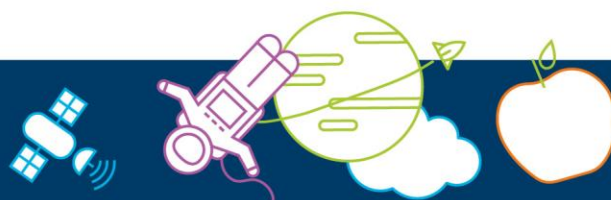


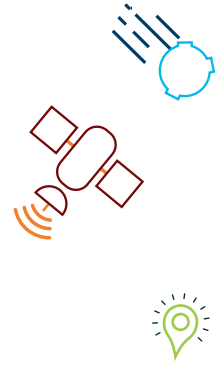


DIY Faraday Challenge Day

AIRBUS

Teacher Extras

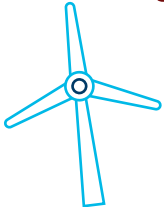
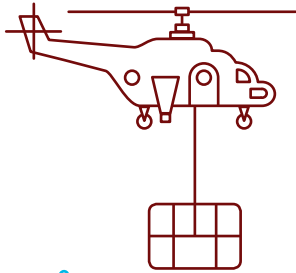




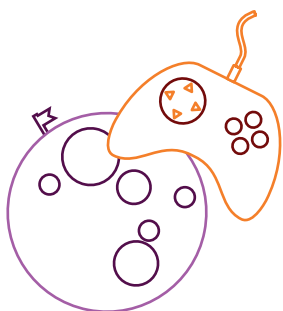
For taking part in the



Faraday Challenge Day



Awarded to



A handwritten signature in blue ink that reads "Nigel Fine".

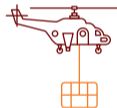
Nigel Fine
IET Chief Executive and Secretary

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AIRBUS

Faraday Reserve Note

= One Faraday



Michael Faraday





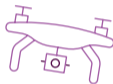
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Engineering and Technology

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F5

Faraday Reserve Note

Five Faradays



Michael Faraday





The Institution of
Engineering and Technology

Faraday Challenge Days

F10

Faraday Reserve Note

Ten Faradays



Michael Faraday





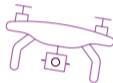
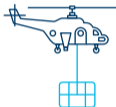
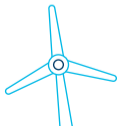
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Engineering and Technology

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F20

Faraday Reserve Note

Twenty Faradays



Michael Faraday



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F4.0

Crocodile leads

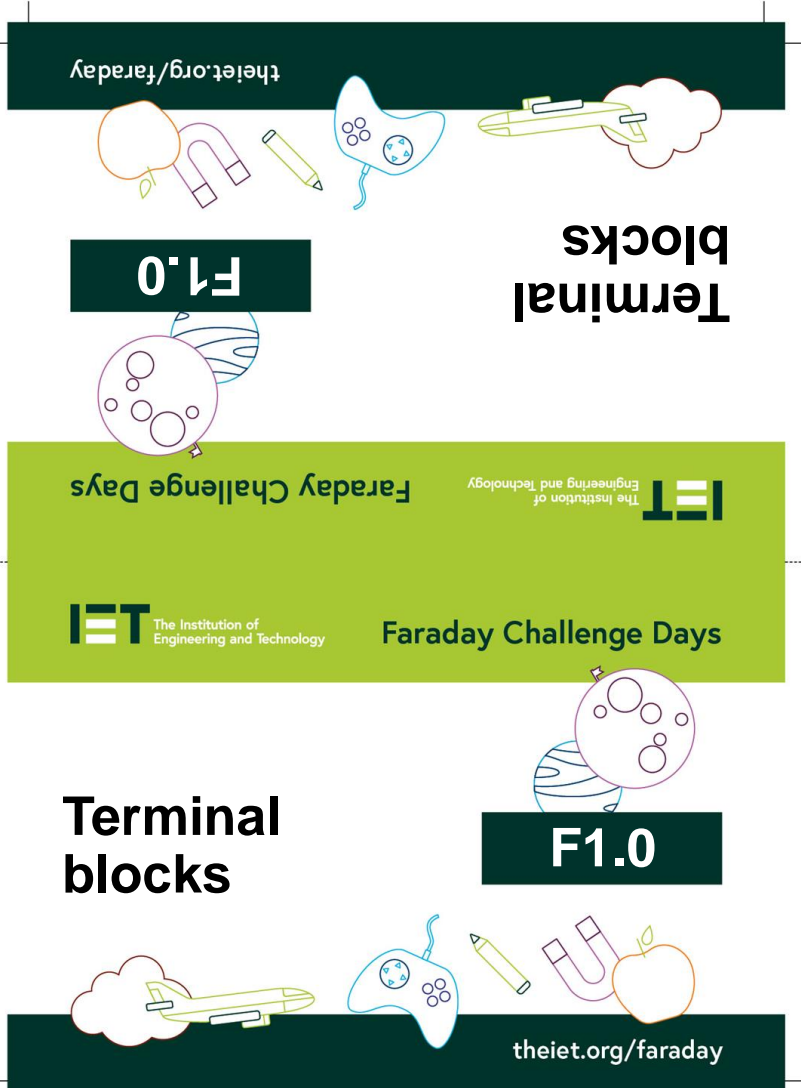
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F4.0

