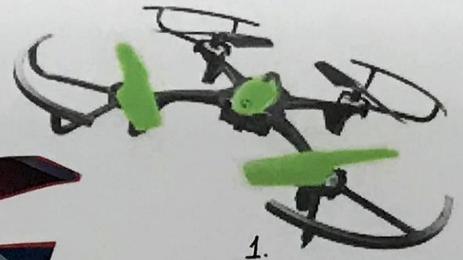
Design Research

I GOT THESE IMAGES FROM A MAGAZINE CALLED "STUFF: THE GADGET AWARDS".

A drone is an unmanned aircraft. It's a flying robot which can be remotely controlled or can fly autonomously.



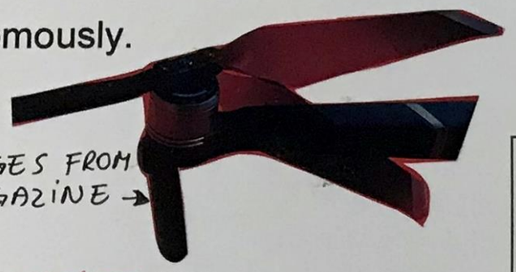
1.

A quadcopter is a type of drone, a small remote-controlled aircraft, with four blades that go around on top. It is especially used to film or photograph things from the air.

2.

THE RESEARCH I'VE DONE TO COMPLETE THIS PAGE HELPED ME UNDERSTAND MORE ABOUT QUADCOPTERS. I LEARNED ABOUT THE PARTS AND COMPONENTS OF QUADCOPTERS. I ALSO LEARNED ABOUT THEIR PURPOUSE.

IMAGES FROM MAGAZINE →



Accelerometers are instruments for measuring the acceleration of a moving or vibrating body.

Drones in the form of quadcopters have become increasingly popular in recent years. As well as being used as a leisure activity, they have many other applications including surveillance, product delivery, aerial video and photography, etc. Recent advances in microelectronics have facilitated the production of affordable lightweight quadcopters with accelerometers, global positioning system, cameras, etc. They are manufactured in a variety of forms and sizes and many are novel in design.

(A) Carry out a design investigation of existing quadcopters in graphic format. Your investigation should include an analysis of physical form and shape, aerodynamics, materials, safety features, power source, etc.

and

(B) Show graphically how you would physically modify a chosen quadcopter to improve its overall design.

or

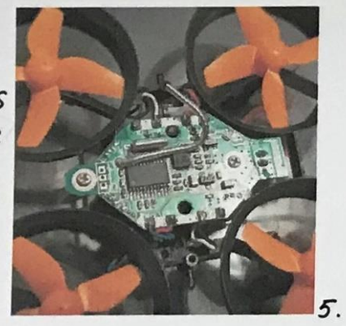
Develop and graphically communicate a new concept design for a quadcopter based on a selected theme or target market.

3.

A camera is a device for recording visual images in the form of photographs, film or video signals.

IMAGES FROM THE SAME MAGAZINE →

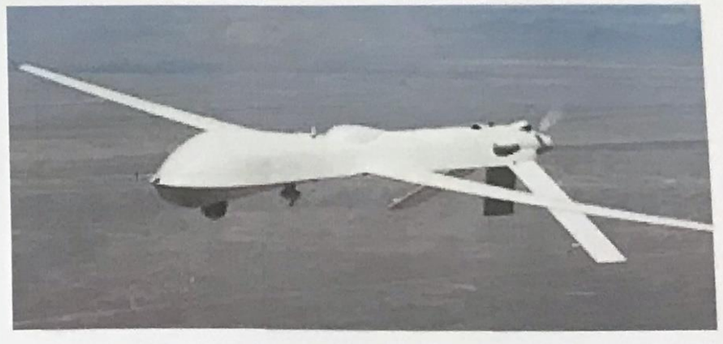
THESE ARE TWO PICTURES OF MY MINI QUADCOPTER I TOOK MYSELF.



5.

6.

Quadcopters come in all shapes and sizes. They can be small, light and easy to carry; or they can be helicopter-size and controlled by a software-controlled flight plans in their embedded systems working in conjunction with onboard sensors and GPS.

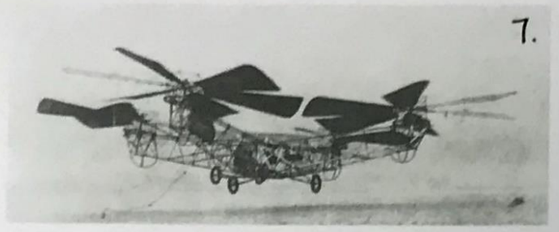


IMAGES FROM THE SAME MAGAZINE →

Exam number: 150038

I FOUND OUT THERE ARE PLENTY OF DESIGNS FOR QUADCOPTERS; BECAUSE OF THE INVESTIGATION AND EFFORT I PUT INTO COMPLETING THIS PAGE. ALSO, I LEARNED ABOUT THE HISTORY OF QUADCOPTERS, WHICH I THINK IT WAS HELPFUL FOR MY INVESTIGATION.

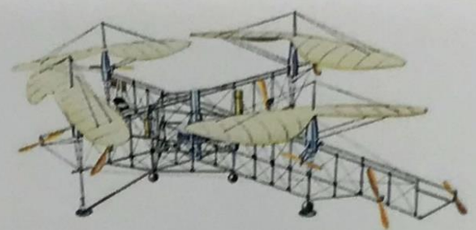
Development of the Quadcopter


7.


8.

1923 Quadcopter

Engineers developed Quadcopters in order to solve the problems that helicopter pilots had with making vertical flights.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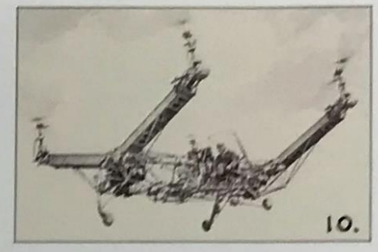

10.

They were very complicated in design and big in size. They were mainly made from metal which resulted in their heavy weight.

1956 Quadcopter

The first recorded quadcopters were big in size as people could fly them but by the use of advanced technology and engineering the quadcopters have developed radically from the first models registered.

Nowadays, the quadcopters are different in size and design, which gives a range of options to choose from. Their simple design which doesn't come with long shafts wins over helicopter design.

17.


16.

THIS IS A SKETCH I DREW DURING MY INVESTIGATION.


19.

Modern quadcopters come in different sizes and shapes.


18.

Other modern quadcopters have a more futuristic design, they are simpler in shape and they are focusing on the aesthetics more.

Modern quadcopters include features such as cameras and lights.


11.


12.

Some new models of quadcopters come in different, childish and playful shapes.

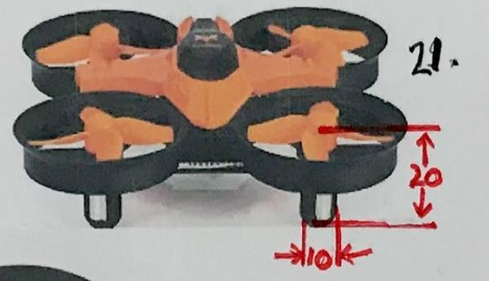

15.

