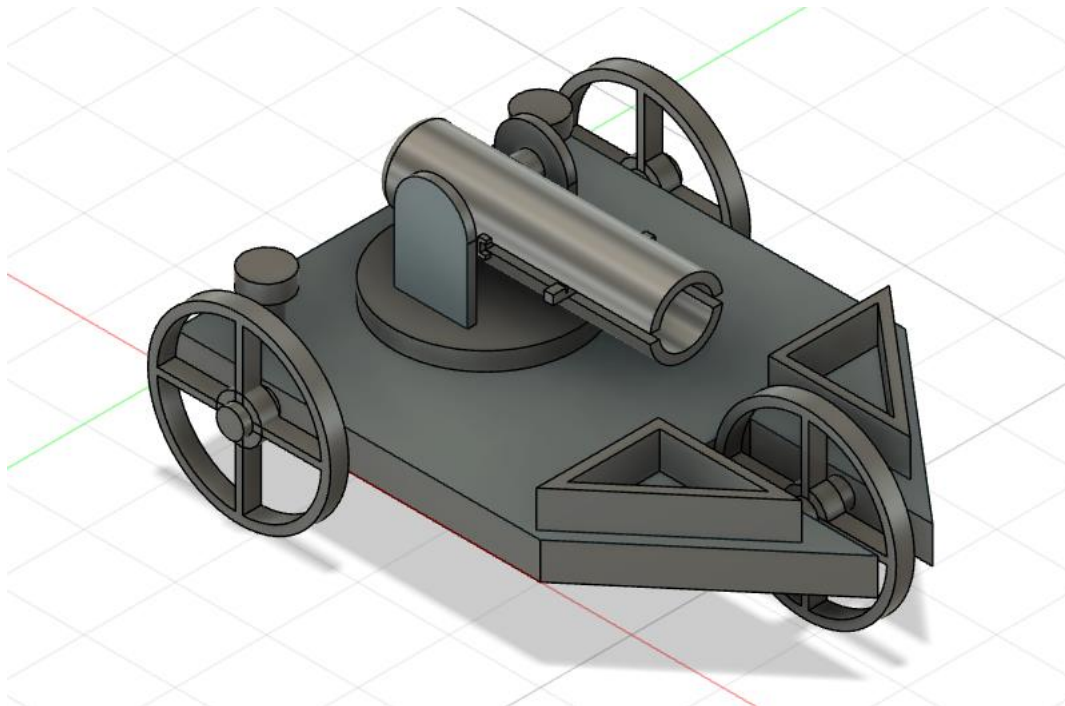


TA 211 LAB PROJECT REPORT GROUP 5



PROJECT NAME: CANNON & CASTLE

Course instructor: Dr. Shashank Shekhar
Staff-in-charge: Mr. I.P Singh and Mr. A.K. Verma
Tutor: Dr. Shivam Tripathi



GROUP MEMBERS:

- | | |
|--------------------|---------------------------------|
| 1. Anvay Joshi | 6. Jayant Budania |
| 2. Khushi Sahu | 7. Kanav Singh Chouhan |
| 3. Udbhav Agarwal | 8. Krishiv Geriani |
| 4. Himanshu | 9. Kunal Shikhar |
| 5. Jyandeep Behera | 10. Keluth Chavan Sree Samhitha |

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INTRODUCTION

What does name suggest?

Our project, "Cannon and Castle," combines ancient warfare with modern engineering, constructing a Cannon Ball Shooter with a meticulously crafted castle using contemporary manufacturing processes. Our project combines tradition and technology, blending medieval aesthetics with modern engineering precision. We aim to create an interactive masterpiece that educates and entertains. Our team applies meticulous manufacturing processes, from design to assembly, ensuring seamless integration of form and function.

Mechanism:

A cannonball shooter with a spring mechanism operates by storing potential energy in a compressed spring. The process involves loading a cannonball, compressing the spring, and releasing it using a trigger or latch. As the spring expands, it converts stored energy into kinetic energy, propelling the cannonball forward with force. The recoil effect is experienced after firing. The mechanism can be reset for subsequent shots. Overall, the spring mechanism enables the cannonball shooter to launch projectiles with precision and power for various applications.