Crocodile leads

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F1.0

Terminal blocks

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F1.0

Terminal blocks

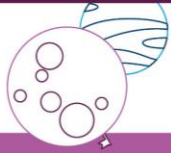
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F6.0

Piezo buzzer



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Piezo buzzer

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F6.0

LED – various colours

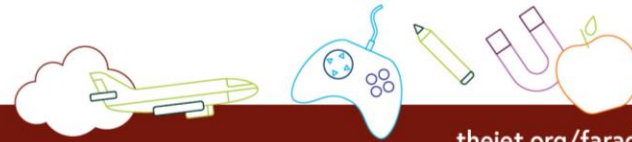


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LED – various colours

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Motor



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Motor

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Solar motor



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Solar motor

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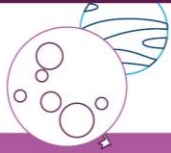
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**Servo motor –
0 to 90 degrees**



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**Servo motor –
0 to 90 degrees**

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**Servo motor –
continuous**

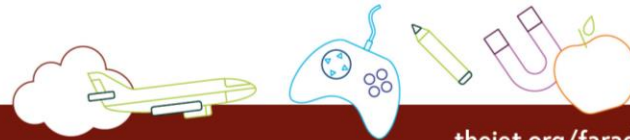


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**Servo motor –
continuous**

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F8.0

**Light
Dependent
Resistor**

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**Light
Dependent
Resistor**

F8.0



F6.0

**Push to make
Switch**

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**Push to make
switch**

F6.0

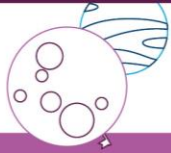


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Moisture sensor



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Moisture sensor

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Servo motor control unit

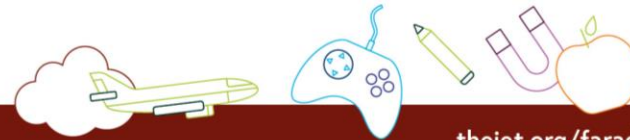


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Servo motor control unit

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F4.0

Motor holder



Motor holder

F4.0



F2.0

Gear attachment for motor



Gear attachment for motor

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F2.0

Pulley attachment for motor

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Pulley attachment for motor

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F6.0

Solar panel

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Solar panel

F6.0

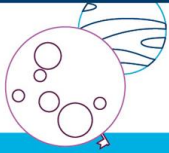
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F4.0

**2 AA cells in
battery holder**



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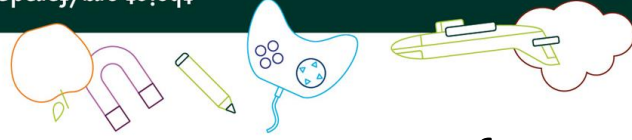
**2 AA cells in
battery holder**