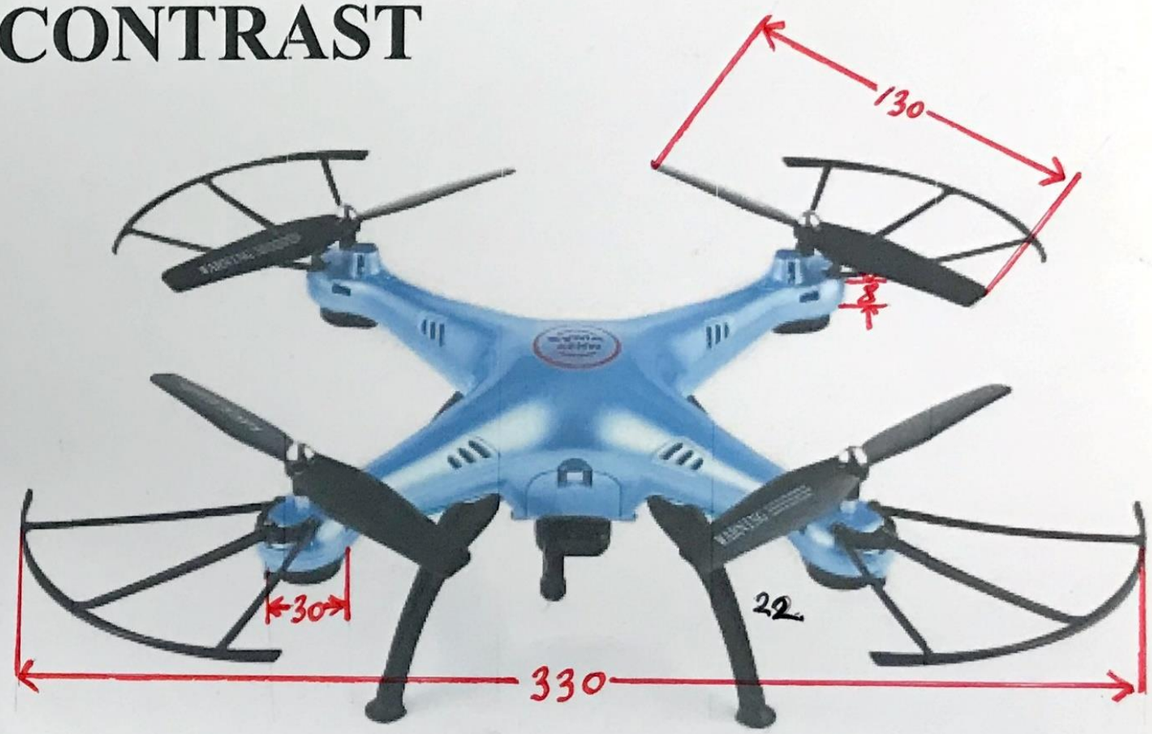

14.

Exam number: 150038

BY WORKING ON THIS PAGE I IMPROVED MY DRAWING SKILLS.
IT WAS ALSO GOOD DRAWING PRACTICE FOR PAGE 5.

COMPARE & CONTRAST





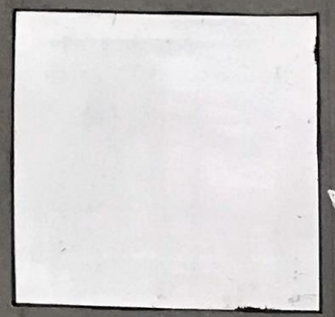
Exam number: 150038

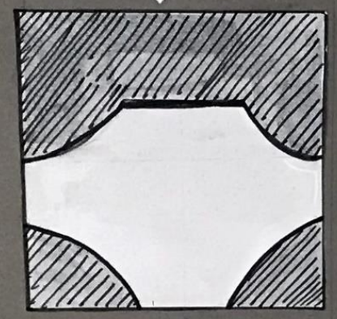
1. Main Body
2. Propeller
3. Battery
4. Wires

1. Main Body
2. Propeller
3.Batteey
4. Blade Protector
5.LED Light
6. Camera
7. Power Button

Brand: FuriBee, China Model: F 36	**MANUFACTURER**	Brand: Syma Place of Origin: Guangdong,China (Mainland)
Mini quadcopter,could be used indoors and outdoors	**TYPICAL USES**	Racing Quadcopter, includes camera
Batery: Lithium Plastic Includes electronic components	**MATERIALS**	Plastic Includes electronic components
US$ 12-26	**COST**	US$ 30-60
9.50 x 9.50 x 5.00 cm	**OVERALL DIMENSIONS**	33.00 x 33.00 x 11.00 cm
Battery: 3.7 V 150mAh	**POWER**	Battery: 3.7 V 500mA