MOTIVATION

We came across this idea of making a cannon while seeking some inspiration for our TA211 project. When we drew a rough image of this idea, it caught our attention, and we then became clear by just looking at it. At that instant, we had decided that we would apply our TA211 theory to make this rough image into its 3D form.

We were extremely fascinated by its image, so we started to wonder how it would feel to have this thing physically and control it.

Since moving parts have more points, we wanted to incorporate at least 2 degrees of freedom in our cannon. Our cannon can not only rotate 360 degrees in horizontal direction, but its projectile angle can also be varied.

Also, our desire to share this excitement of journey with others, especially with the instructor and the TAs of the course also had some part in our project.

ACKNOWLEDGEMENT

We are deeply grateful to Prof. Shashank Shekhar for their valuable and constructive suggestions during the planning and development of this project. Without their guidance and technical support, we would not have been able to complete this effortful task.

We would like to express our great appreciation towards all lab staff for their constant supervision and encouragement which helped us in the completion of the project.

Special thanks to our TA's Dr. Murli Kumar, Manglam, Lakshmi Dinesh and Alka Jangid for giving us their valuable time.

Overall, we thank our course instructor Prof. Shashank Shekhar and Lab in-charge Mr. Anil Kumar Verma for providing us with this opportunity to learn and do something valuable using different manufacturing processes.

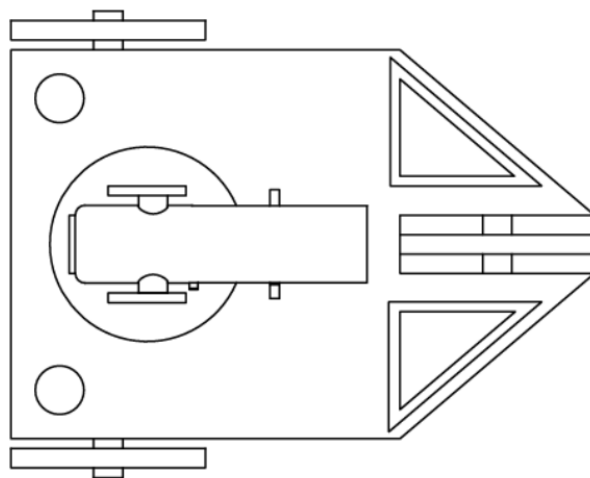
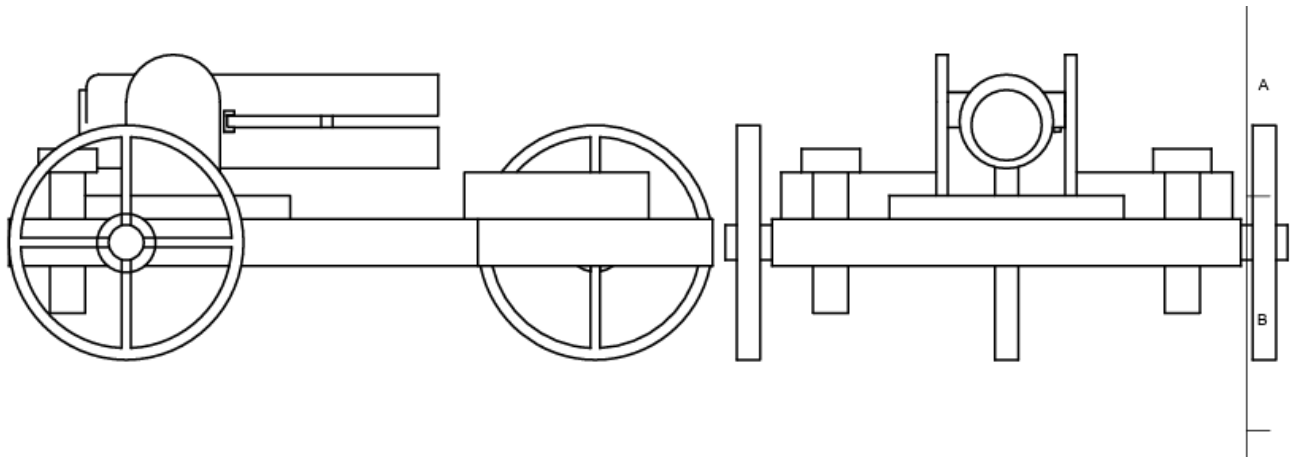
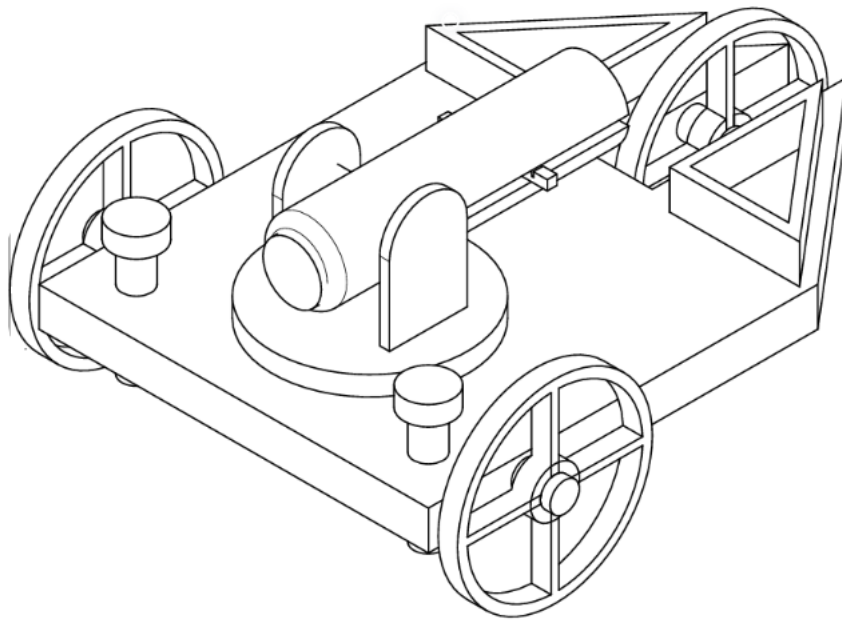
MATERIALS REQUIRED