F4.0



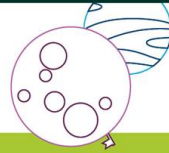
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F6.0

**4 AA cells in
battery holder**



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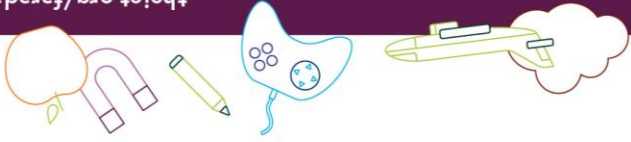
**4 AA cells in
battery holder**

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Correx



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F6.0

Plastic syringes with tube



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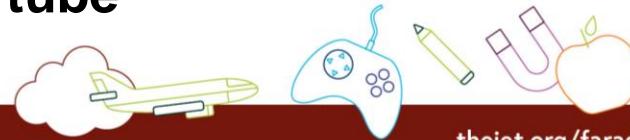
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Plastic syringes with tube

F6.0

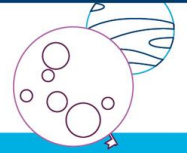


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F2.0

Small cog



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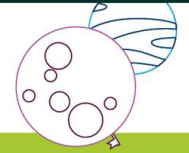
Small cog

F2.0



F2.0

Medium cog



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Medium cog

F2.0





F4.0

Large cog



Large cog

F4.0



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F4.0

Dowel

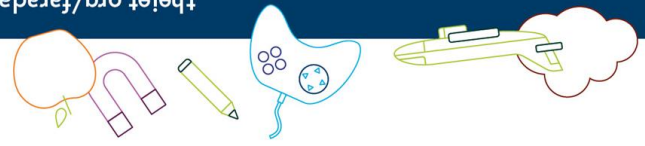


Dowel

F4.0

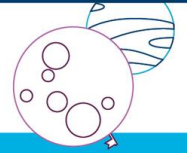


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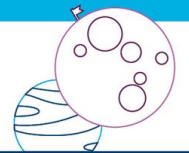


F6.0

Pulley wheel

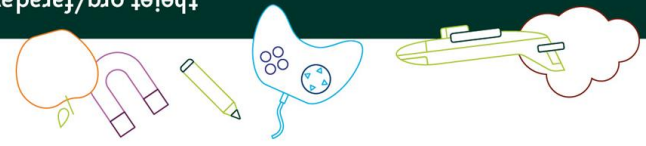


Faraday Challenge Days



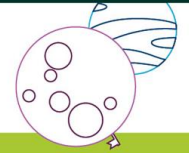
Pulley wheel

F6.0



F4.0

Wooden wheel



Faraday Challenge Days



Wooden wheel

F4.0





F4.0

Plastic reel



Plastic reel

F4.0



F4.0

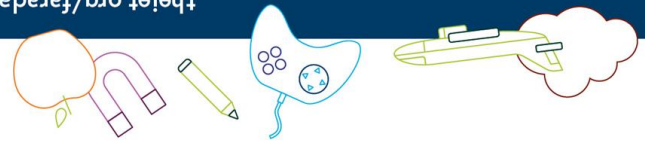
Polyfoam



Polyfoam

F4.0





F4.0

Coloured card



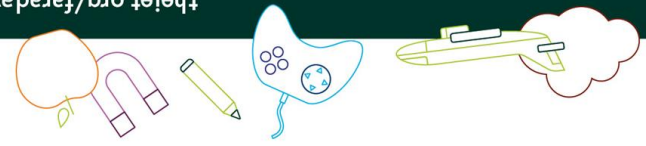
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Coloured card