QUADCOPTER

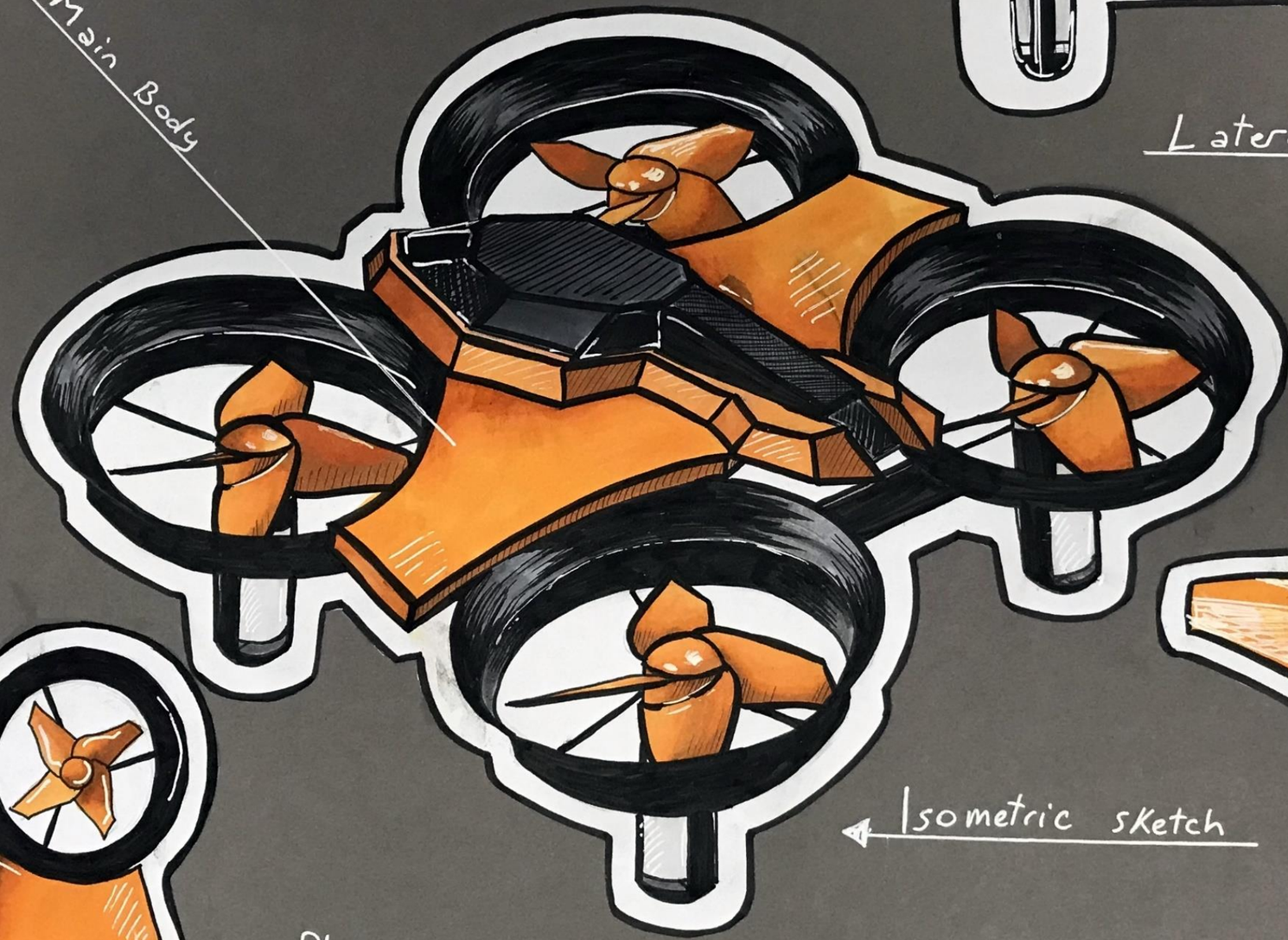




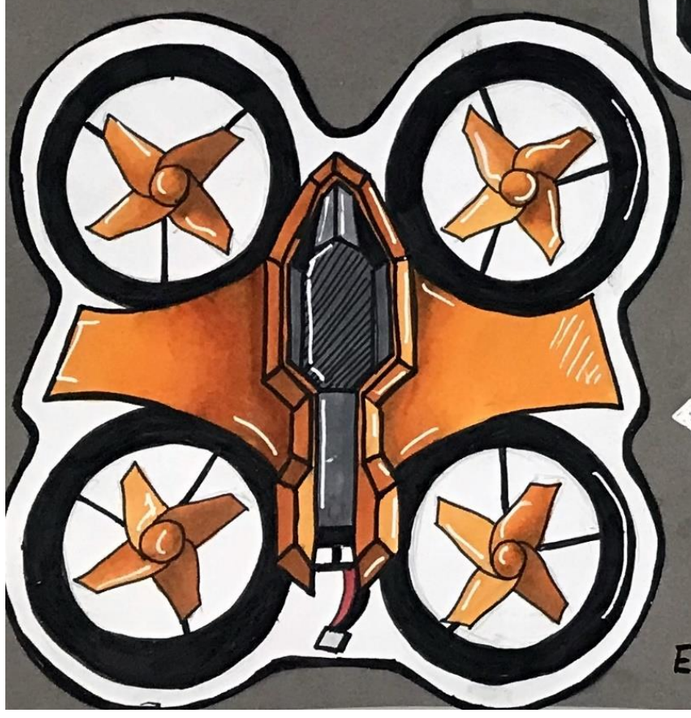
Main Body

Lateral View

I particularly enjoyed drawing on this page. I used markers and white pen to ~~redo~~ represent the drawings of my mini quadcopter.



Isometric sKetch

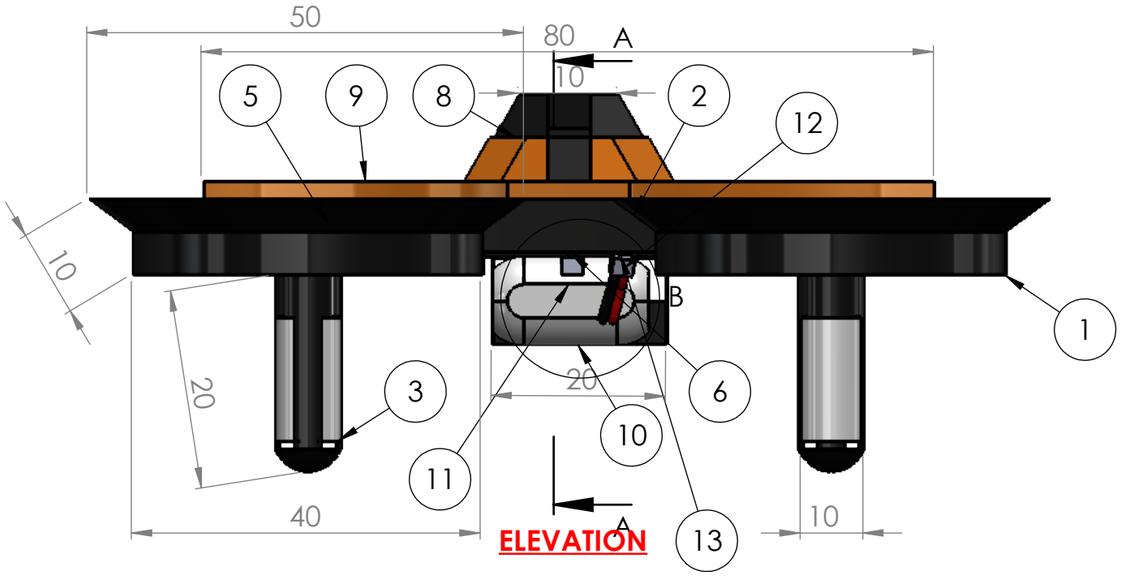


Plan

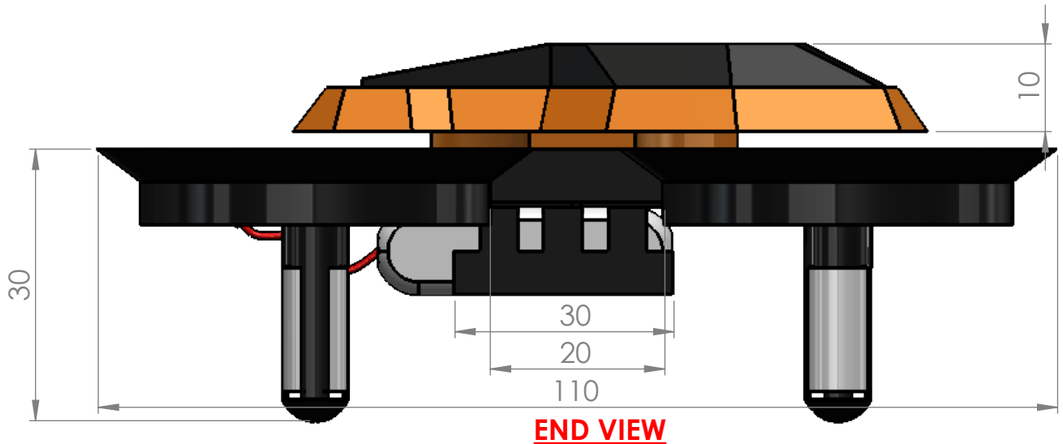
Propeller detail

Elevation (propeller detail)