SL No	Part name	Material	Process applied	Qty
01	Body	Galvanised ironr sheet (2mm) 30x30cm	Cutting, Sheet metal forming, drilling, welding	1
02	Cannon	Aluminium	Casting, cutting	1
03	Wheel	Galvanised iron sheet (2mm)10x10cm	Cutting, drilling	3
04	Cannon Holder	Galvanised iron sheet (2mm)10x10cm	Sheet metal forming	1
05	Tower	Galvanised iron sheet (2mm)40x40cm	Cutting, welding	2
06	Triangular Container	Galvanised iron sheet (2mm)10x10cm	Sheet metal forming	2
07	Spring	Thin Galvanized Wire (2mm dia)	Object fabrication	1
08	Trail	Galvanised iron sheet (2mm) 20x20cmtex	Cutting, drilling	1

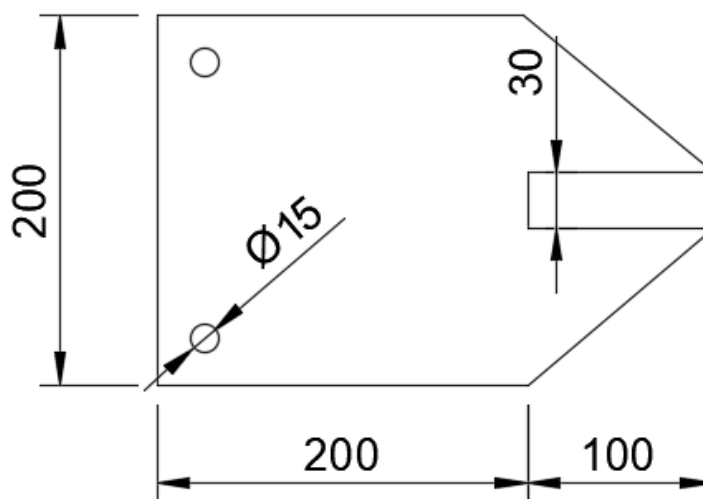
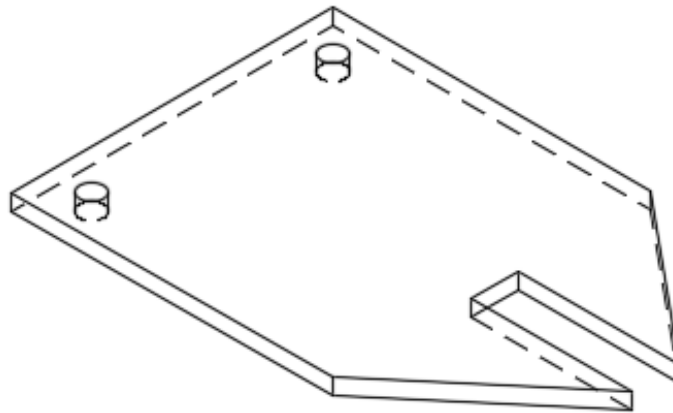
WORK DISTRIBUTION

