Babcock Challenge Badge

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Babcock

Devon Scouts

Girlguiding Devon

D2025242

Thank you so much for taking the time
to complete the challenge badge.

Please send us any pictures of your group
completing their badge and any feedback to:
Babcock.STEM.Events@babcockinternational.com

Introduction

Thank you for taking part in the Babcock Challenge Badge. This badge has been designed to inspire and captivate young minds and challenge stereotypes in Science, Technology, Engineering and Maths (STEM).

All of the activities for the Babcock challenge badge have been developed by STEM Ambassadors based at Babcock's Devonport Facility in Plymouth. They reflect the work we undertake including: nuclear engineering, health and safety, electrical engineering, cyber security and marine engineering. As well as learning more about the work we undertake, those completing the badge will also grow their skills in communication, resilience and teamwork.

Babcock International Group (Babcock) owns and operates the main refit, maintenance and workshop area of the 330 acre naval site at Devonport, known as Devonport Royal Dockyard, where it employs thousands of people. The remainder of the site at Devonport is owned by the Ministry of Defence and is known as His Majesty's Naval Base (HMNB) Devonport – one of the largest naval bases in Western Europe. Babcock and the Ministry of Defence work in partnership to operate and maintain this co-located site by providing through-life support for submarines, surface ships and associated systems and equipment.

What we do at Devonport

Babcock is an international defence company providing support and product solutions to enhance our customers' defence capabilities and critical assets.

Over 27,000 people are employed by Babcock across the globe.

Working in partnership with the Ministry of Defence (MoD), we provide through-life support for submarines, surface ships and associated equipment. All of this work is part of our commitment to supporting the UK's naval capability.

How to complete the challenge badge

In order to complete the badge, we ask that each young person completes two activities from each section, eight activities in total.

We predict the badge should take around four sessions to complete.

All the activities can be adjusted and adapted to suit various ages and abilities as required.

We hope you enjoy the challenge. If you have any queries or feedback, email: **Babcock.STEM.Events@babcockinternational.com.**

Contents

Warehouse whisper

Duration: 15 minutes **Recommended age: 6+**

Step-by-step instructions

Set the scene

- Explain that engineers in the dockyard need specific tools and supplies to complete their job.
- The team must pass the message accurately down the line to get the right items from the warehouse.

Form teams

- Split the group into 2 or more teams.
- Each team stands in a straight line.

Prepare the supply list

- Create a list of items needed (e.g. “10 bolts, 1 spanner, 2 screwdrivers”).
- You can vary the difficulty by adding quantities or similar-sounding items.

Start the relay

- Whisper the list to the first person in each team.
- They must whisper it to the next person, and so on, until it reaches the last person.

Final delivery

- The last person in each team recites the list out loud.
- The team with the most accurate list or the fastest correct delivery wins!

Repeat & rotate

- Run the activity multiple times with new lists.
- Rotate team members to give everyone a chance to start or finish.

Discussion points

- Why did some teams get the list wrong?
- What helped teams remember the items better?
- How does this relate to real jobs in engineering?

Example list of items:

- x 10 Bolts
- x 5 Washers
- Drawings
- x 2 spanners
- A hammer
- x 3 large pipes

Other Items could be:

- Nuts
- Gasket
- Screwdriver
- Hammer
- Saw
- Machine
- Engine
- Propeller
- Radar
- Sonar
- Flange
- Coupling

Radio communications

Duration: 1 hour **Recommended age: 4+**

Learning objectives

- Understand how to communicate clearly through an early method of communication.
- Learn the basic radio conversation between a pilot and an air/ground radio.

What you'll need

- Two empty, clean cans
- String - 2m lengths
- Printer
- Paper
- Two people

Activity overview

- Create a method of communication.
- Take it in turns to be a pilot and radio operator and test their communication skills.

Step-by-step instructions

- For safety reasons, it is recommended leaders punch a hole in the bottom of the cans prior to the activity. Please be careful of any sharp edges and remove these prior to the activity.
- Depending on the number of cans available, split the group up and provide them each a piece of string and two cans with holes punched in the bottom. The group can construct the the rest on their own or with help.
- To do so, pass one end of the string into the bottom of a can and tie a big knot inside the can to stop it falling back out.
- Pass the other end of the string through the second can and tie a knot in the end. (The string should be a reasonable length, e.g. at least two metres, otherwise the two people will be so close that they will simply be hearing each other talk normally).
- One person needs to be the pilot and the other needs to be the radio operator.
- Each person needs to hold a can, walk away from each other so that the string is taut.
- The pilot should speak into the can whilst the radio operator holds it to their ear. Then try it the other way round.
- The group could write their own scripts or come up with secret phrases to transmit.

Reflection questions

- How easy was it to understand what each other said?
- How did you make it easier to hear each other?
- In a busy airfield environment with a lot of people flying, how do we know who is talking?

Letter to parents/guardians

Dear Parents and Guardians,

We're excited to let you know that your Scout/Guide unit will soon be taking part in the Babcock Challenge Badge. This badge has been created by STEM Ambassadors at our Devonport facility and is packed with fun, hands-on activities linked to marine, electrical and nuclear engineering, health and safety, cyber security, and communication.

The badge is designed to spark curiosity, challenge stereotypes, and inspire young people by showing them the variety of careers right on their doorstep.

All activities can be adapted by leaders to suit different ages and needs.

Research shows that career ambitions can begin forming as early as seven, so this badge also helps start positive conversations about future opportunities.

You can support this by chatting with your young person about what they've enjoyed or discovered during the sessions.

If you have any concerns about any of the activities, please speak to the Scout/Guide Leaders. The badge is flexible, and not every activity needs to be completed.

We're delighted to bring this badge to Scout and Guide units across Plymouth.

We'd love to see your photos and hear your feedback at: **Babcock.STEM.Events@babcockinternational.com**

We look celebrating the completion of the Babcock Challenge Badge with your Scout/Guide unit.

Section 1: Engineering

Engineering is the application of maths, technology and science to solve problems. At our Devonport facility we have lots of different types of engineers that work on marine and nuclear projects such as warships, submarines and site facilities. Engineering is the focus of our business and involves designing, building, maintaining, repairing and so much more.

In this section, the unit will be able to explore engineering skills through fun activities which explain what engineering is. Hopefully, it will also spark an interest in a career in engineering.

Who is it suitable for?

Activity	Age 4-5	Age 6	Age 7	Age 8-9	Age 10+
	Squirrels	Beavers	Beavers	Cubs	Scouts
	Rainbows	Rainbows	Brownies	Brownies	Guides
Buoyancy introduction	✓	✓	✓	✓	
Tin foil boats	✓	✓	✓	✓	✓
Raft building			✓	✓	✓
Landing craft game		✓	✓	✓	
Draw an engineer	✓	✓	✓		
Egg protection			✓	✓	✓
Spaghetti structures		✓	✓	✓	✓
STEM heroes					✓
Dragons Den					✓

Port, Starboard, Forward, Aft

Duration: 10 minutes **Recommended age: 7+**

What you'll need

- Space in a room or outside

Step-by-step instructions

Introduce the concept

- Explain that ships use different words for directions:
  - Left = Port
  - Right = Starboard
  - Front = Bow
  - Back = Stern
  - Middle = Midship
- Ask if anyone already knows these terms.

Set the scene

- Imagine the room is a ship.
- Assign each wall or area a direction (e.g., Bow = front wall, Stern = back wall).
- Optional: Stick labels on the walls to help everyone remember.

Play the game

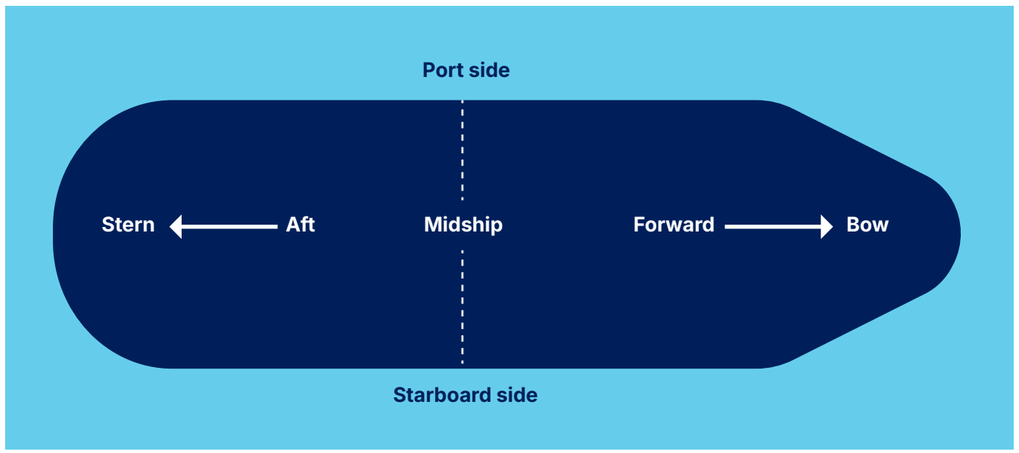
- Everyone stands in the middle of the room.
- The leader shouts out ship directions (e.g., "Port!"), and players must run to the correct area.
- Add fun twists:
  - The last person to reach the spot is out.
  - Occasionally shout "Left" or "Right" to trick player - only ship terms count!

Keep it going

- Play multiple rounds.
- The last person standing is the winner!

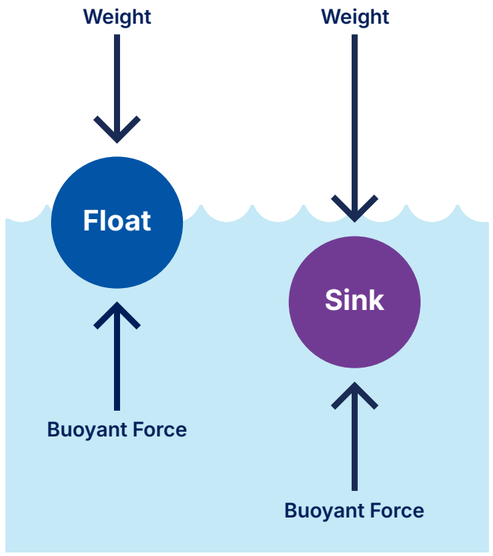
Extension for older groups

- Discuss why ships use these terms instead of left/right.
- Talk about how clear communication is important in engineering and navigation.