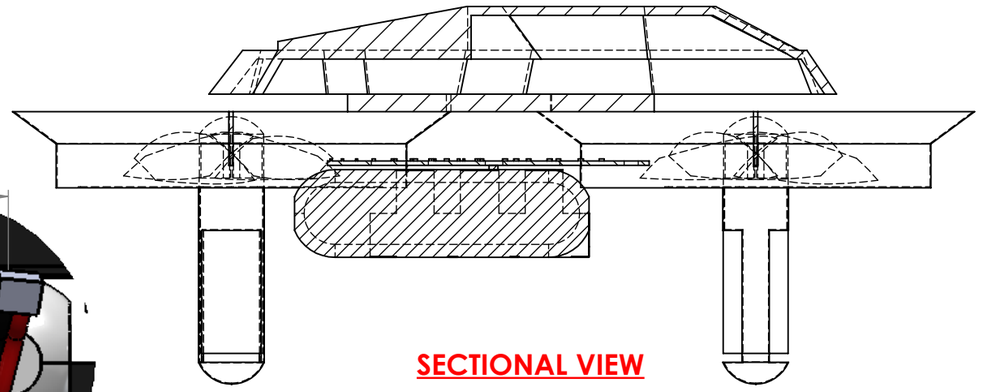
Exam number: 150038



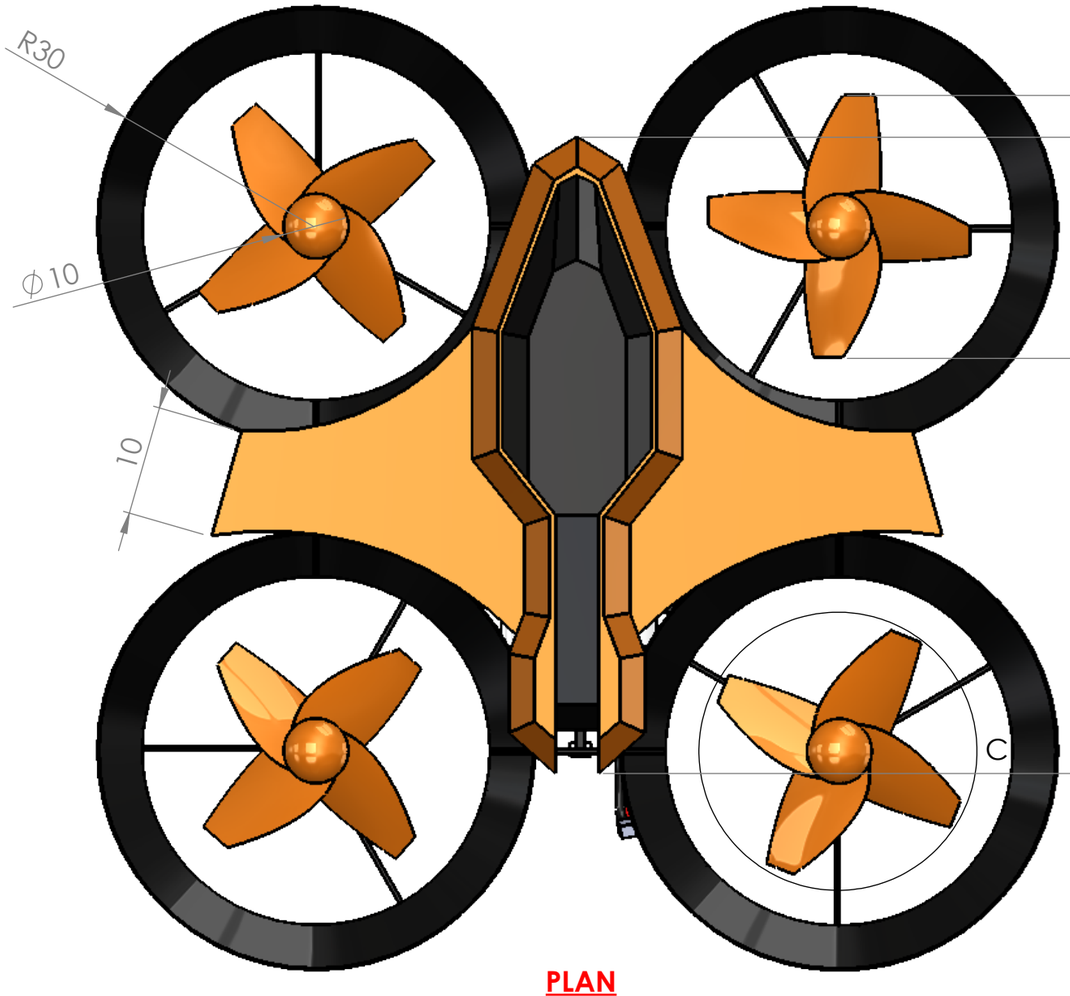
ELEVATION



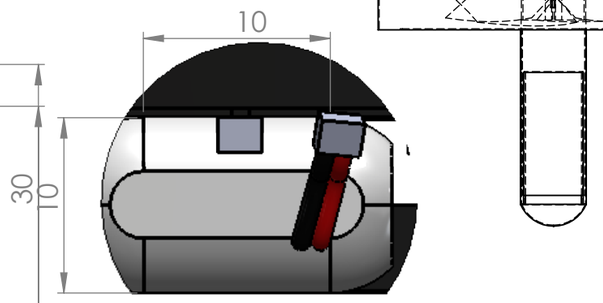
END VIEW



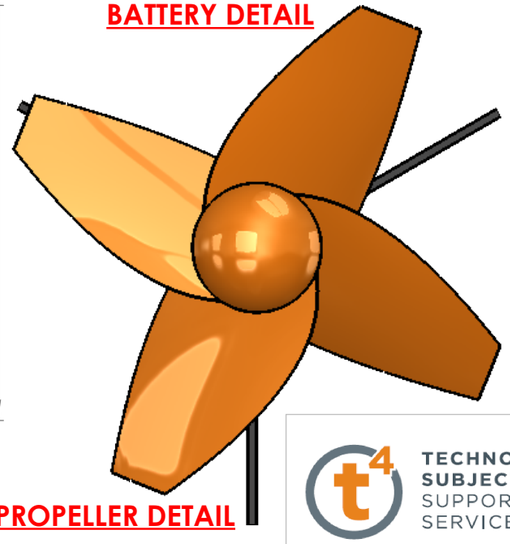
SECTIONAL VIEW



PLAN



BATTERY DETAIL



PROPELLER DETAIL

ITEM NO.		QTY.
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2	PART 2	4
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4	PART 4	1
5	PART 5	4
6	PART 6	1
7	PART 7	1
8	PART 8	1
9	PART 9	1
10	PART 10	1
11	PART 11	1
12	PART 12	2
13	PART 13	2

TECHNOLOGY SUBJECTS SUPPORT SERVICE

DESIGN & COMMUNICATION GRAPHICS

TITLE: **ORTOGRAPHIC VIEWS**

DRAWN BY:

