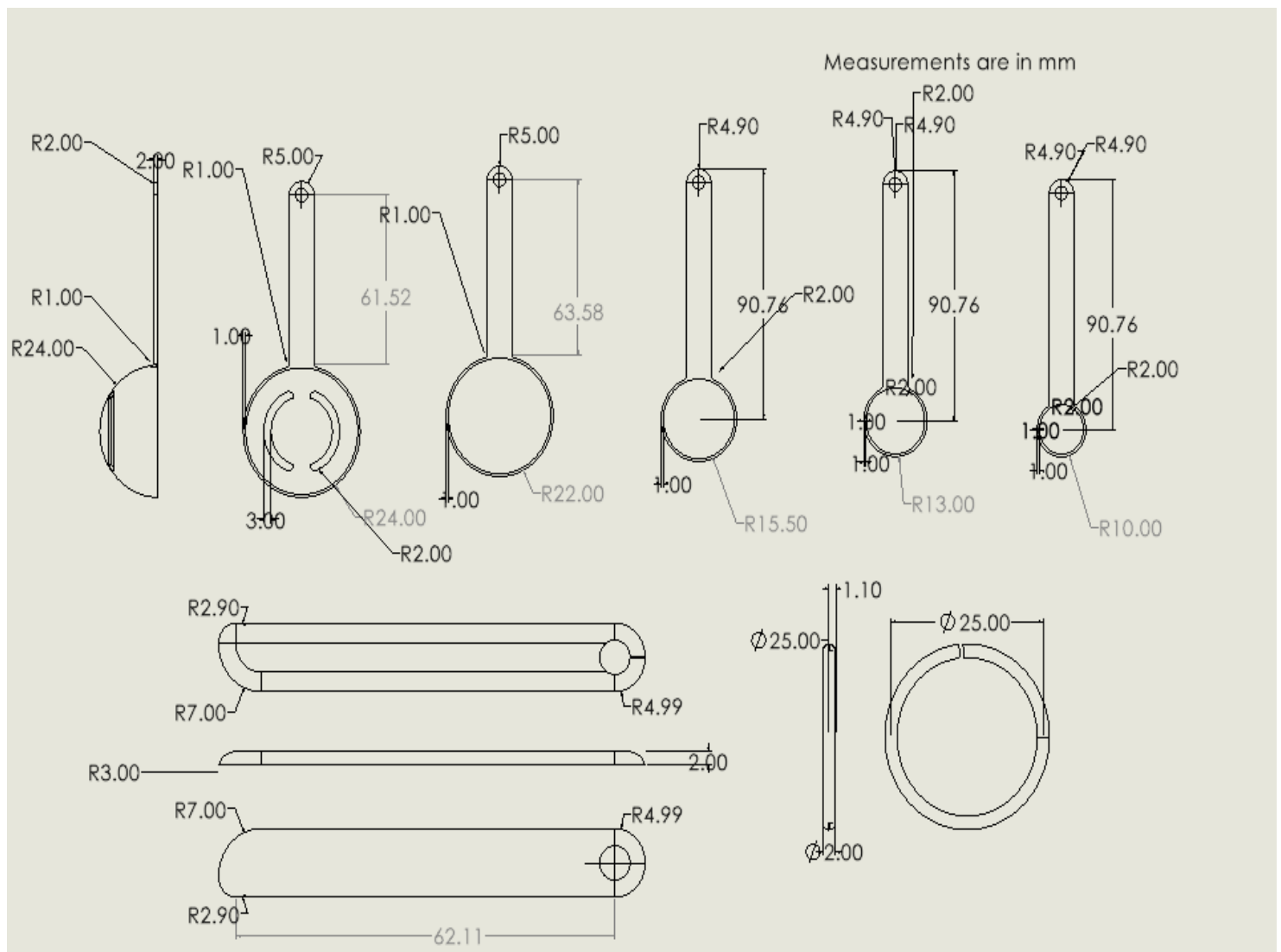
Ring



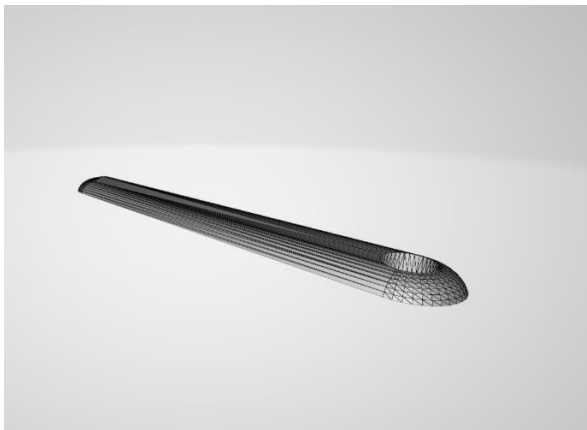
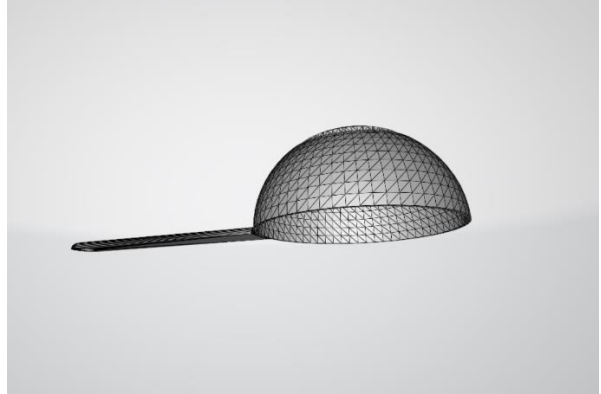
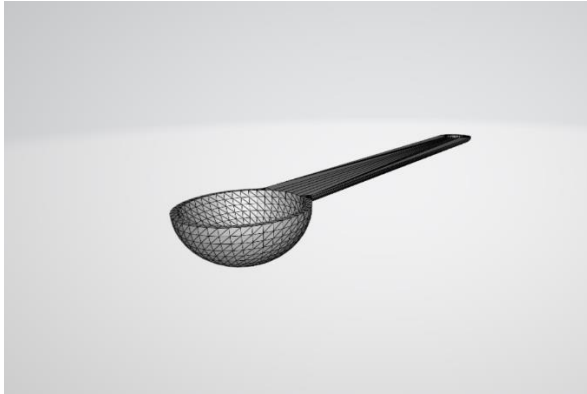
Assembly



Parts dimension:



STL FILE CONVERSION:



Selected parameter for analysis

Sl.No	Parameter	Level 1	Level 2	Level 3
1	Layer thickness(mm)	0.1	0.2	0.3
2	Infill density (%)	10	20	30
3	Travel Speed (mm/s)	100	125	150

L9 Orthogonal Array Design matrix for parameter analysis

Trail No.	1	2	3	Performance Factors	
	Layer thickness(mm)	Infill density (%)	Travel Speed (mm/s)	Build Time	Material consumption (g)
1	0.1	10	100	6h 39m	40.88g
2	0.1	20	125	6h 40m	41.01g
3	0.1	30	150	6h 42m	41.1g
4	0.2	10	125	4h 28m	40.36g
5	0.2	20	150	4h 29m	40.55g
6	0.2	30	100	4h 29m	40.72g
7	0.3	10	150	3h 48m	40.6g
8	0.3	20	100	3h 48m	40.81g
9	0.3	30	125	3h 49m	40.94g

Optimal parameter selected:

Time taken: 3hr 48m

Weight : 40.01g