Buoyancy exploration activity

Duration: 30-45 mins **Recommended age: 4+**



What you'll need

- A large container or tub filled with water
- A selection of small objects (e.g., rubber duck, rock, plastic spoon, small ball, leaf, piece of wood)
- Paper and pencils for recording observations

Step-by-step instructions

Introduction to buoyancy (5-10 minutes)

- Begin by explaining the concept of buoyancy – the upward force (pushes objects up) that acts on objects in water (or any liquid). It's why some things float, like boats or rubber ducks, and why some sink, like rocks.
- Use the diagram in the annex and simple examples to illustrate:
  - "What happens if you put a rock in the water?
  - "What about a rubber duck?"

Hands-on testing (15-20 minutes)

- Invite each child to select an object and gently place it in the water.
- **After each test, ask:**
  1. "Does it float or sink?"
  2. "Why do you think that happened?"
- **Encourage close observation:**
  1. Does the object float immediately?
  2. Does it sink slowly or bob up and down?

Group discussion (10 minutes)

- Bring the group together to reflect on their findings.
- Explain that whether an object floats or sinks depends on its weight and how much water it displaces (pushes aside).
- Discuss why materials like wood and plastic tend to float, while stone and metal usually sink.

Wrap-up and reflection (5 minutes)

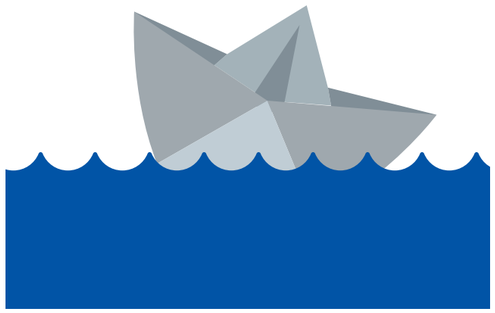
- Ask: "What could you do to make a sinking object float?"
- Explore ideas such as changing the shape, using lighter materials, or adding air pockets - like in boats.
- Encourage children to think of other items they could test at home (with adult supervision).

Extension activities

- Invite each child to bring an item from home they believe will float or sink. Test it together as a group.
- For older children:
  - Challenge them to modify objects to change their buoyancy.
  - Can they make a sinking item float or a floating item sink?

Tin foil boats

Duration: 30-45 mins **Recommended age: 4+**



Prerequisite: To be conducted after the introduction to buoyancy activity.

What you'll need

- Aluminium foil
- Ruler
- Tape
- Scrap piece of paper and pen or pencil
- Rag or paper towels
- Pennies, buttons or nuts/bolts (something small with a weight). You may need as many as two hundred pennies, depending on the size and shape of the boats you make
- Calculator
- Optional: dry rice and measuring cup
- Bucket, tub, sink etc.
- Water

Step-by-step instructions

Introduction to the challenge

Explain that the goal is to test how different boat designs made from aluminium foil can carry varying amounts of weight before sinking.

Prepare the materials

Age group dependant - Leaders should cut aluminium foil into squares of different sizes. These will be used to build the boats.

Build the boats

Using the foil squares, create two boats of different sizes but with a similar shape (e.g., rectangular or oval). This helps isolate size as the variable.

Check for leaks

Inspect each boat's hull for holes or weak spots. Use tape to patch any leaks to ensure fair testing.

Measure boat volume (optional for Scouts/Guides)

Fill each boat with dry rice, then pour the rice into a measuring cup to determine the boat's volume. Record the results.

Float the boats

Fill a bucket or tub with water and carefully place each boat on the surface.

Add weight gradually

Begin adding pennies (or your chosen object) one at a time. Distribute the weight evenly to prevent tipping.

Test the limits

Continue adding pennies until the boat sinks. Record how many pennies each boat held.

Compare results

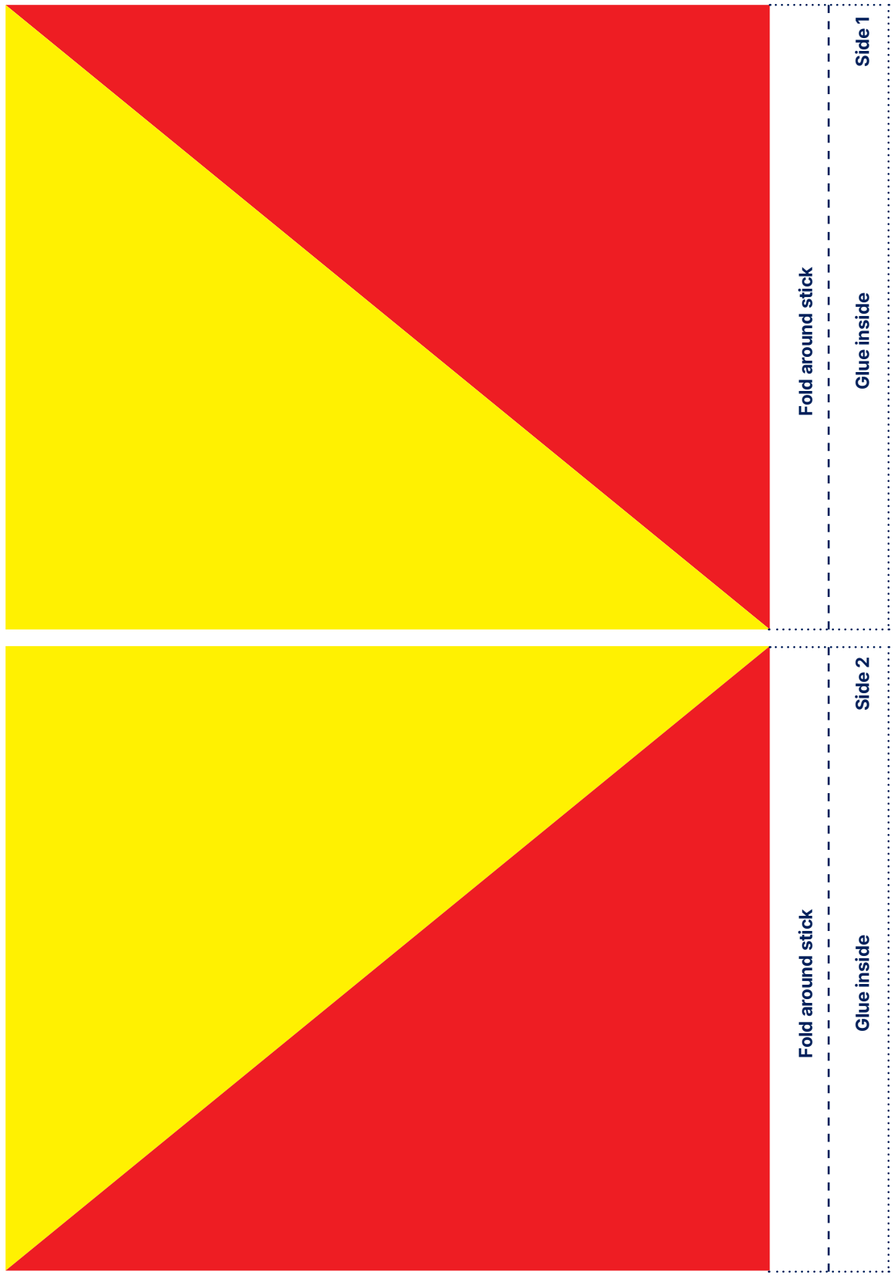
Repeat the test with each boat. You could even turn it into a friendly competition:

- Whose boat held the most pennies before sinking?

Experiment with shapes

- Try building boats with different shapes - such as a teardrop or circular design.
- Does the shape affect how much weight the boat can carry?

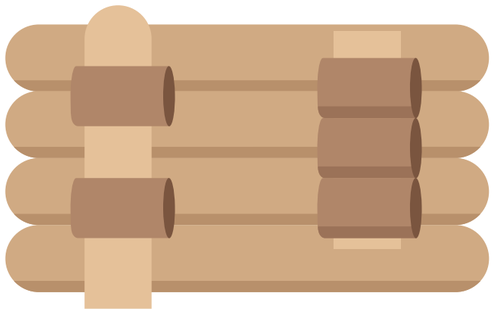
Flag 2 template



Raft building

Duration: 1 - 2 hours

Recommended age: 4+



Learning objectives

- To explore buoyancy, raft design, reusing materials and knot tying.
- Build a raft capable of carrying a load (egg, mug of tea, person, etc) for a distance and/or time.
- Use different materials for different age groups. I.e. junk modelling for Beaver/Cubs/Brownies and barrels, pallets etc for Scouts/Guides.

What you'll need

- **Buoyancy:**
  - Small = Coke cans, film canisters, corks, etc
  - Large = Barrels, 5L water bottles, etc
- **Structure:**
  - Small = Sticks, lolly sticks, pencils, etc
  - Large = Staves, logs, pallets
- Payload/Something to transport: e.g. mug of water, an egg, a team member!

Step-by-step instructions

Introduction

- Start by describing the challenge and the bounds.
- **Explain what the raft needs to do:**
  1. Float for 1 minute without spilling a mug of tea (for example).
  2. Carry someone across a pond – for larger rafts!
  3. Show the materials they can use.
  4. You can also judge rafts on how cool they look!

Plan it

- Think about your design before building – encourage your group to draw a diagram or sketch of their raft.
- Try some floating materials to see what works.
- Work in pairs or teams.

Build your raft

Test the rafts

Test the rafts with the agreed payload for the test time/distance.