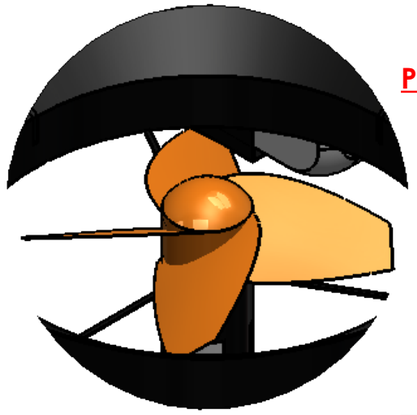
SIZE A3

UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN mm

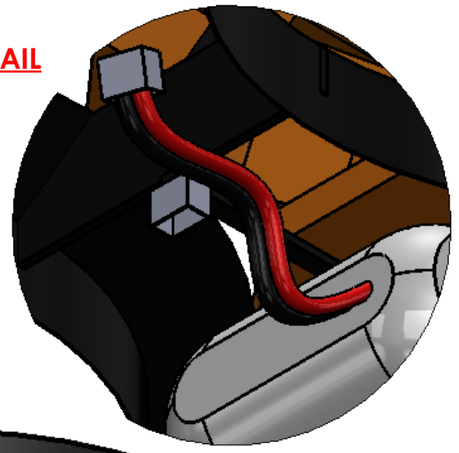
SCALE: 1:1

DATE: 06/12/2018

PROPELLER DETAIL



WIRES DETAIL



REAR PICTORIAL

FRONT PICTORIAL

BATTERY DETAIL

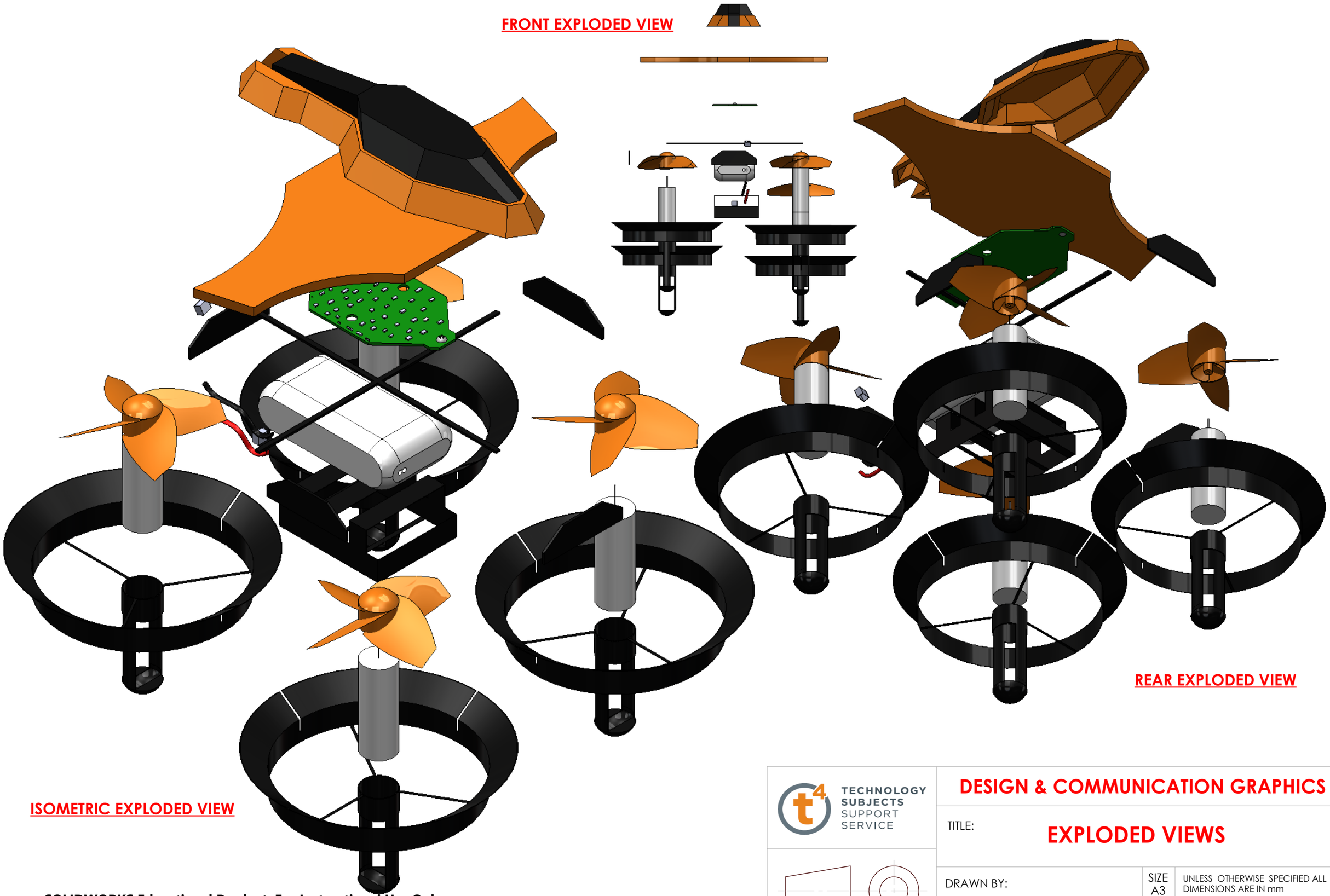
TECHNOLOGY SUBJECTS SUPPORT SERVICE

DESIGN & COMMUNICATION GRAPHICS

TITLE: **PICTORIAL VIEWS**

DRAWN BY:	SIZE A3	UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN mm
SCALE: 1:1	DATE: 06/12/2018	PAGE 7

FRONT EXPLODED VIEW



REAR EXPLODED VIEW

ISOMETRIC EXPLODED VIEW

SOLIDWORKS Educational Product. For Instructional Use Only.