TURN/ NAME	1st	2nd	3rd	4th	5th	6th
Anvay/ Khushi	Wheel	Wheel cutting and shaping	Shooting mechanism	Shooting balls	Assembly	Assembly
Himanshu /Jyandeep	body	Body shaping and cutting	Shafts on body	Cannon lifting mechanism	Assembly	Assembly
Jayant/ Udbhav	Cannon holder	cannon	welding	Spring making	Assembly	Assembly
Kanav/ Kunal	bridge	Windows on tower	Gate opening mechanism	Other Bridge features	Assembly	Assembly
Krishav/ Samhitha	First tower	Second tower	gate	Base of tower	Assembly	Assembly

ISOMETRIC DRAWING



PART 1- BODY



Part name: Body

Material: Galvanised iron sheet (2mm) 30x30cm

Process applied: Cutting, Sheet metal forming, drilling, welding

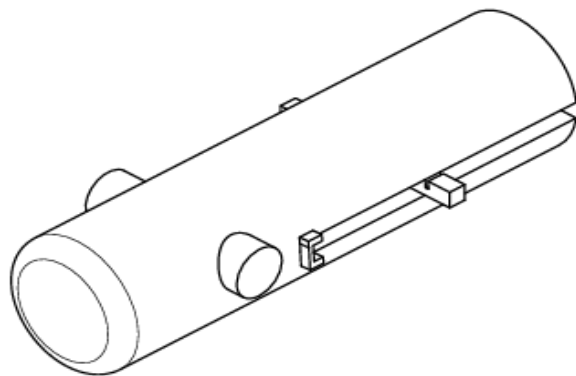
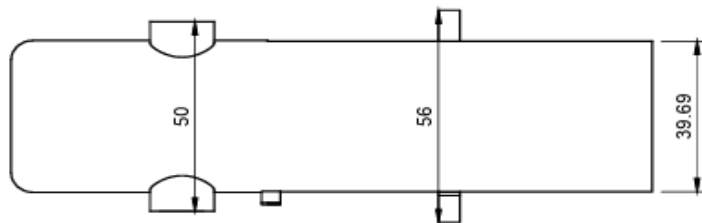
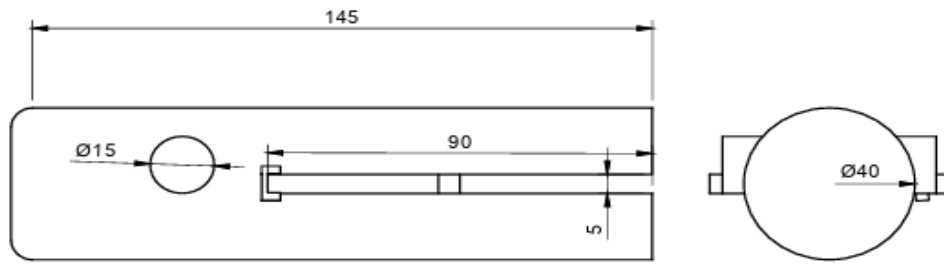
Qty: 1