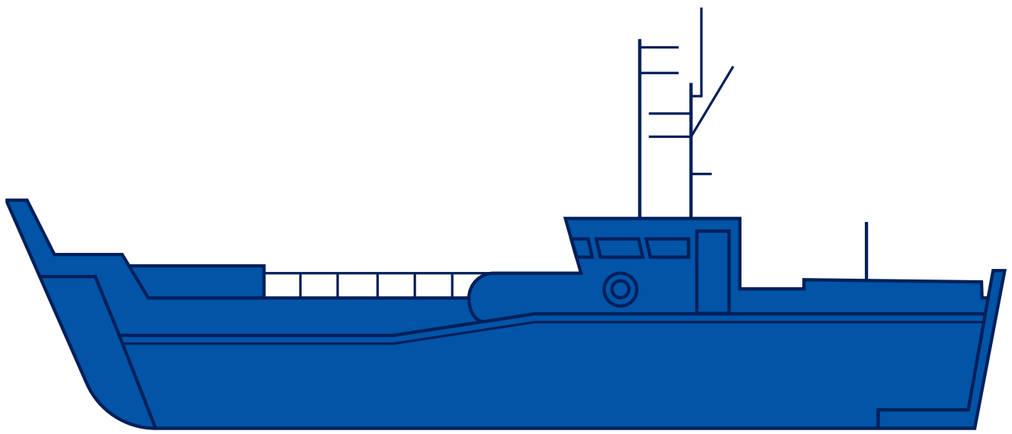
Discuss the results and wrap-up

- Which raft worked best?
- What made it strong or float well?
- What could you change next time?
- Celebrate all the creative designs!

Create a landing craft

Duration: 45 minutes

Recommended age: 7+



What you'll need

- Paper template (see page 11), one per person
- Scissors
- Glue
- Optional - coloured pens and pencils

Step-by-step instructions

Learn about landing craft

- Landing craft are small Royal Navy boats used by the Royal Marines.
- They carry troops, vehicles, and supplies from big ships to the shore.
- These boats are important for military missions and helping people during emergencies.

Below are some key facts about landing craft and what they do to share with your group.

Print out the landing craft templates, either individually or enough for pairs.

Tell the group to cut out the template, cutting along the solid lines only. The dotted lines are for folding.

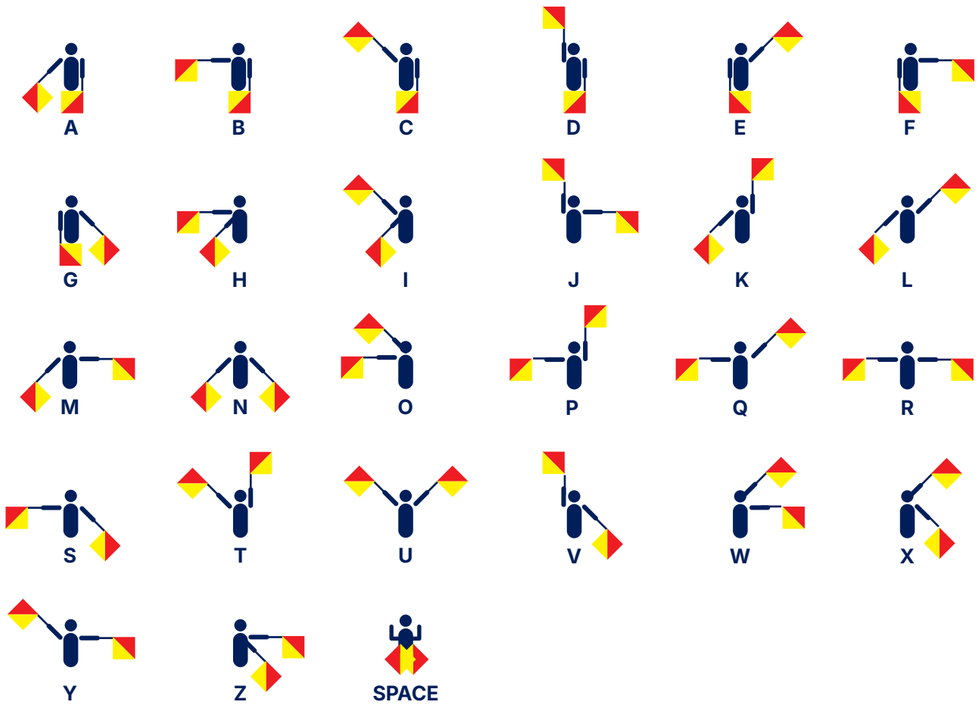
Optional: The group can colour in the landing craft on both sides of the paper, if they want to add a cool design and name the vessel.

Once cut out the group can fold the template to create the landing craft. Fold along all the dotted lines first.

Glue the corresponding tabs together.

Flag 1 template

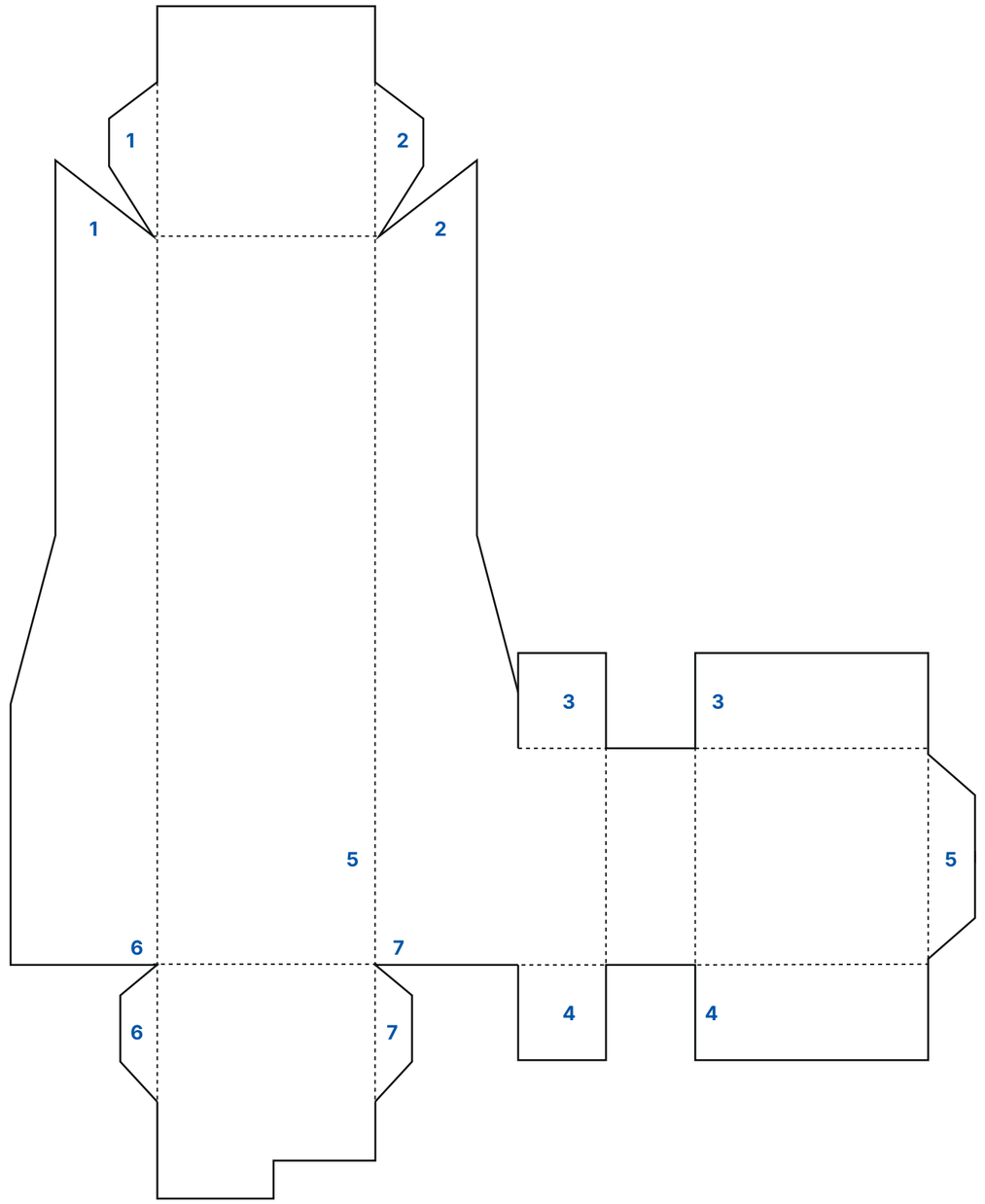
Talking with flags – worksheet



Use the semaphore alphabet above to translate the below word:

=

Now draw the symbols to spell out your name:



Talking with flags

Duration: 30 minutes **Recommended age:8+**

What you'll need

- Worksheets printed – can be one per group of 2-4.
- Flag template – can be one per group of 2-4.
- Stick or pencil
- Scissors
- Glue
- Tape
- Pens or pencils

Step-by-step instructions

Introduction to Semaphore

- Explain that Semaphore is a way of sending messages using arm positions and flags.
- It was invented in the 1790s and used on ships before radios and phones existed.
- Ask: "Does anyone know what Semaphore is or how it works?"

Start with a worksheet

- Hand out the Semaphore alphabet worksheet.
- Ask the group to spell out the word using the symbols on the sheet. The answer is BOAT.

Make your flags

- Print and cut out the flag templates.
- Tape or glue each flag onto a stick, pencil, or straw to create your own signalling flags.
- You can also use hand movements, but coloured flags make it easier to read the signals.

Practice in pairs or groups

- In pairs, use the flags to spell out your name to your partner.
- Take turns decoding each other's signals.

Add a competitive twist

- Split into two teams.
- Give each team a word to translate using Semaphore - the shorter the word the easier!
- The fastest team to decode the word correctly wins!