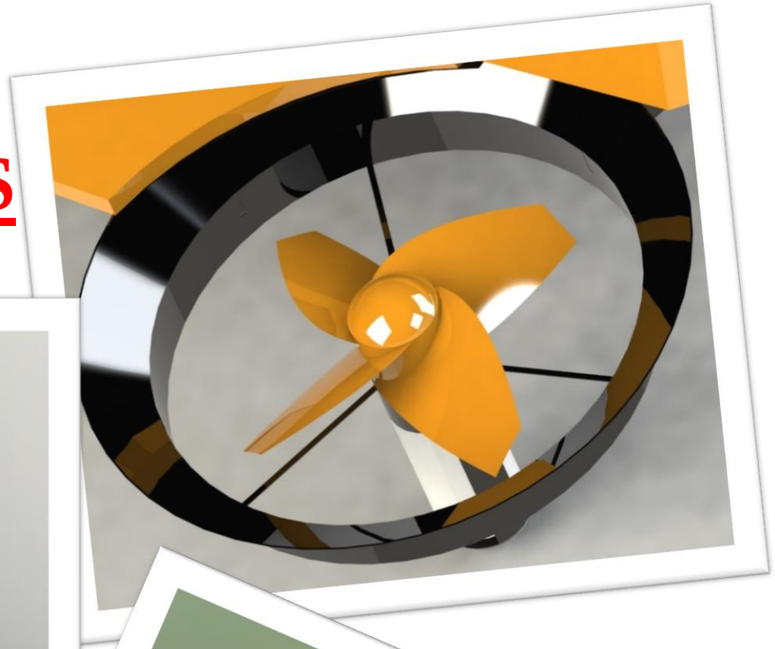
TECHNOLOGY SUBJECTS SUPPORT SERVICE

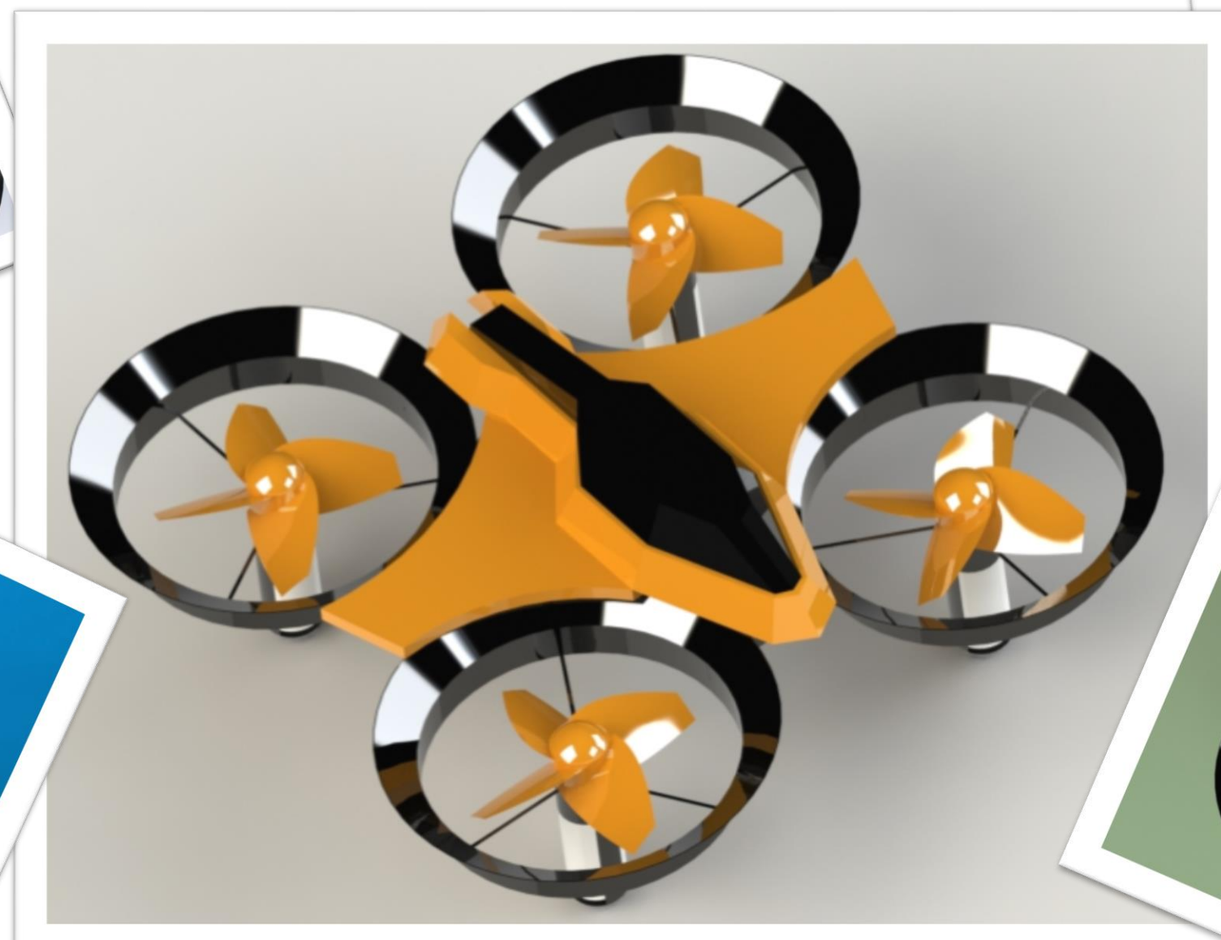
DESIGN & COMMUNICATION GRAPHICS

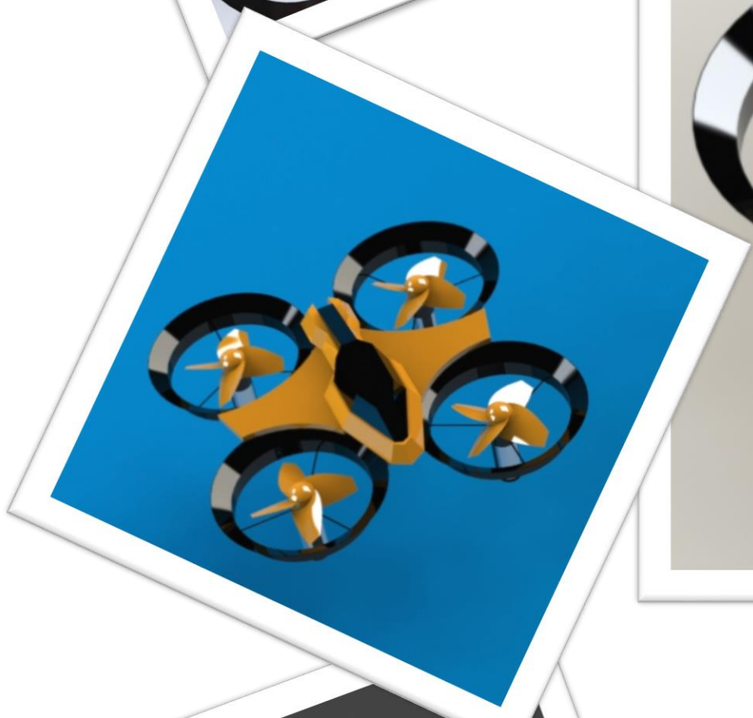
TITLE: **EXPLODED VIEWS**

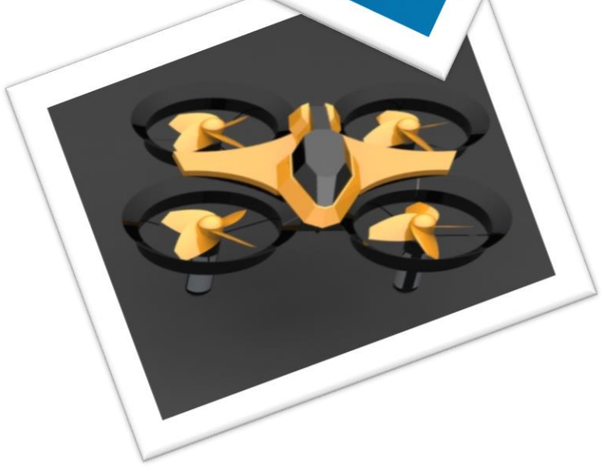
DRAWN BY:	SIZE A3	UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN mm
SCALE: 1:2	DATE: 06/12/2018	**PAGE 8**

PHOTOREALISTIC IMAGES

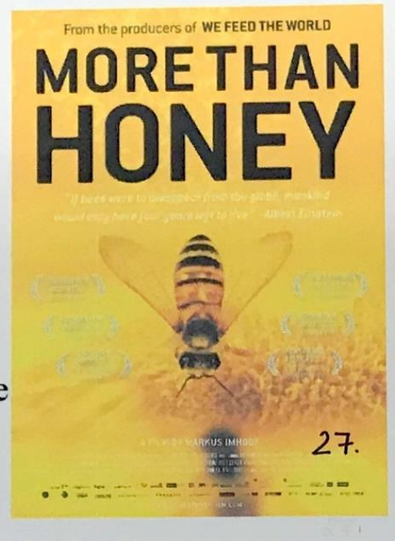








One of my favourite documentaries is 'More Than Honey'. I find it very emotional and disturbing in the same time, as I found out that bees do no longer exist in some countries, such as China, because of pollution. This documentary inspired me to create a quadcopter concept, which will have the shape of a bee.



27.


28.

During my research, I found online some nice represented tattoos of bees which I think look totally beautiful. I find bee tattoos very aesthetical and delicate. I also appreciated the hexagonal honeycombs represented beside the bee.


29.

I DREW THIS SKETCH


31.

A ladybird & a bee

Because I have an interest in insects, I chose to consider for my final concept the ladybird. I made this decision just because of pure personal colour preference. I think ladybirds are even more fragile, and feminine than bees. I also think that my quadcopter concept will look glamourous and innovative if I choose to represent a ladybird.


30.


37.

I DREW THIS SKETCH

I focused on the concept of a bee from the moment I finished watching the documentary ('More Than Honey'), because the image of bees and their honeycombs was very appealing and aesthetical to me.

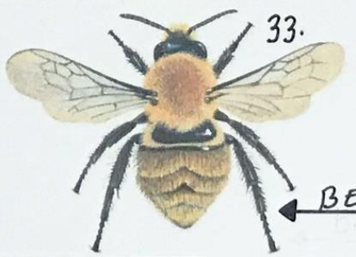
For my Leaving Certificate English Comparative Section, I watched and studied the film 'Brooklyn'. Like this I found out how good of an actress Saoirse Ronan, the protagonist, is. Because of this I chose to watch the film 'Lady Bird', in which Saoirse is again the protagonist. I absolutely loved it. I was inspired by the title so I chose to base my quadcopter concept on a ladybird instead of a bee.

35.

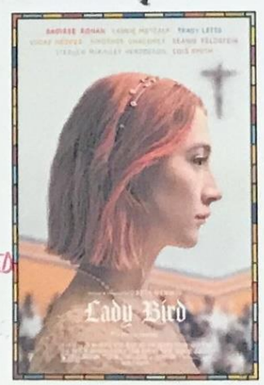
THIS PAGE TAUGHT ME THE IMPORTANCE OF RESEARCH BEFORE DESIGNING A QUADCOPTER. I CHANGED MY MIND DURING THE PROCESS IN REGARD TO THE MAIN IDEA.


32.

LADYBIRD


33.

BEE



34.

IT WAS EASIER THIS TIME TO MAKE THIS PAGE AS I HAVE ALREADY THE EXPERIENCE I GAINED BY DOING PAGE 1.

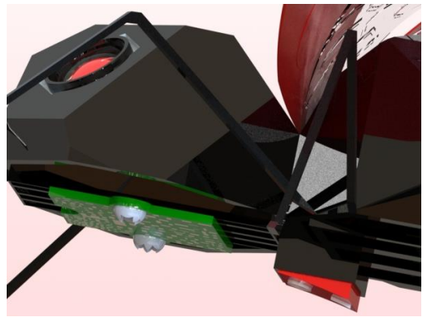

38.

Different types of ladybirds


36.

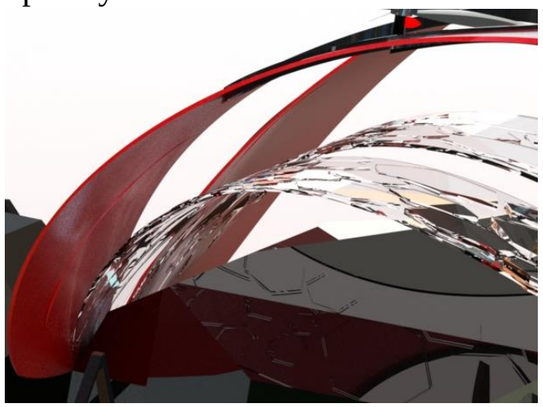
MY OWN DRAWING

I liked the idea that the legs of the quadcopter could move around, this giving to the ladybird the ability to walk around as well as flying.