ALL DIMENSION IN MM

SCALE- 1:1.5

PART 2- CANNON

SCALE - 1:1.5



ALL DIMENSIONS ARE IN MM

Part name: Cannon

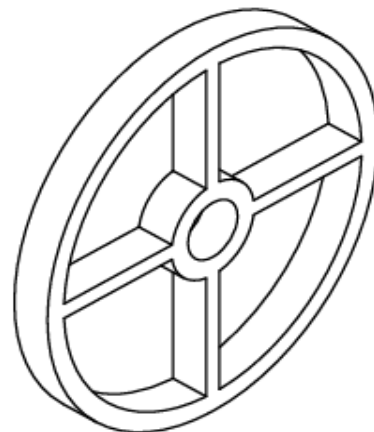
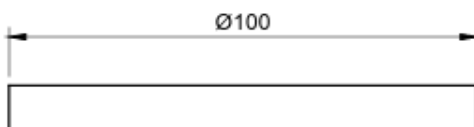
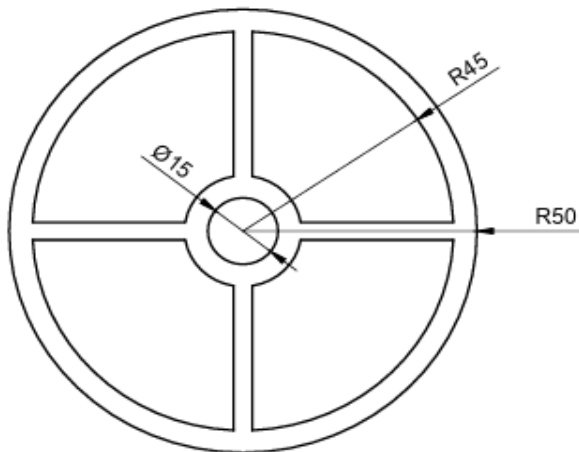
Material: Aluminium

Process applied: Casting, Cutting

Qty: 1

PART 3- WHEEL

SCALE - 1:1



Part name: Wheel

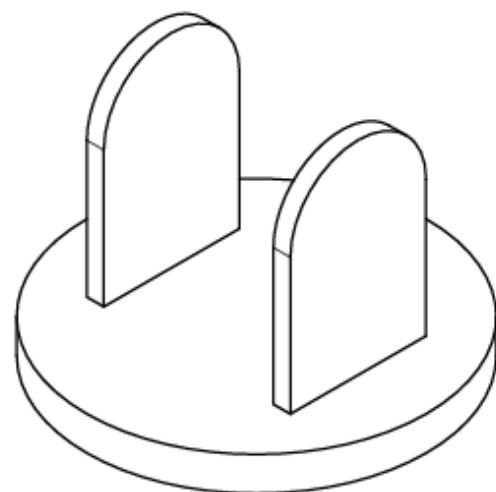
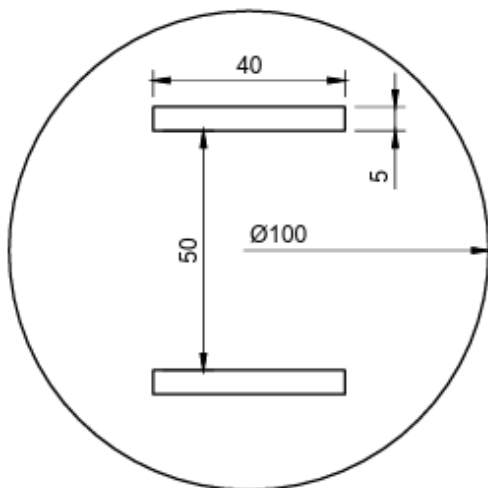
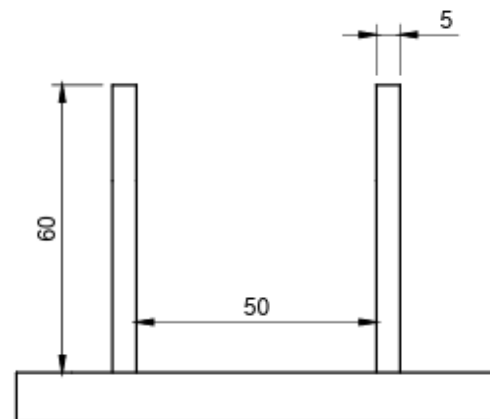
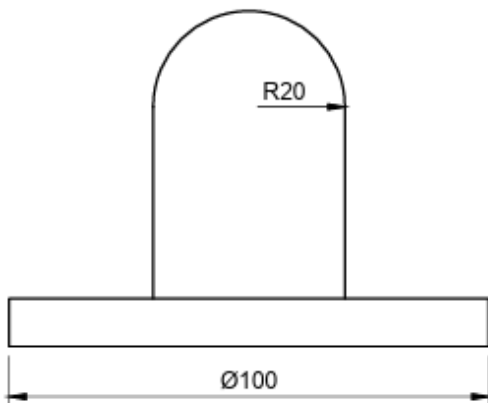
Material: Galvanised iron sheet (2mm) 10x10cm