For older groups

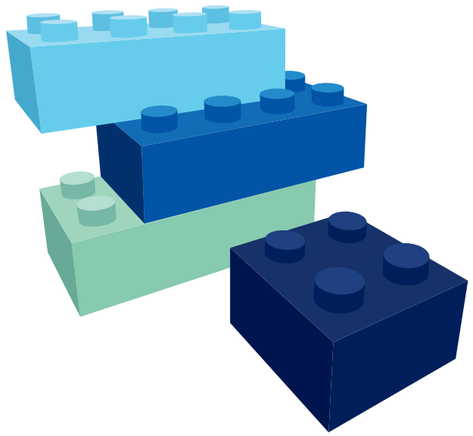
What other codes could we use to convey information?

Activity – create your own coding system for letters and numbers.

Secret building

Duration: 30 minutes

Recommended age: 6+



What you'll need

- Five to ten identical LEGO pieces per person (same shape and size for each pair)
- Timer (optional)

Step-by-step instructions

Pair up and sit back-to-back

- Split the group into pairs.
- Each pair sits back-to-back so they cannot see each other's work.

Distribute LEGO pieces

- Give each person in the pair the same set of LEGO pieces.
- Colour doesn't matter unless you want to add extra challenge.

Build the first model

- One person in each pair builds a LEGO model of their choice using the pieces.
- The other person must not look at what's being built.

Describe the model

- The builder now describes how to build the same model to their partner using only words.
- Set a 2-5 minute time limit to add pressure and excitement!

Reveal and compare

- Once time is up, both partners reveal their models.
- See how close they got to matching!

Swap roles and repeat

- Switch roles so the other person gets a turn to build and describe.

Reflect and discuss

After each round, ask pairs to share:

- One thing that went well.
- One thing they could do better next time.

Discuss as a group:

- What made communication easier or harder?
- How did you give or follow instructions?

Draw an engineer

Duration: 30 minutes - 1 hour

Recommended age: 7+

Learning objective

To challenge stereotypes and show that anyone can be an engineer, no matter what they look like or who they are.

What you'll need

- Paper
- Pens or pencils
- Optional: "Draw an Engineer" worksheet

Step-by-step instructions

Introduce the activity

- Explain that this is a fun way to think about what engineers do and who can be an engineer.
- Mention that engineers come in all shapes, sizes, and backgrounds and do many different jobs.

Hand out materials

- Give each person a piece of paper and a pen or pencil.

Draw an engineer

- Ask everyone to draw what they think an engineer looks like.
- There are no right or wrong answers - just use your imagination!

Add engineer qualities

- Once the drawings are done, ask them to write a few words around the picture:
  - What does an engineer need to be? (e.g. creative, smart, curious, good at solving problems)

Share in pairs

- Ask everyone to pair up and talk about their drawings.
- What did they draw? What qualities did they write down?

Group discussion

- Come together as a group and talk about what everyone noticed.
- Highlight that engineers can be anyone and we need all kinds of people to solve different problems.

Discussion points

- Has everyone drawn and written the same thing?
- Has anyone drawn something different to everyone else?
- Does anyone know any engineers?
- What is an engineer?
- Who can be an engineer?
- What do engineers do?
- What tools and equipment might an engineer carry?
- Do engineers need safety clothing?

What am I drawing?

Duration: 5 - 10 minutes

Recommended age: 4+

What you'll need

- Paper
- Pens or pencils

Step-by-step instructions

Set up the group

- Sit everyone down with their own piece of paper and a pen or pencil.
- Make sure they don't look at each other's paper.

Explain the rules

- Tell the group they must follow the instructions exactly as you read them.
- No asking questions or clarifying - just listen and draw.

Read the instructions aloud

- Read these slowly and clearly:
  - "Draw a semi-circle on your page."
  - "Draw a straight line from the middle of the semi-circle outwards."
  - "Draw a small triangle on the line."

Reveal the Intended drawing

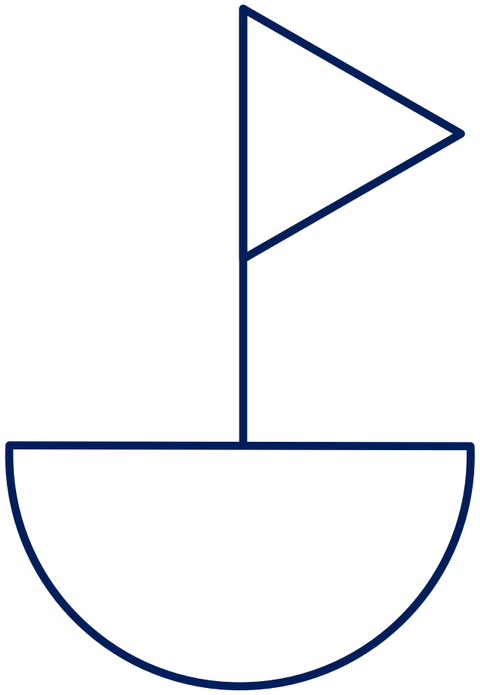
- Show the group the simple boat they were meant to draw.
- Let everyone share their drawings - expect lots of variety!

Discuss the results

- Ask:
  - "Did your drawing look like a boat?"
  - "What made the instructions hard to follow?"
  - "Why is clear communication important?"

Bonus activity: create your own instructions

- Ask each person to write their own instructions for drawing a boat, house, or stick figure.
- Pair up and test each other's instructions.
- Reflect:
  - "What worked well?"
  - "What could be clearer?"



Section 4: Communication

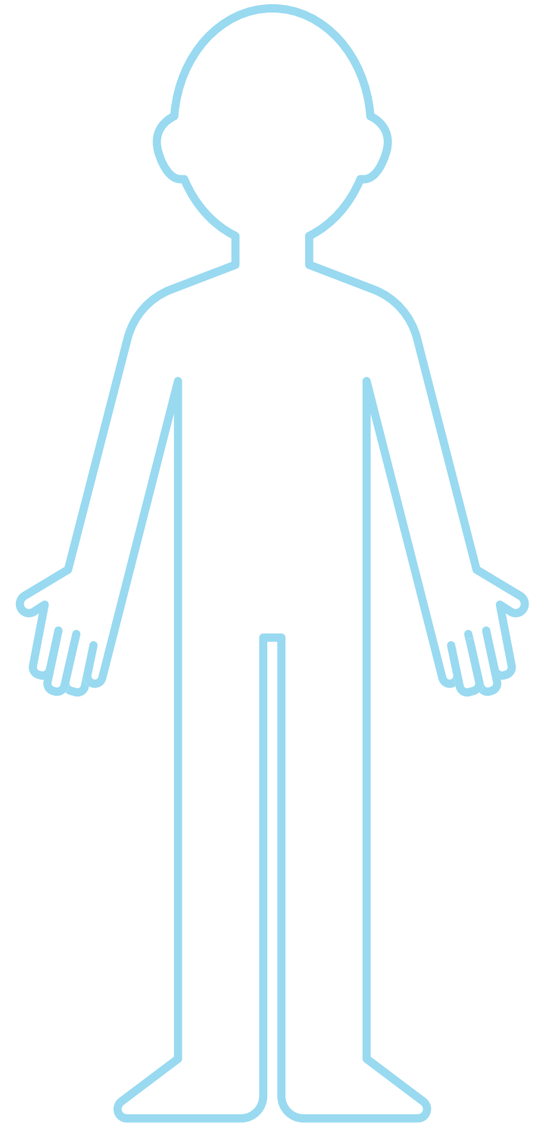
Good communication is helpful in all areas of life but it is particularly helpful at work to ensure employees have the information they need to perform well, have a positive environment and save wasted time. Sometimes at Babcock tasks can get quite complicated and so clear and correct language helps to explain things to others helping everyone work towards success.

In this section there are activities which help to show the need for clear instructions and test the group's communication skills.

Who is it suitable for?

Activity	Age 4-5	Age 6	Age 7	Age 8-9	Age 10+
	Squirrels	Beavers	Beavers	Cubs	Scouts
	Rainbows	Rainbows	Brownies	Brownies	Guides
What am I drawing?	✓	✓	✓	✓	✓
Secret building		✓	✓	✓	✓
Talking with flags				✓	✓
Port, Starboard, Forward, Aft			✓	✓	
Radio communications	✓	✓	✓	✓	
Warehouse whisper		✓	✓	✓	✓

What makes a good engineer?



Egg landing craft challenge

Duration: 1 - 2 hours **Recommended age: 6+**

Inspired by Stephanie Kwolek – Inventor of Kevlar

- She invented Kevlar, a super-strong material used in bulletproof vests and helmets.
- She was one of the first women to win big science awards for her work.
- She helped inspire more girls and women to become scientists and engineers.

Learning objective

Design and build a landing craft that protects an egg passenger when dropped from a height. Learn about gravity, impact protection, and engineering design.

What you'll need

- Hard-boiled eggs (or raw for extra challenge!)
- Cotton wool
- Elastic bands
- Cardboard boxes
- Empty cans
- Sellotape
- Balloons
- String
- Any other recycled materials!
- A safe place to drop your craft from (e.g. stairs, balcony, or step ladder)
- Plain paper for designing

Craft a Submarine

Duration: 30 - 45 minutes **Recommended age: 4+**

What you'll need

- Recycled materials – cardboard tubes/toilet roll tubes
- Card or paper
- Scissors
- Glue or tape
- Pens, pencils, paint
- Optional: Paper straws

Step-by-step instructions

Prepare your materials

- Distribute the recycled items and craft supplies to each participant.

Build the Submarine body

- Wrap a piece of blue paper around one toilet roll to form the submarine's body. Alternatively, colour the roll blue.

Add details

- Use a different coloured paper to wrap around the tube.
- Cut out small circles for portholes on the sides.
- Cut a hole on top for the fin.

