Design & Technology

Mathematics for D&T – Surface area and volume

Materials required for questions

- Pencil
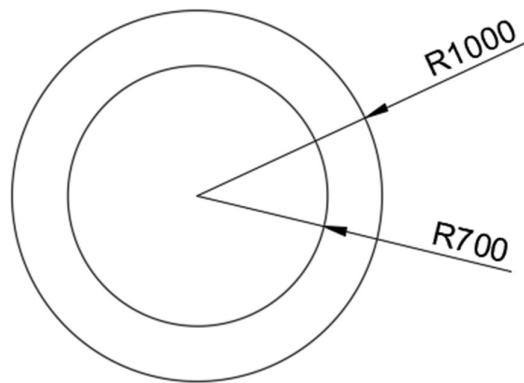- Rubber
- Calculator

Instructions

- Use black ink or ball-point pen
- Try answer all questions
- Use the space provided to answer questions
- Calculators can be used if necessary

Advice

- Marks for each question are in brackets
- Read each question fully
- Try to answer every question
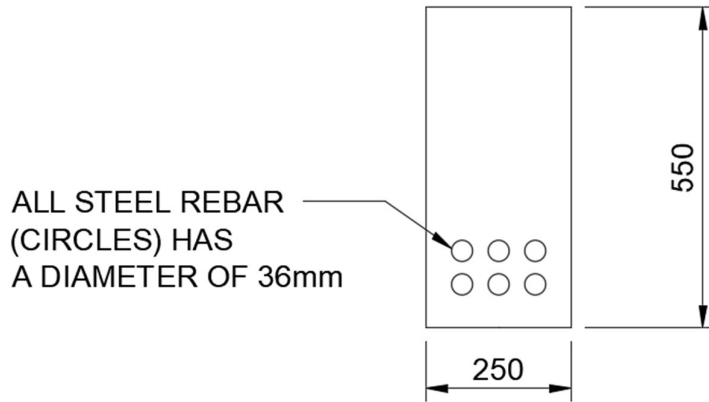- Don't spend too much time on one question

Good luck!

Q1a. A component is being press stamped to remove its inner part. What is the area of the component. All measurements are in mm **(3 marks)**
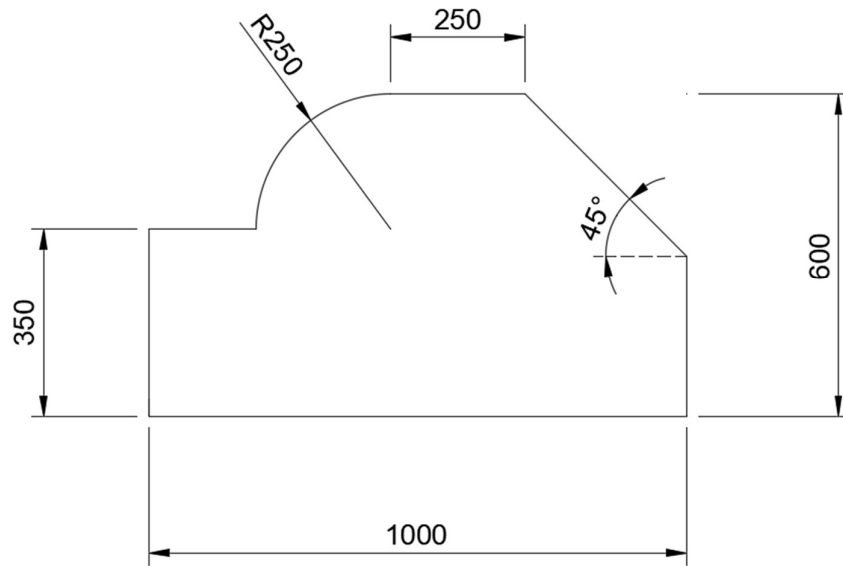

Q1b. If the component is being pressed on a 2000mm x 2000mm section of metal, what is the waste percentage of material **(3 marks)**
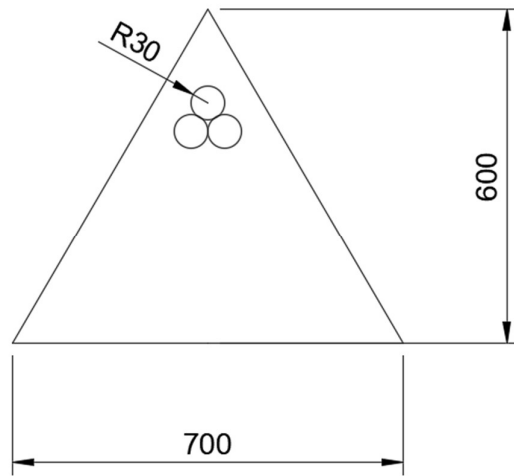
Q2. A reinforced concrete beam is being designed. The beam is 6m long and the section is show below. What is the volume of concrete needed for the beam. All measurements are in mm **(5 marks)**

ALL STEEL REBAR
(CIRCLES) HAS
A DIAMETER OF 36mm

550

250

Q3. A car panel is being press formed, as shown by the diagram below. The material has a density of 24.6kg/m². Find the mass of the car door. All dimensions are in mm **(6 marks)**

Q4. Three holes are being drilled into a component. What is the area of the component. All measurements are in mm **(3 marks)**

Q5. The image below shows a glass. The base is 4cm and the top is 9cm. If the volume of the glass in 600cm³, what is the height of the glass **(5 marks)**

Q6. A solid sphere is needed for a car valve that must have a volume of 7 litres. Calculate the diameter of the sphere **(5 marks)**

Answers

Q1.
1,602,212.3mm^2

Q1b.
40.1%

Q2.
0.79m^3

Q3.
12.1kg

Q4.
201,517.7mm^2

Q5.
4.31cm

Q6.
237.3mm