F4.0



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F6.0

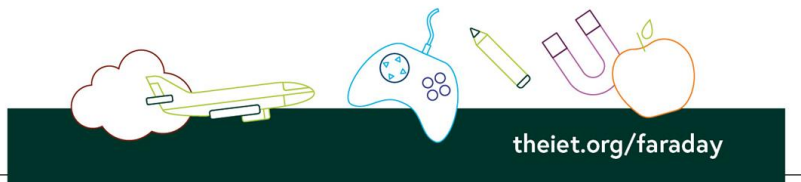
Aluminium foil



Faraday Challenge Days

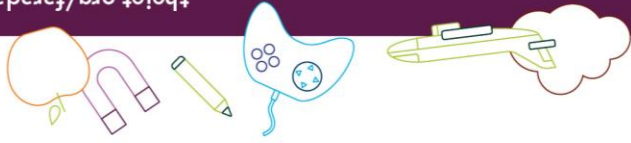
Aluminium foil

F6.0



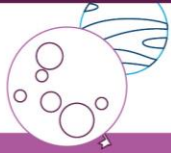
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F6.0

Masking tape



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Masking tape

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F6.0

Sponge



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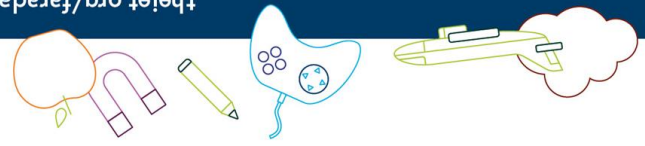
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Sponge

F6.0

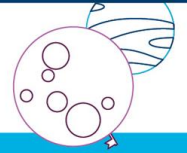


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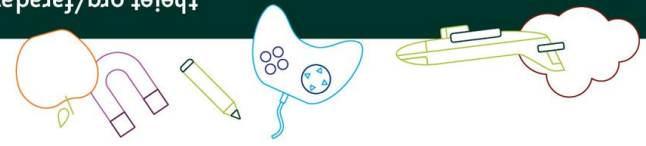
F1.0

Paperclip



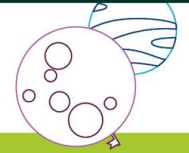
Paperclip

F1.0



F1.0

Paper fastener



Paper fastener

F1.0





F1.0

Elastic band



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Elastic band

F1.0



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F2.0

Cable tie



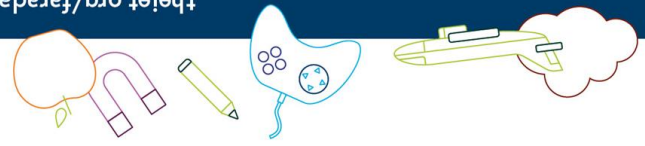
Faraday Challenge Days

Cable tie

F2.0



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F4.0

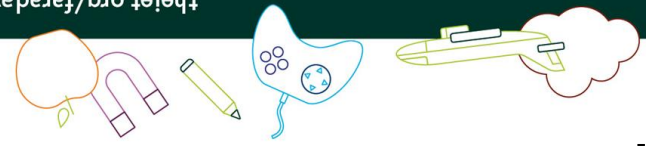
String

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String

F4.0



F6.0

Baking parchment

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Baking parchment

F6.0

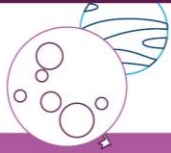


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F4.0

Wooden lolly stick



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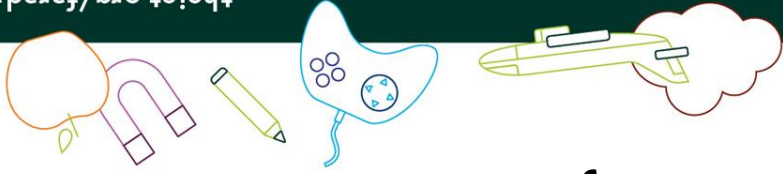
Wooden lolly stick

F4.0



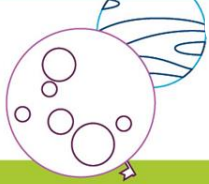
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Need card