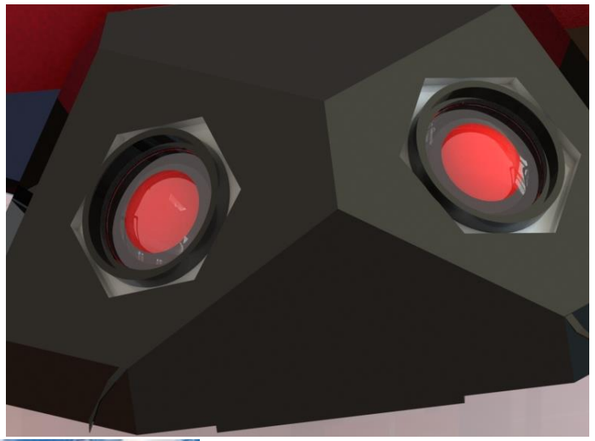


I wanted to make a quadcopter that would be environmental friendly so I liked the idea that the quadcopter will work, move and fly being controlled not by a remote, but by your mobile phone, through wireless and Bluetooth.

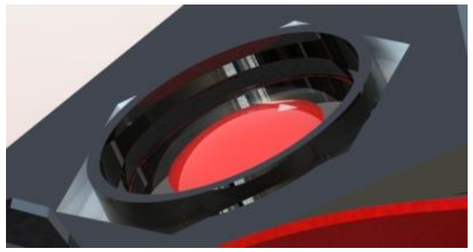
I decided that the both pairs of wings would have electro-magnetic sensors, this letting the quadcopter to close and open by itself.

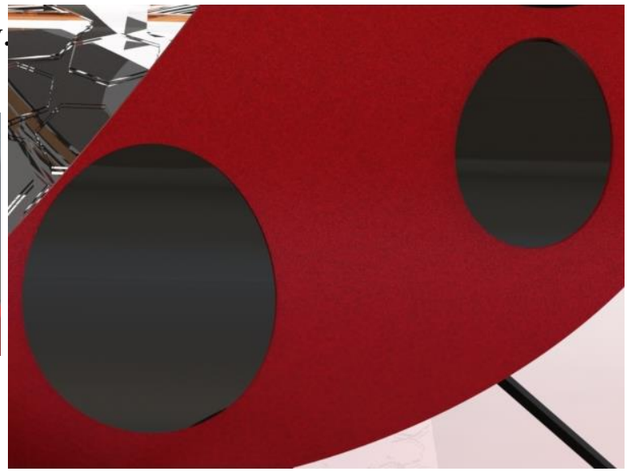


I also wanted to add cameras to my quadcopter so the gardener who is using it could see clearly where the quadcopter is situated at any moment. Like this, the gardeners can pollinate the plants and flowers they like whenever they want.



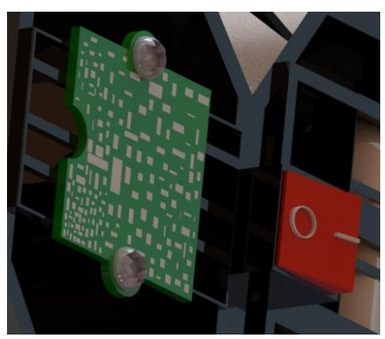
The ladybird is coming with four black dots attached to the first pair of wings (the red pair of wings).
I liked the idea of attaching solar panels, so if the quadcopter is situated in an area with no wireless it can use solar energy to fly around and continue its job or, it can return in safety to its owner before losing the remaining energy.





My target audience is a garden society or business, an agri horticultural society or a natural science museum. I created the quadcopter in the shape of an insect so that its main role is to pollinate flowers and plants.

I added a power button beside the gear so it can easily be turned off and on.



TOP VIEW

My favourite drawing on this page.

ISOMETRIC SKETCH

PROPELLER DETAIL

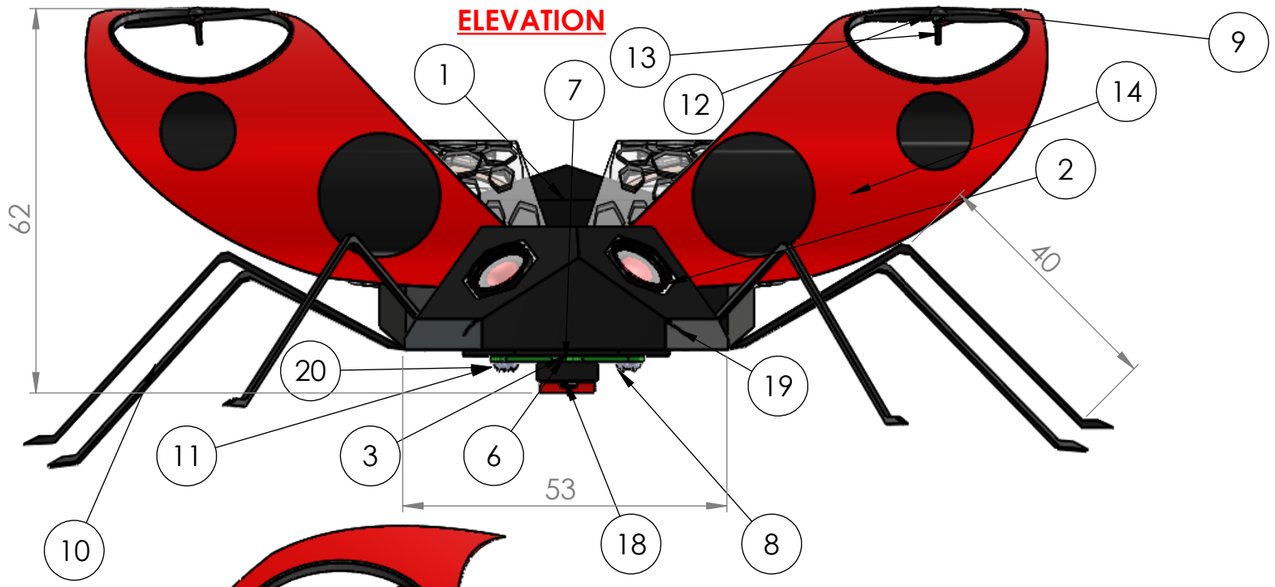
SWITCH BUTTON

FINAL VIEW

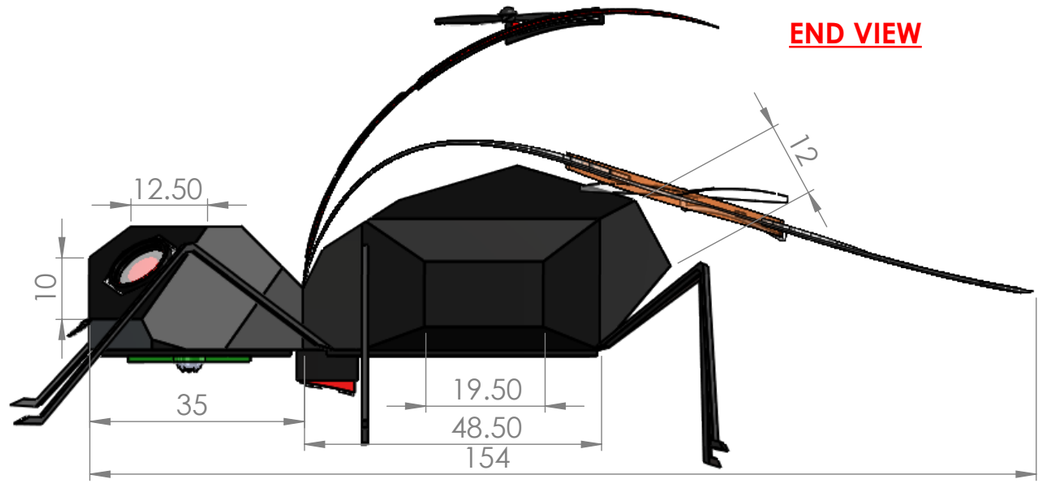
I enjoyed very much working on this page and I think it was easier to draw this than the elements on page 5.