Make the fin

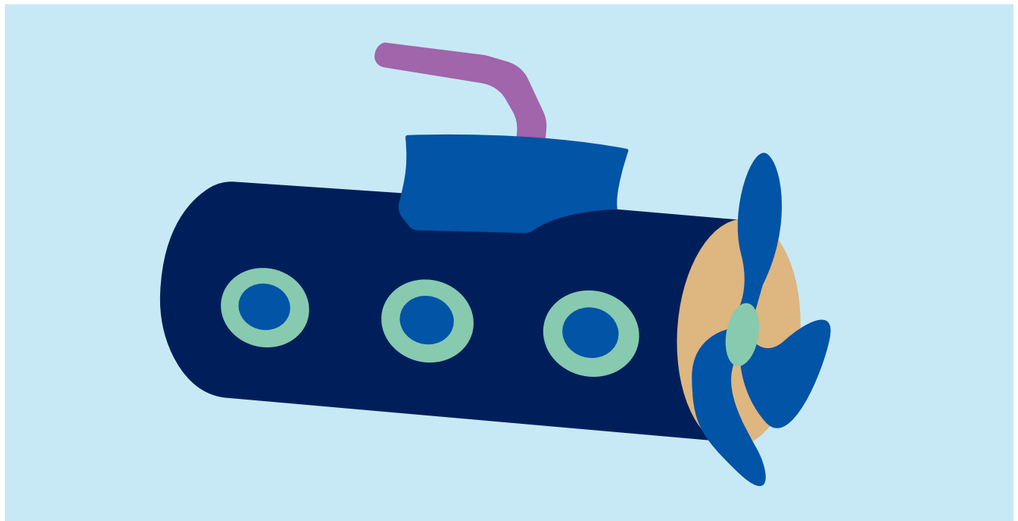
- Cut the second toilet roll in half and attach one half to the top of the submarine.

Periscope

- Use a paper straw or roll up a piece of paper to create a periscope sticking out of the fin.

Finish the ends

- Crumple up paper to fill the front and back of the submarine.
- Add a long oval piece of paper at the back to act as the propeller.



Periscope challenge

Duration: 1 hour **Recommended age: 7+**

What you'll need

- Cardboard box (an old cereal box would work well)
- Old mirrors or bought online/shop
- Cling film/tinfoil
- Sticky tape and glue

Learning objectives

- Understand how light reflects on a mirror and how this transfers to your eye.
- Understand why it is important to be precise when manufacturing a product.

Step-by-step instructions

Using an old cardboard box follow the instructions below to create your periscope:

- Make sure box is empty before using it.
- Print out or copy the template on the last page.
- Glue the template to the cardboard box and leave to dry.
- Cut around the template along the solid lines.
- Using a ruler to help, fold inwards along the dotted lines, using a ruler will allow the lines to stay straight.
- Glue or tape the flaps to create the shape of the periscope.
- Glue the mirrors into place on the sloped faces ensuring the mirrored face is visible!
- Wrap the box in paper or colour/paint the box to a design of your choice.

Reflection questions

- What happens if the mirrors aren't positioned correctly? Can you see?
- What happens if the shape of your periscope isn't perfectly straight?
- What do Babcock engineers need to think about when fixing periscopes?

Periscopes old and new

- The first naval periscope was invented in 1845 and consisted of a vertical tube containing two mirrors set at 45 degrees. These were used within submarines to see above the waterline when the submarine was fully submerged.
- Older style submarines use a traditional periscope similar to the one we have built using mirrors and pipes. Newer ones are a lot more advanced.

But how does the periscope work?

Light reflects away from a mirror at the same angle that it hits the mirror. In your periscope, light hits the top mirror at a 45 degree angle and reflects away at the same angle, which bounces it down to the bottom mirror. The reflected light hits the second mirror at a 45 degree angle and reflects away at the same angle, into your eye.

Make it harder by:

- Using raw eggs
- Dropping from higher places
- Limiting materials

Step-by-step instructions

Collecting materials

- This task can be done individually but it is recommended to run in small groups to minimise the number of eggs needed.
- Gather or ask the group to bring in a container and soft padding materials to act as protection for the egg.
- The container could be an egg box, plastic container or a small cardboard box etc. The padding could be bubble wrap, foam or paper etc.
- Any materials will work, it's fun to experiment and see what works and what doesn't.

Plan the design

- Get the group to draw a design or write a plan of their landing craft design.
- What shape will it be?
- What materials will you use?
- Start simple: one container, one type of padding inside, one type outside.

Build the craft

- Get the group to build their designs using their recycled materials.
- Place the egg into the container ready for testing.

Test it!

- Go to a safe location or use a ladder which allows enough height to drop the landing craft and egg passenger. This drop test will be imitating the harsh conditions of the landing craft going through sea and beaching on land.
- Did the egg survive?
  - If yes - great job!
  - If not - go back to their design and improve it.

Re-test and improve

Try encouraging them to change only one thing at a time.

- Add more padding
- Change the shape
- Use balloons or string to slow the fall

Discussion points

- What forces acted on the egg during the fall?
- How did your design protect it?
- Why is Kevlar used in real-life protective gear?
- Adaption for Scouts/Guides – complete a presentation on Stephanie Kwolek.

Spaghetti structures – build a crane

Duration: 1 hour **Recommended age: 6+**

Learning objective

Design, plan and construct a crane using spaghetti and marshmallows.

What you'll need

- Dry spaghetti (uncooked)
- Marshmallows – large and small
- Tape or string (optional for extra support)
- Ruler or measuring tape
- Paper and pencils
- Optional – small weight to hang off the top

Instructions

Plan your design

- Split the group into pairs or small groups.
- Introduce the activity concept and explain how they need to build a crane using only the provided materials, spaghetti and marshmallows. Provide images of cranes if needed.
- Ask them to think about what types of shapes and structures are the strongest. Hint: the answer is triangles or pyramids.
- Ask them to draw a design and plan how they will use the spaghetti and marshmallows to create a crane design.

Start building!

- Get the groups to start building their cranes using the spaghetti as beams and the marshmallows as joints.
- Don't forget spaghetti is very fragile!
- How could they make it stronger?
  - Double up the spaghetti?
  - Use reinforcements or supports?

Optional challenges:

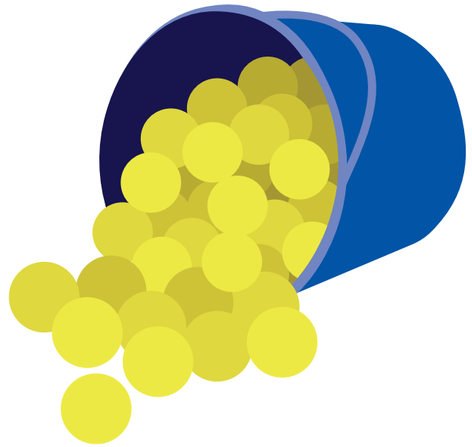
- Set a height requirement such as 30cm, or compete to see who can create the tallest crane.
- Hang a small weight from the jib (the part extending outwards from the rest of the structure) of the crane. See who's crane can balance and hold the weight.
- Set a time constraint for building such as 15 minutes.

Discussion points

- Why did certain structures hold more weight than others?
- What shapes were the strongest?
- What would you change next time?

Toxic transfer

Duration: 30 - 45 minutes **Recommended age: 6+**



What you'll need

- One Bucket, ideally with a rim. Filled with water (if outside) or tennis balls (if inside).
- Paracord or rope, three long lengths or lots of lengths of roughly 1m in length.
- Several different items such as clothes hangers, pencils, a book, wooden spoons, random items which could be useful or not.

Step-by-step instructions

Set the scene

- Your team must move a bucket of radioactive waste to a safe disposal zone. But beware! You cannot touch the bucket or the waste, and you must not enter the controlled area around it. Anyone who does is "eliminated" from the challenge.

Prepare the area

- Place the bucket on the ground.
- Mark a 1 metre radius around it as the controlled area - no one can step inside this zone.
- Mark a separate waste disposal zone where the bucket needs to be moved.

Brief the team

- The goal is to move the bucket from the controlled area to the disposal zone without touching it, spilling the contents, or entering the danger zone.
- Use only the ropes and items provided to complete the task.

Challenge time

- Give the team their materials.
- Let them plan, experiment, and work together to solve the problem!

Float a submarine

Duration: 1 hour **Recommended age: 10+**

- Observe the forces that act on a submarine when it's in water.
- Use the Cartesian Diver science experiment to demonstrate the principle of buoyancy.
- Create this experiment to help understand how submarines dive and resurface.

What you'll need

- Empty bottle
- Pen lid
- Blue Tack (or Playdough)
- Optional: Cups

Learning objectives

- Understand how buoyancy forces allow a submarine to dive and resurface.
- Understand how density is important when designing a submarine.

Step-by-step instructions

- Fill an empty plastic bottle you can squeeze with water. You may also want to fill a small cup with water for the initial buoyancy test.
- Use the pen lid and place some blue tack at the end to give it more weight. This will represent a submarine.
- Drop the pen lid into the bottle. The pen lid should float upright at the top of the water. If it doesn't stay upright, they should try adding more blue tack.
- It may be best to get the buoyancy correct in a glass of water first where it is easier to remove the lid and add blue tack.
- Once your pen lid is upright, squeeze the bottle gently and watch the pen lid sink to the bottom. Release the bottle and watch the pen lid rise to the top.
- Discuss why the pen lid does this.

Reflection questions

- Why does squeezing the bottle make the pen lid sink?
- What happens to your submarine if you add more weight to it and why?
- What do Babcock engineers need to think about when designing submarines? Think about weight, design and materials.

STEM heroes

Duration: Various **Recommended age: 10+**

What you'll need

- Mobile or internet access
- Pens, paper, and poster materials
- Post-it notes

Step-by-step instructions

Each participant chooses one STEM hero to research further:

- Avye Couloute - Founder of Girls Into Coding
- Dr. Hadiyah-Nicole Green - Medical physicist
- Tim Berners-Lee - Computer Scientist
- Tabitha Goldstaub - Tech Entrepreneur
- Tilly Lockey and Open Bionics - Social Media personality and amputee advocate
- Burt Rutan - Aerospace Engineer and Entrepreneur
- Gitanjali Rao - Inventor and Author
- James Watson - Molecular Biologist and Geneticist
- Dr. Merritt Moore - Quantum Physicist and Professional Ballerina
- Shinya Yamanaka - Researcher and Professor
- Jane Goodall - Primatologist and Anthropologist

They bring their research to the next session and create a poster answering:

- Who are they?
- What did they do?
- Why is this person a STEM Hero?
- How has their work impacted the world - or your life?