HIRE CENTRE
1 item only at a time



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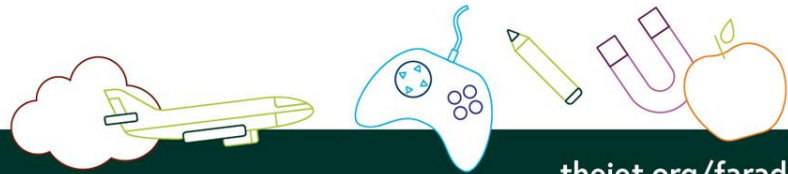
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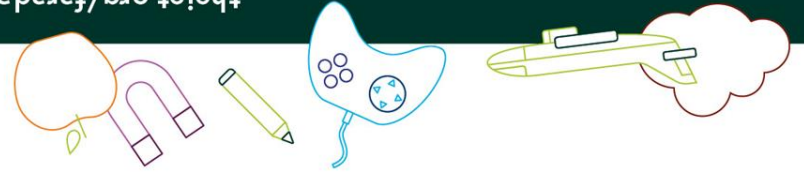
1 item only at a time

Need card



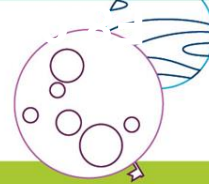
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F6.0

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TRADE CARD
Team 1



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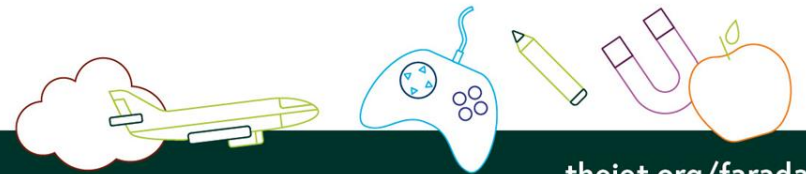
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HIRE CENTRE
TRADE CARD

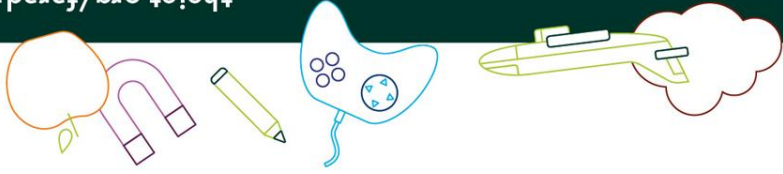
Team 2

F6.0

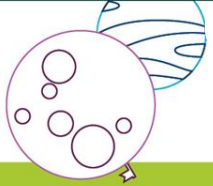


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F6.0



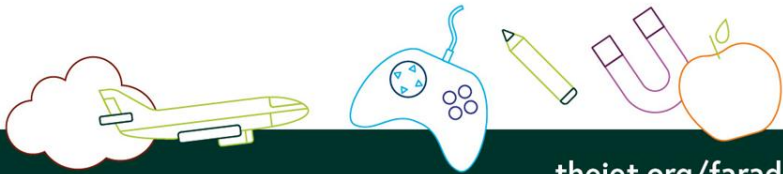
HIRE CENTRE
TRADE CARD
Team 3

Faraday Challenge Days



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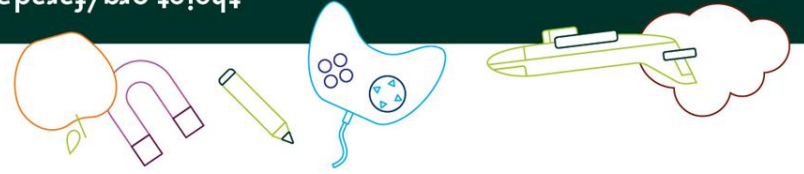
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TRADE CARD
Team 4



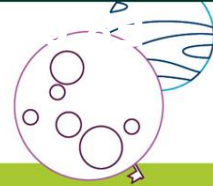
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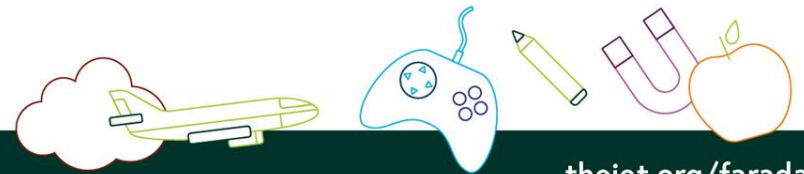
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TRADE CARD
Team 5