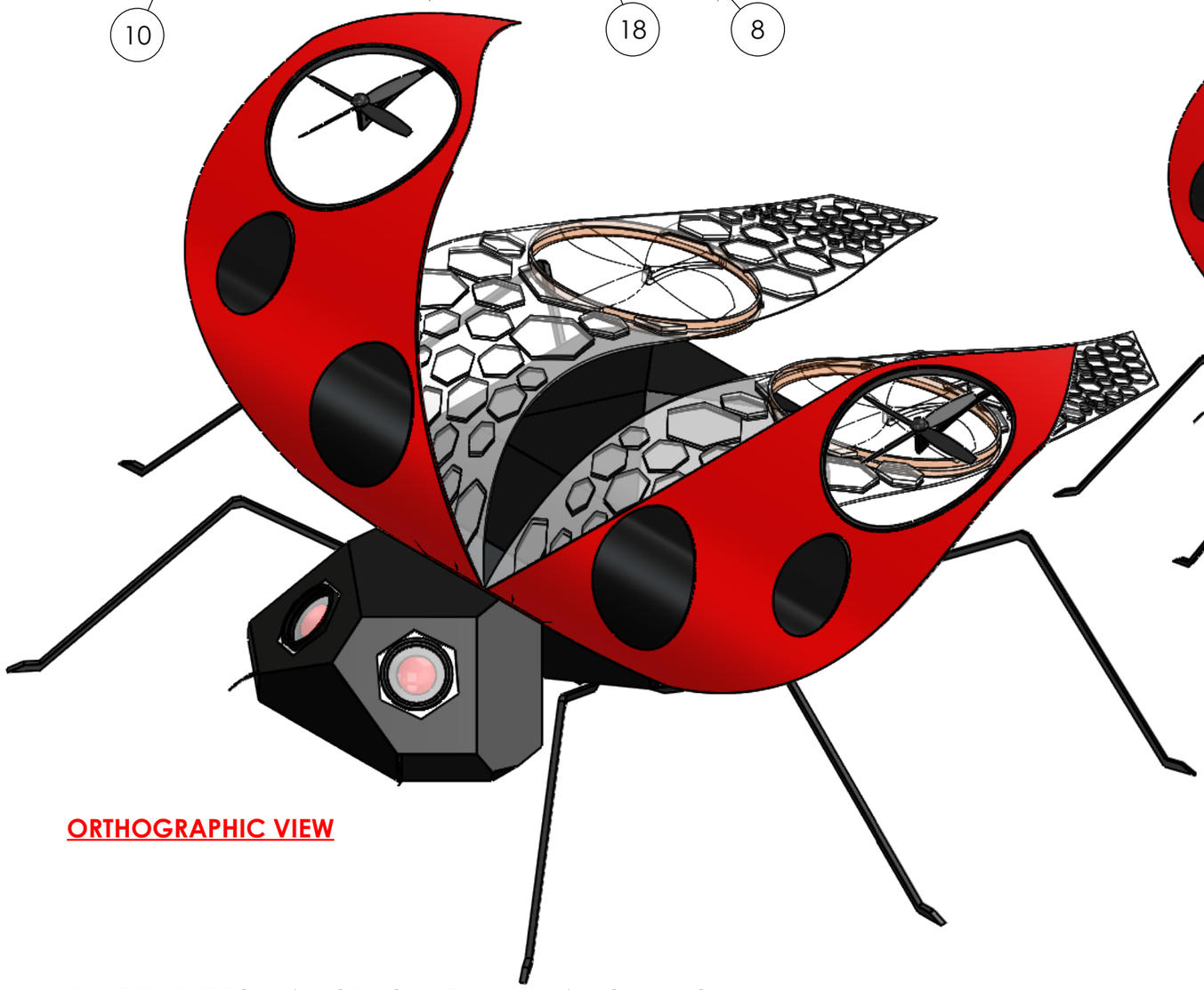
CAMERA DETAIL

ELEVATION

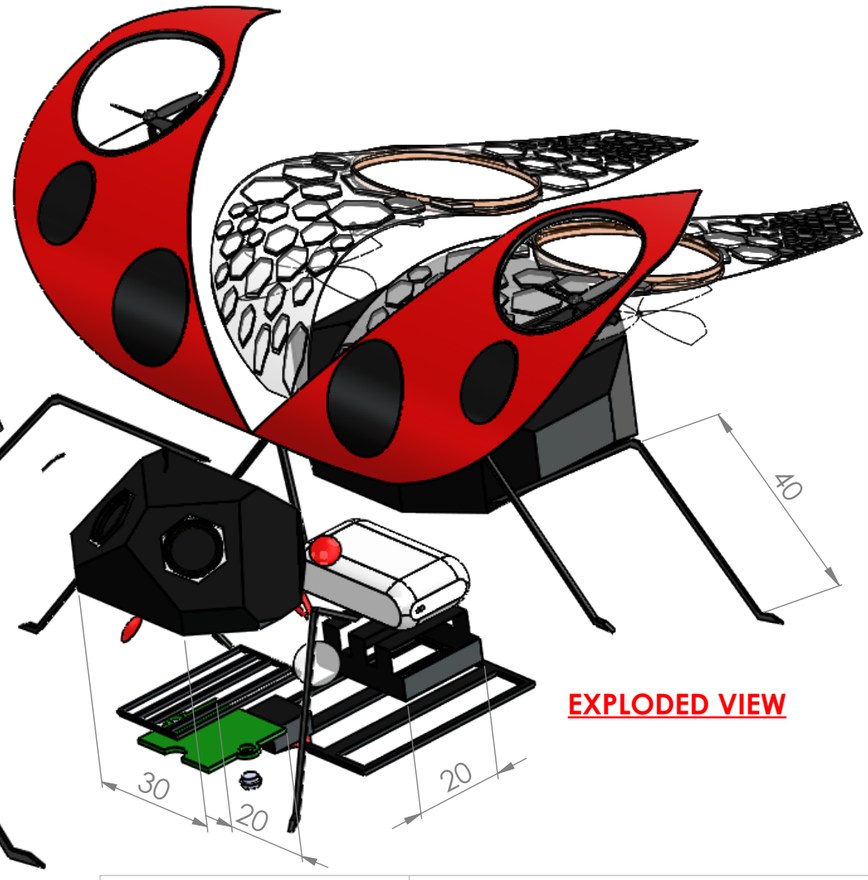


END VIEW





ORTHOGRAPHIC VIEW



EXPLODED VIEW

ITEM NO.	PART NUMBER	QTY.
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2	PART 2	1
3	PART 3	1
4	PART 4	1
5	PART 5	1
6	PART 6	1
7	PART 7	1
8	PART 8	2
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18	PART 18	1
19	PART 19	2
20	PART 20	1
21	PART 21	2
22	PART 22	2
23	PART 23	2

TECHNOLOGY SUBJECTS SUPPORT SERVICE

DESIGN & COMMUNICATION GRAPHICS

TITLE: **ORTHOGRAPHIC/PICTORIAL VIEWS**

DRAWN BY:	SIZE A3	
SCALE: 1:2	DATE: 16/01/2019	SHEET 1 OF 1

PHOTOREALISTIC IMAGES