Group discussion

Ask

- "How might this person's work have affected your life?"
- "What difference has their invention or discovery made to society?"

Encourage deeper thinking

- "What makes someone a STEM Hero?"
- "Can anyone become one?"

STEM hero qualities wall

- Give each participant a few Post-it notes.
- Ask them to write down qualities or skills they think a STEM Hero needs (e.g. curious, brave, creative, determined).
- Stick them on the wall and discuss as a group.

Dragons Den

Duration: Various **Recommended age: 12+**

Learning objectives

Read and understand the information provided in the brief and translate this into a new, presentation format.

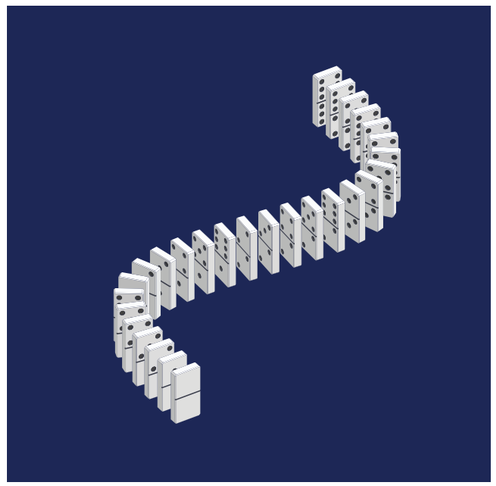
Provide a convincing presentation to the group including important facts and mitigating drawbacks.

Step-by-step instructions

- Print out a couple copies of each information card, or provide them digitally.
- Split the group into four or more groups, at least pairs to work in.
- Give each group one of the asset information cards below to present on and argue why the MoD should invest in their piece of equipment.
- Explain the goal of the activity:
- The task is to pitch a chosen project to the Ministry of Defence (MoD), which is seeking a new military asset.
- The goal is to persuade the MoD to approve and fund the project by highlighting its benefits whilst managing any concerns or drawbacks.
- The success will depend on how compelling and convincing they are in presenting the project as a valuable investment for the military.
- Give the group time (around 15 mins) to work on their presentations, provide paper for posters, or writing notes where needed.
- After the time is up they must present back to the leaders (acting as the MoD) and the rest of the group.
- Depending on the age and ability of the group you can choose how to provide feedback: Score the presentations out of 10, provide feedback on what went well and what could be improved, ask questions about areas you think need more information and ultimately decide if you will be investing.

The domino effect

Duration: 10 - 20 minutes **Recommended age: 7+**



This activity demonstrates how nuclear energy moves through a series of dominoes demonstrating a chain reaction and the basic concept of nuclear fission. A neutron hits an atom which causes it to split into more neutrons, which hit also start hitting other neutrons, continuing a cycle. The split of neutrons creates heat energy that can be used to create electricity when controlled. If uncontrolled, the energy can be used in atomic bombs or causes disasters such as the Chernobyl disaster.

What you'll need

- 1 x Pack of Dominoes, more if available to allow big creative designs or splitting into groups.
- Pencils

Step-by-step instructions

Set up

Arrange dominoes upright in a triangular pattern:

- Start with one domino in the first row, two in the second, three in the third, and so on.
- Keep dominoes close enough so one will tip the next.

Demonstrate

- Gently push the first domino.
- Watch as the "energy" (like a neutron) travels through the whole group, knocking them all down in a dramatic, uncontrolled chain reaction.

Discuss

- Explain that this is like an uncontrolled nuclear reaction, where energy spreads quickly - like in an atomic bomb or a nuclear accident.

Controlled chain reaction

Set up

Arrange dominoes upright in a triangular pattern:

- Arrange dominoes in a single line or creative pattern, close enough to knock each other over.

Demonstrate

- Push the first domino and watch the controlled, steady reaction.

Add control rods

- Place pencils between some dominoes to act as "control rods."
- These stop or slow the chain reaction, just like in a nuclear reactor.

Experiment

- Try different patterns, lengths, or obstacles.
- Compete for the longest or most creative controlled chain reaction.

Discussion points

- What's the difference between controlled and uncontrolled reactions?
- Why do we need control rods in nuclear reactors?
- How does this relate to real-world nuclear power and safety?

Section 3: Nuclear

At Babcock, we do some really exciting work with nuclear technology and submarines! Submarines are amazing underwater machines that can travel deep beneath the ocean, and nuclear power helps them stay underwater for a very long time without needing to come back up.

Lots of different people help make all this happen - engineers, scientists, designers, and many others. Even though everyone has their own special job, it's important for everyone to understand a little bit about how submarines work and why nuclear power is so useful.

In this section, you'll find activities that help you explore the science of nuclear energy, the design of submarines, and what life might be like on a submarine under the sea.

Who is it suitable for?

Activity	Age 4-5	Age 6	Age 7	Age 8-9	Age 10+
	Squirrels	Beavers	Beavers	Cubs	Scouts
	Rainbows	Rainbows	Brownies	Brownies	Guides
The domino effect			✓	✓	✓
Float a submarine					✓
Toxic transfer		✓	✓	✓	✓
Periscope challenge			✓	✓	✓
Craft a submarine	✓	✓	✓	✓	

Dreadnought – Next Generation Class Submarine

Project details

Continuous at Sea Deterrent (CASD) is a special mission that helps keep the UK safe. It means that, every single day and night, there is always a Royal Navy submarine deep under the ocean, watching over the country.

These submarines carry ballistic missiles called nuclear deterrents. They are not meant to be used in battle, but instead, the aim is to stop other countries from trying to start a war. This is because if the UK always has a submarine ready it immediately helps protect the UK and keep peace in the world. CASD has been running for over 50 years without stopping, making sure the UK is always safe and secure.

Importance of this project

- **Boosts UK Defence:** Helps the UK stay strong against powerful nations like Russia and the USA.
- **Creates jobs:** Estimated 22,000 new jobs for engineers, factory workers, and project managers required for this project
- **Advanced Technology:** New advanced technologies continued from the previous submarine class PWR3 reactors no refuel required. Moving away from the traditional style of rudder, the X-form rudders increase stealth at high speeds, whilst maintaining control and safety.
- **Building Partnership:** Babcock promise to provide future through-life maintenance on the new Dreadnought-class submarine.

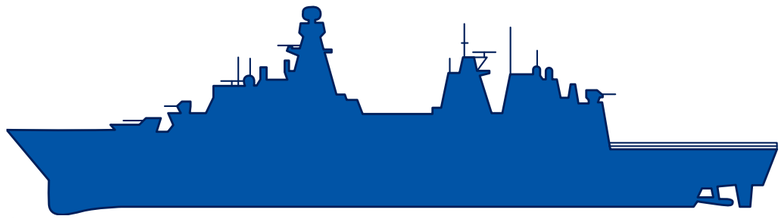
Challenges of this project

- **Takes a long time:** Delivering 4 new submarines will take 15+ years and because it's a large project it increases the likelihood of potential delays.
- **Very expensive:** The unit cost of the Dreadnought-class submarine is £10 billion. The overall project cost is £40 billion.
- **Maintenance issues:** Right now, the UK doesn't have the facilities to repair the new PWR3 reactors.
- **Keeping secrets safe:** The UK must protect its submarine technology from rival countries (Intellectual Property).

Asset facts & figures:

- Engine: PW3 Nuclear Reactor (never needs refuelling!)
- Weapons: 12 ballistic missile tubes & 4 torpedo tubes
- Size: 153.6m long, 12.8m wide
- Weight: 17,200 tonnes
- Crew: 130 people

T31 Warships – The future of Naval Defence



Project details

The Type 31 Frigate, also known as the 'Inspiration' class, is the next-generation Royal Navy warship. It is a fast, powerful, and technologically advanced vessel designed to protect the UK's waters, strengthen international security, and support humanitarian missions.

- **Built for strength & speed:** Moves at 26 knots (30 mph) and can withstand rough seas and enemy attacks.
- **Super smart sensors:** Advanced radars help detect enemy threats, illegal activities, and emergency distress signals.
- **Powerful defences:** Equipped with big guns and guided missiles to defend against attacks.
- **Multi-purpose mission support:** Can be used for anti-piracy operations, search-and-rescue missions, and global naval partnerships.
- **International impact:** The design is exportable to other countries, generating income and supporting global security alliances.

Importance of this project

- **Modern defence & security:** The T31 warships will protect the UK from emerging threats, including piracy, cyber warfare, and military conflicts.
- **Boosts the UK economy:** Keeps British Shipyards active creating 2,500 jobs and 150 new apprenticeships developing the UK's Shipbuilding industry.
- **Global export opportunities:** Selling these advanced warships to allied nations will bring revenue into the UK.
- **Strengthens international relations:** The T31 warships will be used in joint naval exercises, improving global security partnerships.
- **Future-proof design:** Built with modular technology, allowing upgrades and long-term sustainability.

Challenges of this project

- **Balancing flexibility vs specialisation:** The Type 31 is a general-purpose warship, meaning it must be good at multiple tasks (anti-piracy, rescue missions, naval defence, etc.). However, it may not be as powerful in any one specific role compared to specialised ships.
- **Time-intensive:** Full deployment will take up to 10 years, requiring long-term commitment.
- **Dependence on foreign suppliers for components:** Many high-tech components, such as radars, weapons systems, and engines, rely on foreign suppliers.
- **High development & maintenance costs:** Although the Type 31 is considered a "low-cost" frigate, each ship still costs £250 million, and the entire project is expected to exceed £2 billion.

Asset facts & figures:

Size: 138.7m in length

Speed: 26 knots

Crew: 140 personnel

Fleet Size: 5 warships planned (Venturer, Active, Formidable, Bulldog, Campbeltown).