Process applied: Cutting, drilling

Qty: 1

ALL DIMENSIONS ARE IN MM

PART 4– CANNON HOLDER



Part name: Cannon holder

Material: Galvanised iron sheet (2mm) 10x10cm

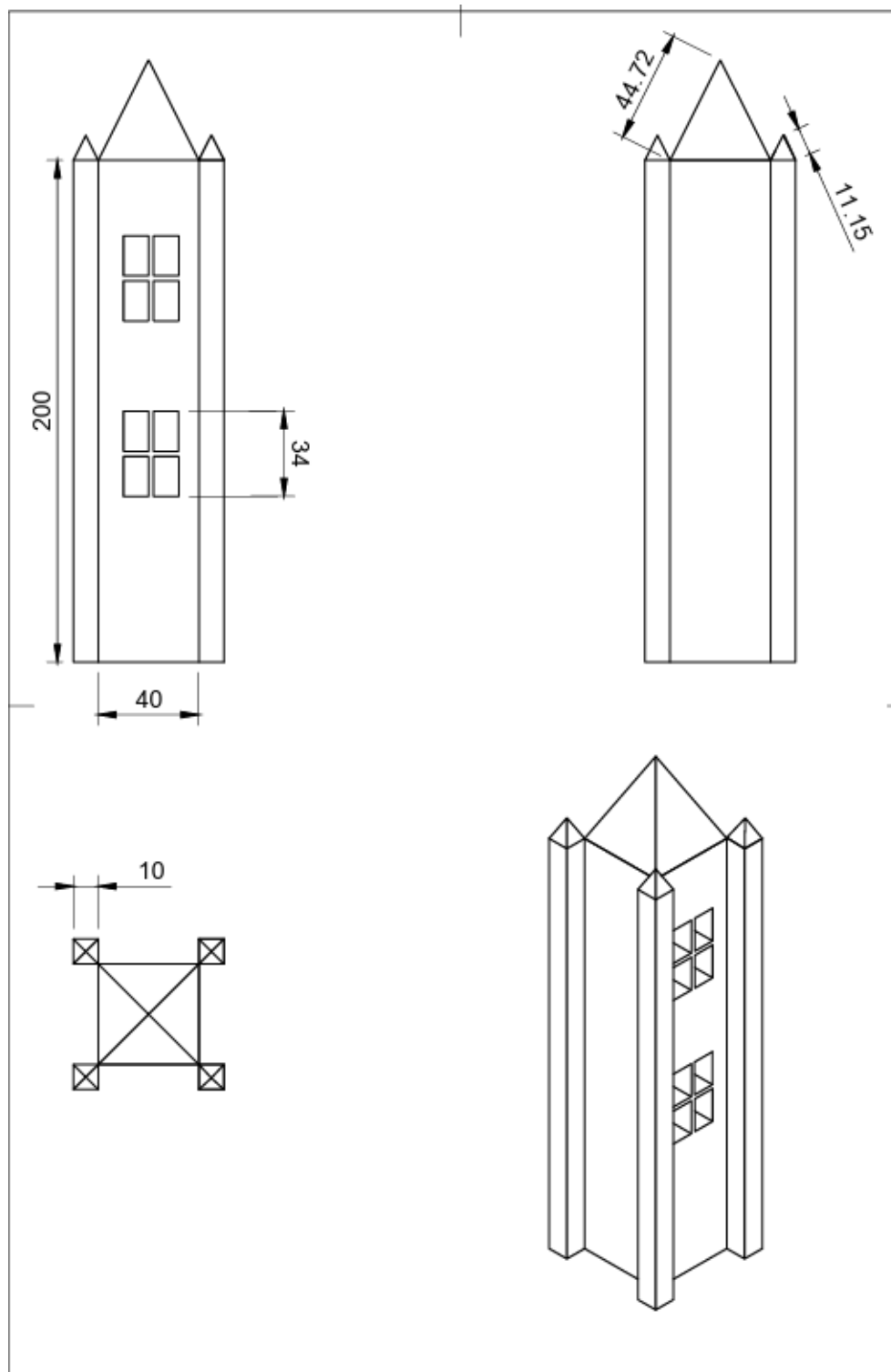
Process applied: Sheet Metal forming

Qty: 1

ALL DIMENSIONS ARE IN MM

SCALE- 1:1.5

PART 5- Tower



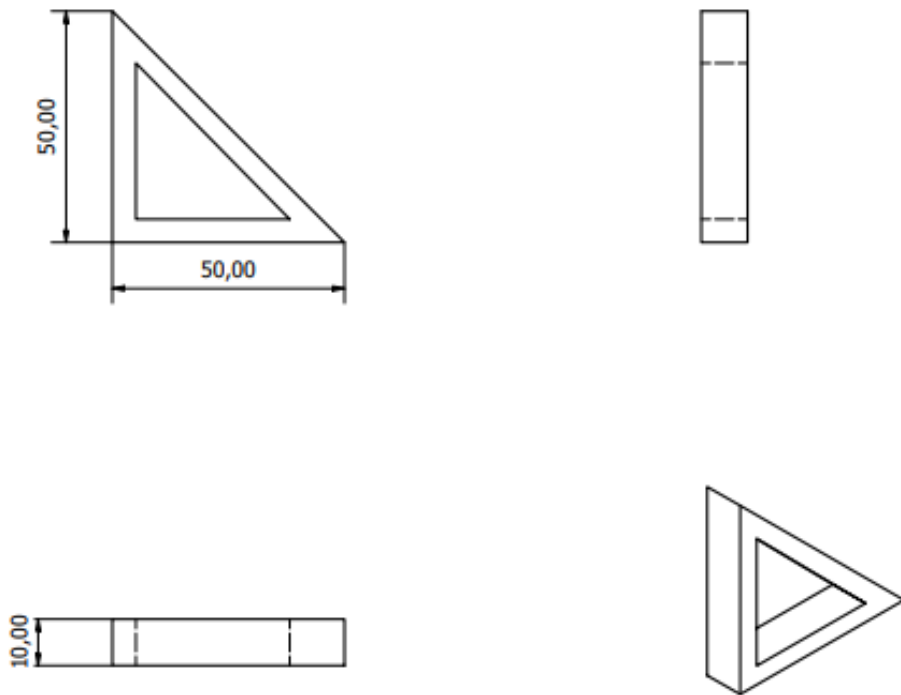
Part name: Tower

Material: Galvanised iron sheet (2mm) 40x40cm

Process applied: Cutting, welding

Qty: 1

PART6- TRIANGULAR CONTAINER



ALL DIMENSION IN MM
SCALE- 1:1.5