Faraday Challenge Days



Faraday Challenge Days

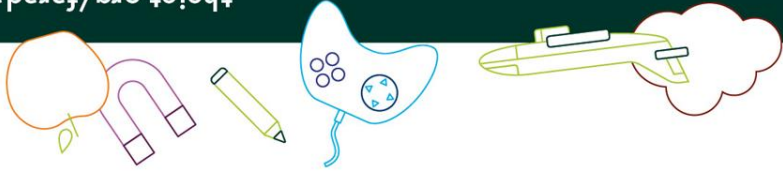
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TRADE CARD
Team 6



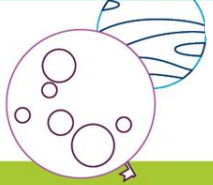
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F6.0



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TRADE CARD

Team 7

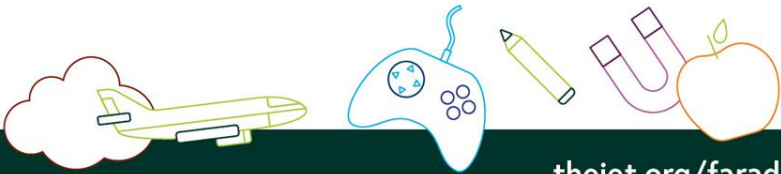
Faraday Challenge Days



Faraday Challenge Days

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TRADE CARD

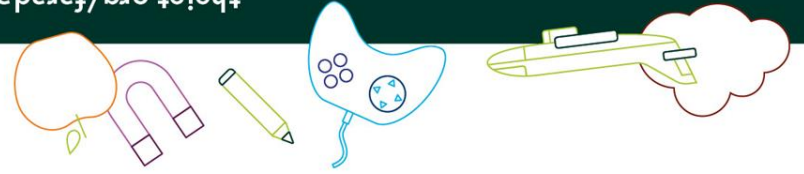
Team 1



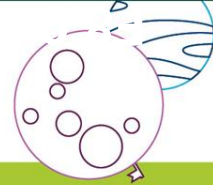
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F6.0



HIRE CENTRE
TRADE CARD

Team 2

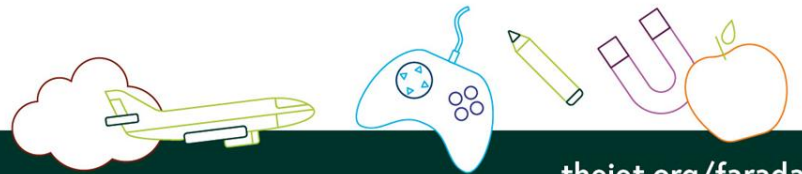
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Faraday Challenge Days

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TRADE CARD

Team 3












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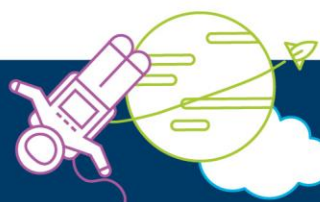
F6.0




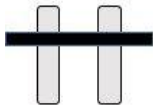






Shop manager resource sheet

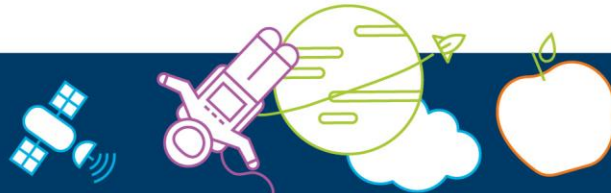
Items to buy

Electrical components				
Item		Description	Unit	Cost
Crocodile leads		Lead with crocodile clips at each end	Each	4 Faradays
Terminal blocks		Can be used to connect insulated wire	Block of 4	1 Faraday
Piezo buzzer		Connect in a circuit to give a sound output	Each	6 Faradays
LED – various colours		Light Emitting Diode which lights up when connected in a circuit. Choose from red, orange, green or blue.	Each	6 Faradays
Motor		Connect in a circuit to create clockwise or anti-clockwise movement. Will not work with a solar panel or an LDR.	Each	6 Faradays
Solar motor		Connect to a solar panel to create clockwise or anti-clockwise movement.	Each	6 Faradays
Servo motor (0 to 90 degrees)		Use with a servo motor control unit to control movement from 0° to 90°	Each	6 Faradays
Servo motor (continuous)		Use with a servo motor control unit to control continuous movement through 360°	Each	6 Faradays
Light Dependent Resistor (LDR)		Component that detects the light level and changes resistance in a circuit.	Each	8 Faradays