Infrastructure Investment: £100m spent upgrading Rosyth Dockyard for warship construction. £55m additional investment in advanced naval technologies.

TATHER

	2				

GPHNISHI

			13				

EMASERNU

				4			

ASECRAM

			7			

LINGO

			3	

MERGECYNE

								11

1	2	3	4	5		6	7	8	9	10	7

11	9	12		13	2	14	10	7

Code breaker puzzles – worksheet

Level 2

SRUVI

			12	

RCKHEA

			5		

RTNELOI SNGEROI

9						

ULBGNCYEBIR

		6			6						

WENRKOT

		1				

ICYARPV

	10					

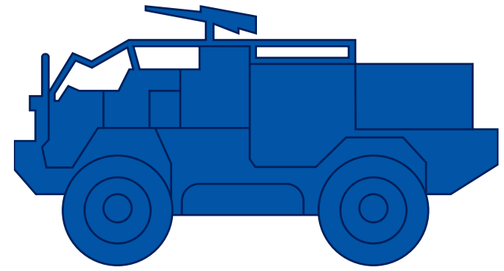
ADKR EBW

	14					

The Jackal 2 – Super-Powered Army Vehicle

Project details

The Jackal 2 is a fast, powerful, and heavily armoured military vehicle designed to keep soldiers safe while traveling through dangerous terrain. Unlike tanks, which are slow and heavy, the Jackal 2 is built for speed and flexibility, making it ideal for quick missions.



- **Super speed:** Reaches 80mph, as fast as a car on the motorway!
- **High protection:** Thick armour protects against explosions and enemy attacks.
- **Powerful weapons:** Equipped with a 360-degree rotating machine gun for all-around defence.
- **All-terrain capability:** Designed to handle deserts, mountains, and forests with ease.
- **Essential for missions:** Used by the British Army for patrols, transport, and support operations.

Importance of this project

- **No extra factory costs:** The Jackal 2 can be built in existing UK facilities, saving money.
- **Highly versatile:** Unlike tanks, the Jackal 2 works well in deserts, mountains, and forests.
- **Multi-purpose design:** Can be customised for desired operations patrol missions, transporting troops, or supporting attacks fitting either machine guns or grenade launchers.
- **Strong military demand:** Already proven success with the Jackal series already used by the military.
- **Strong export potential:** Other countries might be interested in buying Jackal 2, bringing money into the UK.

Challenges of this project

- **Supply chain delays:** Some parts are imported, which means shortages could slow down production. i.e If a key component like the suspension system is delayed, the entire production line could be affected.
- **Resource problems:** There is currently only two qualified inspectors, which could cause delays if issues are found during checks. Context: it takes an individual inspector a day to inspect two Jackal units.
- **Competition from other vehicles:** Other armoured vehicles already exist that might compete for funding or interest. i.e If a newer, more advanced vehicle is developed, the Jackal 2 might lose military contracts.
- **Expensive to transport:** Getting the Jackal 2 to different locations could be costly. A challenge to ship Jackal 2 to desired location whether that's to mission site or exporting to international countries.
- **Army Mission Support:** Landing Crafts (LCVP MK5 & LCU MK10.

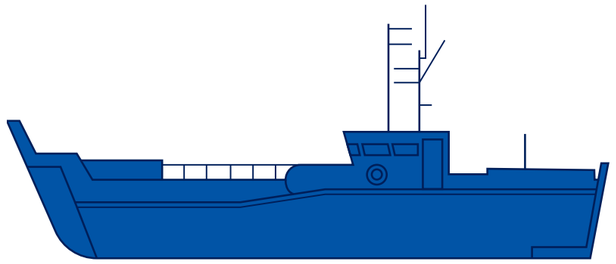
Asset facts & figures:

Size: 5.39m (length) x 2.00m (width) x 1.97m (height)	Weight: 6,650kg	Crew: 3 people (Driver, Co-Pilot, Gun Operator)	Cost per unit: £50,000	Total cost for 500 Jackal 2: £25 million

Landing crafts

Project details

Landing crafts are special boats used to transport soldiers, vehicles, and supplies from big ships to the shore, even in rough conditions. They have been used in major military operations, such as D-Day in World War II, and continue to play an important role in modern warfare and emergency response.



- **Essential for military missions:** Can quickly unload troops and vehicles in places with no ports or docks.
- **Useful in emergencies:** Can help rescue people or deliver aid in disasters like floods and tsunamis.
- **Tactical advantage:** Allows stealthy, fast deployment of forces in enemy territory.

Importance of this project

- **Multi-purpose use:** Supports Royal Marines in training and combat and can also be used in disaster relief efforts.
- **100% UK built:** All materials and systems are sourced in the UK, boosting the national economy.
- **Essential for rapid deployment:** Landing crafts allow quick, flexible movement of troops and equipment, especially in locations where traditional ports are unavailable.
- **Upgradable for the future:** Possibility to add self-driving technology or bigger versions for modern warfare.

Challenges of this project

- **Declining demand:** Landing crafts are not as widely used as before, making large-scale production difficult to justify.
- **Future fuel & sustainability concerns:** Both landing crafts rely on diesel engines, which are less fuel-efficient and create high emissions.
- **Limited defensive capabilities:** Landing crafts are not well-armed and can be easily attacked by enemy forces. Moving at 8 knots (9mph) increases risk for frontline operations without naval or air support.
- **Declining demand for landing crafts:** Traditional warfare strategies are changing, and many modern naval forces are moving towards helicopters and drones for troop deployment. If global demand continues to fall, the project might struggle to justify long-term investment.

Asset facts & figures: Landing Craft Vehicle Personnel (LCVP) MK5 – Fast attack & transport

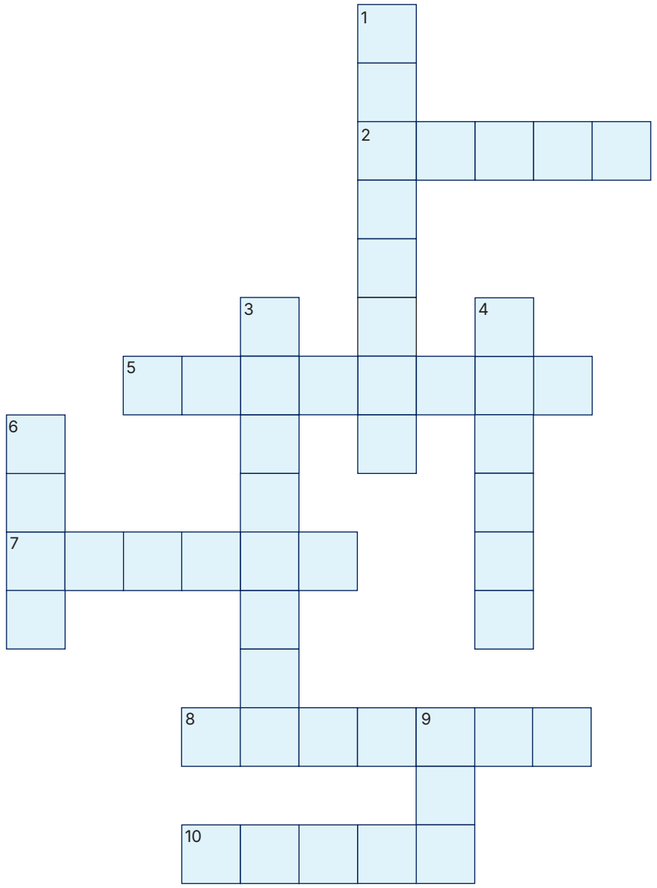
- Size: 15.7m (length) x 4.3m (width)
- Speed: 25 knots (about 29 mph)
- Range: 210+ nautical miles
- Carries: 35 fully equipped soldiers or military vehicles
- Units: 9 each worth £1 million

Asset facts & figures: Landing Craft Utility (LCU) MK10 – Heavy transport & deployment

- Size: 29m (length) x 7.4m (width)
- Speed: 8 knots (about 9 mph)
- Range: 600+ nautical miles
- Carries: 120 Royal Marines OR 4 Viking Armoured Vehicles OR 1 Challenger Battle Tank
- Units: 8 each worth £5 million

Code breaker puzzles – worksheet

Level 3



Across

2. What you should think twice about doing with photos or personal info
5. The place where websites, games, and videos live
7. Someone you know and trust - not just someone who sends you a request
8. Type of information you should never share online (like your address!)
10. What you do with a mouse to open a link or button

Down

1. A secret word or phrase that keeps your account safe
3. Someone you don't know online or in real life
4. What you should do if something online makes you feel uncomfortable
6. How you should always try to be when using the internet
9. What you should do before downloading or signing up for something

Which answer matches up with each question?

Password, Internet, Stranger, Private, Click, Report, Safe, Ask, Friend, Share

Code breaker puzzles – worksheet

Level 1

X F S T R A N G E R P J O S N Y B Q
I U I F B E V N O V H S X A E I L Q
Q I E R N Y I Z X C I F M R T C U I
K S Y P E L F E H H S Y Z E W R E R
E A B Z N W K R A D H C P M O D T L
X M L O Y M A C D E I N E A R R O N
U X I A G W P L M S N B K C K O O O
Y D C R R E J A L J G I E E L W T I
Q Z L J C M N H A C K E R W R S H T
D Z G P P R I V A C Y S M E D S J P
X W M E E T E C E U P K B M W A Z Y
R U R S H S H B G B Y V P E F P C R
V G U R V G N I Y L L U B R E B Y C
W F E I P S L Y S C C S Q G Y M Z N
Z A R H U C I O L X I D K E L O M E
T U V R L T F U G T L X B N Z M H D
S S I X Q R I J E I R Z E C H V H Q
U V Q Y E B W U Q X N W B Y Q E W F

Alarm
Cyberbullying
Emergency
Hacker
Online
Privacy
Username
Web
Bluetooth
Cybercrime
Encryption
Login
Password
Stranger
Virus
Website
Cameras
Dark
Firewall
Network
Phishing
Threat
Virus
WiFi

Section 2: Home Safe Every Day

At Babcock everyone has a commitment to go ‘Home Safe Every Day’. This means we work to ensure the safety of ourselves and others at all times no matter what job we are doing. Whilst there are particular people hired to help keep people safe, it takes action from everyone to make an environment safe.