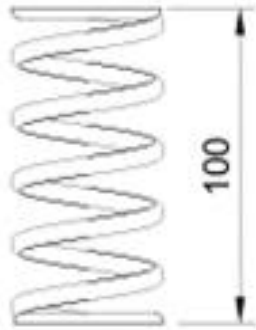
Part name:Triangular Container

Material:Galvanised iron sheet (2mm)10x10cm

Process applied:Sheet metal forming

Qty: 1

PART 7- SPRING



Part name:

Material:

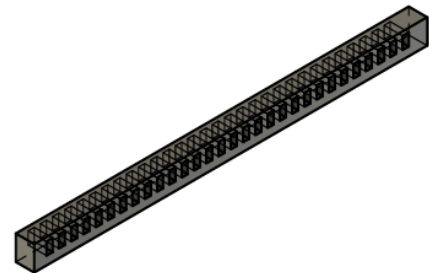
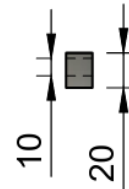
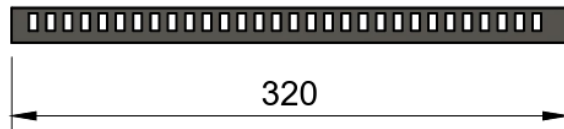
Process applied:

Qty: 1

**ALL DIMENSIONS ARE
IN MM**

SCALE- 1:1.5

PART 8- TRAIL



ALL DIMENSION IN MM
SCALE- 1:1.5

Part name: Trail

Material: Galvanised iron sheet (2mm)
20x20cmtex

Process applied:Cutting, drilling

Qty: 1