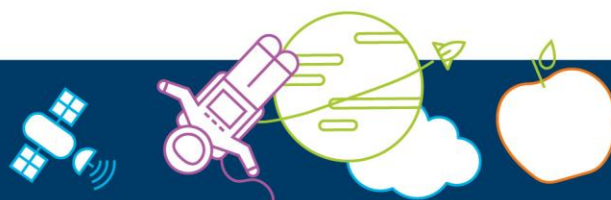


Push to make switch		Connects a circuit when pushed down and breaks the circuit when released.	Each	6 Faradays
Moisture sensor		Component which detects moisture in the surroundings. Can also be used to detect materials which conduct electricity.	Each	8 Faradays
Servo motor control unit		Use this to control a servo motor. You MUST read the 'How to ...' sheet before connecting this component.	Each	8 Faradays
Motor holder		Used to fix a motor or a syringe in position. NOTE: you will need the insert to connect a syringe.	Each	4 Faradays
Gear attachment for motor		Used to connect a motor to a cog.	Each	2 Faradays
Pulley attachment for motor		Used to connect a motor to a pulley wheel – will need connector (e.g. elastic band)	Each	2 Faradays
Solar panel		Used to power components using the power of the sun. You MUST read the 'How to ...' sheet before using.	Each	6 Faradays
2AA cells in battery holder with battery snap		Used to provide power for your circuit	Each	4 Faradays
4 AA cells in battery holder with jumper leads		ONLY to be used with servo motor control unit.	Each	6 Faradays





Construction materials			
Item	Description	Unit	Cost
Correx	Used to create structures	Piece	6 Faradays
Plastic syringes with tube	Used to develop pneumatic system	Pair of syringes with plastic tube	6 Faradays
Small cog	Used in gear systems with motors	Each	2 Faradays
Medium cog	Used in gear systems with motors	Each	2 Faradays
Large cog	Used in gear systems with motors	Each	4 Faradays
Dowel	Piece of solid cylindrical wooden rod used to create structures	Each	4 Faradays
Pulley wheel 54cm	Used to connect to pulley attachments on motor	Each	6 Faradays
Wooden wheel 54cm	Used with motors to drive something	Each	4 Faradays
Plastic reel	Used in construction	Each	4 Faradays
Polyfoam	A5 sheet – assorted colours	Each	4 Faradays
Coloured card	A4 sheet of card – assorted colours	Each	4 Faradays
Aluminium foil	A conductive material which can be used to make pressure pads or switches (MUST NOT be used in place of connecting wires)	10cm strip	6 Faradays
Masking tape	Can be used to secure light parts in your design. NOTE: excessive use of tape will result in an additional charge	Roll	6 Faradays
Sponge	Can be used to make pressure switches or enhance your design.	Each	6 Faradays
Paperclip	Used to create switches or in construction	Each	1 Faraday
Paper fastener	Used to create switches or in construction	Each	1 Faraday
Elastic bands	Used to hold or create working parts, including driving pulley wheels	Each	1 Faraday





Cable ties	Can be used to hold your structures in place	Each	2 Faradays
String	Can be used as part of your product design	30cm piece	4 Faradays
Baking parchment	Can be used as part of your product design	10cm strip	6 Faradays
Wooden lolly sticks	Can be used as part of your product design	Each	4 Faradays
Hire Centre Trade Card	Use this to hire various items from the hire section of the shop – see below for details	One per team	6 Faradays

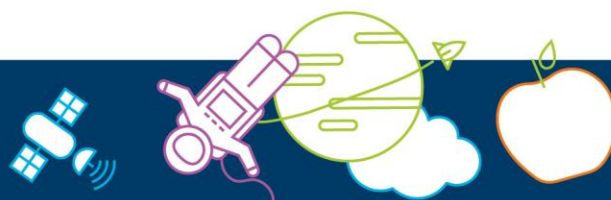
Available with your Hire Centre Trade Card

These items can be hired from the shop if you buy a Hire Centre Trade Card. You will need to take it to the shop and show the shopkeeper each time you want to use of one of these items. You may only get one item at a time.