In this section there are activities which introduce the idea of keeping ourselves safe when out and about in the real world, as well as when online.

Who is it suitable for?

Activity	Age 4-5	Age 6	Age 7	Age 8-9	Age 10+
	Squirrels	Beavers	Beavers	Cubs	Scouts
	Rainbows	Rainbows	Brownies	Brownies	Guides
Spot the hazard	✓	✓	✓	✓	
A safety walk		✓	✓	✓	
Make a Babcock pass		✓	✓	✓	
Poster project			✓	✓	✓
Password cracker			✓	✓	✓
Code breaker puzzles				✓	✓

Password cracker

Duration: 30 - 45 minutes

Recommended age: 7+

What you’ll need

- Pen and paper

Step-by-step instructions

Form teams

- Split the group into teams of four.
- Each team stands in a line.

Explain the challenge

- The goal is to pass a password (two or three words) down the line using different methods.
- Only Player 4 can deliver the final password to the group leader.

Start the relay

- Player 1 is given a question or word by the leader.
- Player 1 whispers the answer to Player 2.

Draw it!

- Player 2 draws the word or answer on paper (no words or letters allowed).
- Pass the drawing to Player 3.

Act it out!

- Player 3 looks at the drawing and acts out what they think it is (no speaking).
- Player 4 watches the acting.

Deliver the password

- Player 4 remembers the word and runs to the group leader to whisper the password.

Repeat & rotate

- Rotate roles so everyone gets a turn at each stage.
- The team that delivers the most correct passwords wins!

Discussion points

- What made the password hard or easy to pass along?
- How did your team work together?
- What could you do differently next time?
- Pick two or three words to compile a ‘password’:
  - Fish, boat, crab, wave, bubble, dive, swim, starfish, shark

After completing the password cracker, the group can try out the code-breaker puzzle worksheets for some more cyber-security themed challenges.

Print a few copies and hand them out.

Poster project

Duration: 20 - 30 minutes

Recommended age: 7+

What you'll need

- Pens and pencils
- Paper (ideally A3 or bigger)

Step-by-step instructions

Introduction

- Explain that presenting information is an important skill, used in many jobs (like explaining business finances or sharing safety updates).
- Ask: "Can you think of other times when a business or group might need to present information?"

Form groups

- Split into small groups.
- Each group will create a poster about a safety topic.
- Older participants can use their phones to look up information if needed.

Choose a topic

Pick from topics such as:

- What does safety mean to you?
- Why is safety important?
- How do we stay safe every day?
- Road safety, water safety, cooking safety, exercise safety
- How we stay safe at school or at home
- What to do if you get hurt or injured
- Any other health and safety topic

Create your poster

- Work together to design and make your poster.
- Include key facts, drawings, and tips.

Prepare your presentation

- Decide who will say what.
- Practice explaining your poster to the group.

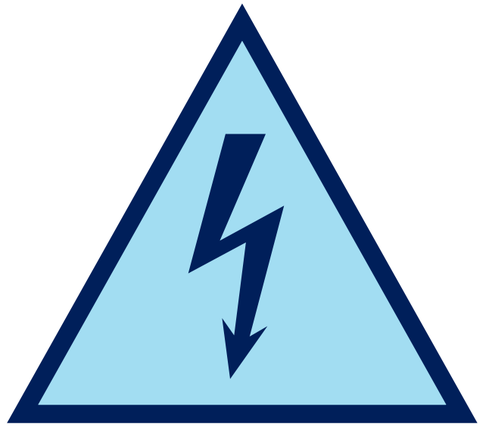
Present to the group

- Work together to design and make your poster.
- Include key facts, drawings, and tips.

Spot the hazard

Duration: 15 minutes

Recommended age: 4+



What you'll need

- Worksheet
- Notepad/paper
- Pen/pencil

Step-by-step instructions

Introduction

- Explain that the goal is to find things in a scene that could be dangerous (hazards).
- Share these definitions:
  - **Hazard:** Anything that could cause harm.
  - **Risk:** How likely it is that a hazard will cause harm, and how serious that harm could be.

Set up the activity

- Show the group a worksheet or picture of a busy scene (on paper or a screen).
- Decide if you'll work as a big group or in small teams (two - three people). Teams can race to find hazards if you want!

Spot the hazards

- Look at the scene and write down everything you think is unsafe or could cause an accident.
- You can use a timer (1 - 5 minutes) or just work together as a group.

Make it safe

- For each hazard, write down or discuss how you would make it safe.

What is a Risk Assessment?

- Explain that writing down hazards and how to fix them is called a risk assessment.
- A risk assessment helps people know what could hurt them before they start a job, so they can protect themselves.

Discussion questions

- Why is it important to spot hazards before starting work?
- Can you think of a time when spotting a hazard helped prevent an accident?
- Who uses risk assessments in real jobs?

Spot the hazards at the park worksheet

What hazards can you see?

Make a Babcock pass worksheet

Draw yourself here

Name: .....

Age: .....

Favourite food: .....

Favourite colour: .....

Hobbies: .....

.....

.....

Why is safety important: .....

.....

.....

Name: .....

Age: .....

Favourite food: .....

Favourite colour: .....

Hobbies: .....

.....

.....

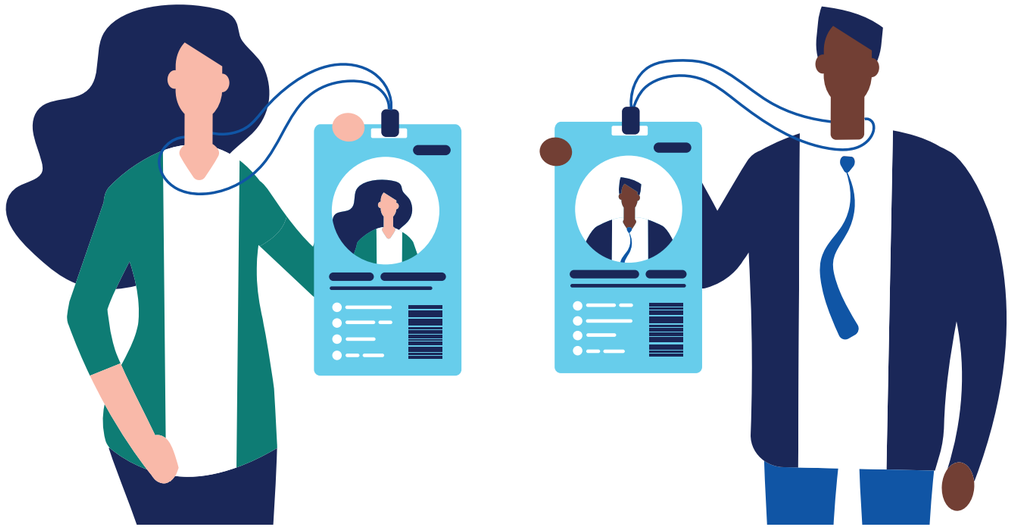
Why is safety important: .....

.....

.....

Make a Babcock pass

Duration: 10 minutes **Recommended age: 6+**



What you'll need

- Babcock security pass worksheet or plain paper
- Pens and pencils
- Scissors (optional)

Step-by-step instructions

Introduction

- Explain that to enter a dockyard or any secure site, you must show a security pass - just like a passport for entering a country.
- The pass proves you are who you say you are and that you're allowed to be there.

Make your own security pass

- Hand out printed worksheets for making a security pass or use plain paper for everyone to design their own.
- Remind the group: This is just for fun - making fake passes in real life is not allowed!

Fill out the pass

- Give everyone time to fill out their pass with details like name, photo (drawn), favourite colour, and favourite food.

Role play the security check

- The leader or a chosen person acts as the security guard.
- Each person must show their pass and answer questions about what's on it (e.g., "What's your favourite food?") to prove it's really theirs.

Discussion (optional)

- Talk about why it's important to only let the right people into a school or workplace.
- Ask: "What could happen if someone without a pass got in?".

Spot the hazards in the classroom worksheet

What hazards can you see?

A safety walk

Duration: 30 minutes **Recommended age: 6+**

What you'll need

- Outdoor clothing, preferably Hi-Viz
- Optional: checklist
- Optional: pen and paper

Step-by-step instructions

Introduction & briefing

- Explain that you'll be going on a walk to look for hazards - things that could cause harm.
- Share these definitions:
  - **Hazard:** Anything that could cause harm.
  - **Risk:** How likely it is that a hazard will cause harm, and how serious that harm could be.
- Discuss why it's important to spot hazards in everyday life.

Before the walk

- Ask older children to write down or discuss what hazards they expect to find.
- Remind everyone to stay together and listen to leaders for safety.

Go on the walk

- Walk around your local area as a group.
- Use the checklist on page 28 to help spot hazards.
- Leaders should prompt discussion and point out hazards as you go.

After the walk

- Ask everyone to update their list with any new hazards they noticed.
- Discuss as a group:
  - What hazards did you find?
  - How could you make each one safer?
- Encourage everyone to suggest ways to reduce or avoid these risks.

Optional: Safety Champion

- Award a "Safety Champion" title to the person who spotted the most hazards or acted the safest during the walk.

A safety walk – worksheet

Use this checklist to spot hazards on your walk:

- ☐ Slippery surfaces (wet leaves, moss, ice)
- ☐ Poor visibility (dark clothing, dim lighting)
- ☐ Low-hanging branches
- ☐ Blocked pavements (bins, parked vehicles)
- ☐ Litter or broken glass
- ☐ Construction areas or workmen
- ☐ Road safety (crossings, speeding cars)
- ☐ Unstable ground (loose gravel, potholes)