Stapler	Used to staple soft materials only
Hole punch	Used to make small holes in soft materials
Ruler	Used to measure any part of your product or additional items
Scissors	Used for soft materials only
Screwdriver	Used to connect insulated wire in terminal blocks or to bulb holders.
Wire strippers	Used to cut or strip insulated wire.

Free to use

The cutting station may be used at any point **BUT** only 3 people will be allowed at this station at any one time. Please take care when using this equipment.



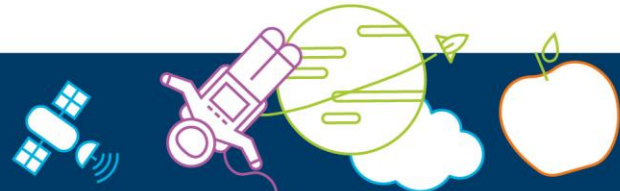


Account sheet

Team.....

You will need to keep an accurate record of all the purchases your team makes.

Materials/resources purchased	Quantity	Cost		Faradays remaining
		Spent	Received (if sold back)	
Total Faradays remaining:				





Student Team Registration Form

Team number

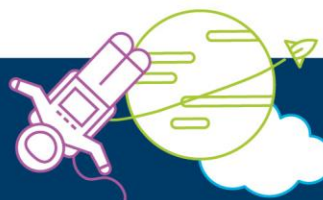
Faraday Challenge Date:

Your School Name:

Your Teacher's Name:

Team Member Names (please print clearly):

	First name	Surname
1		
2		
3		
4		
5		
6		





IET Faraday Challenge Day - Shop Manager Balance Sheet

School Date

Each visit	Team 1		Team 2		Team 3		Team 4		Team 5		Team 6		Team 7	
	Spent	Return	Spent	Return	Spent	Return	Spent	Return	Spent	Return	Spent	Return	Spent	Return
1														
2														
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														
TOTAL SPEND														





SHOP MANAGER GUIDANCE

- Please record the number of Faradays spent each time a team comes to the shop. You do not need to record what the team buys, only the amount spent. If teams come up more than the available spaces then continue on the reverse side. There is no restriction on the number of times they may visit the shop.
- Most unused items can be sold back to the shop for half price. No refunds given for partially used items (e.g.: card, polyfoam, dowel, etc.) or for Hire Centre Trade Cards or rolls of masking tape.
- All prices and the amounts they can receive are on the list on the clipboard. Please keep to these amounts and do not give them whole rolls of string or tin foil. No negotiation on shop items and no selling/bargaining between teams.
- Teams may come and replace a used roll of masking tape for free once they have bought a roll. The Challenge Leader will monitor how much they are using. They **cannot** sell masking tape back to the shop.
- **DO NOT** sell teams a 4 x AA battery pack unless they are using it with a servo motor and control unit as they will blow the LEDs. They **MUST** have read the How to use a servo motor if they are to buy this battery pack, the servo motors or the servo motor control units.
- If teams are unsure what components to buy, particularly which motor, please direct them to the 'How to' Sheets, the Student Booklet or the Challenge Leader for assistance.
- Only 2 members from each team at the shop at any time.
- Please monitor (or arrange for another person to monitor) the cutting station to ensure safe use of the craft knives and hacksaw and ensure the cutting station rules are adhered to. In the case of injury, Challenge Leaders are not allowed to administer first aid.
- Hire centre trade cards need to be purchased first before using the Hire Centre items. Each team to get the card with their team number on. They can only get one item at a time.
- If you think students are buying tin foil to connect their circuits, please inform the Challenge Leader urgently.
- Teams have a budget of 120 Faradays. Please inform the Challenge Leader if a team spends over this.
- Change for the shop is in the box provided.

