

The Royal Navy

The Royal Navy is made up of a number of vessels, including the following:



A Type 45 Destroyer

designed for a huge range of tasks, from hunting down pirates to defending the Fleet from air attack



Queen Elizabeth-class aircraft carriers

are the biggest warships ever built for the Royal Navy



The Astute-class submarines

are the largest, most advanced and most powerful attack submarines ever operated by the Royal Navy



The HMS Protector

a ship used to explore areas such as the Antarctic

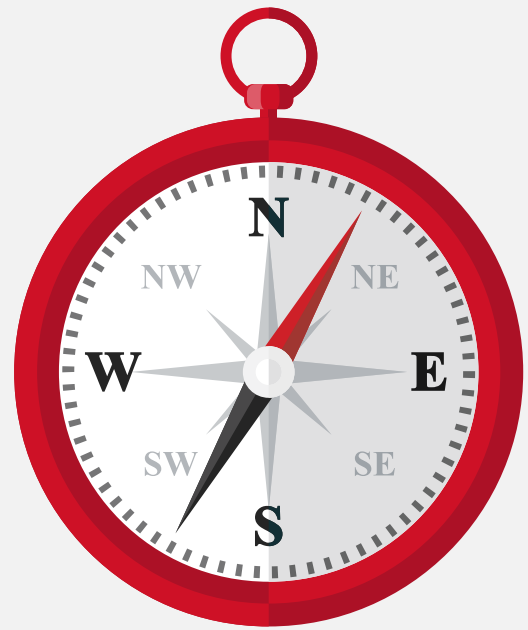
Learn about: How magnetism works in compasses

Make your own Compass

The magnetic compass is an ancient navigational tool used to indicate north, south, east and west. It's composed of a magnetised needle that aligns itself with the earth's magnetic field to point north.

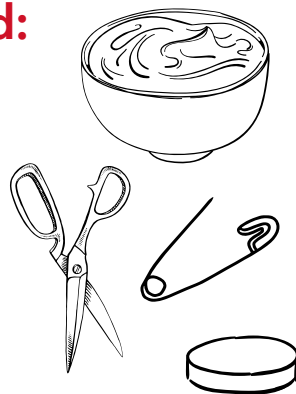
In the Navy they use different navigational tools and systems to precisely track a ship's position and course across the ocean.

If you find yourself lost without a compass, you can easily make your own using a piece of magnetised metal and a bowl of water.



You will need:

- Ferromagnet
- Needle/Safety Pin
- Paper
- Bowl of Water
- Scissors
- Adult Supervision



Instructions

1. Rub one end of the needle on one side of the magnet 30 times (the north pole if your magnet is labelled). Rub in one direction, not back and forth.
2. Flip the magnet over and rub the other end of the needle on this other side 30 times. Again, rub in the same direction.
3. Cut a circle about 2 inches in diameter out of the paper.
4. Carefully thread the needle through the paper circle twice, but not all the way through, so that the needle lays flat on the paper.
5. Carefully place the paper and needle on the surface of the water. Both ends of the needle should be above the floating paper circle.
6. Watch it slowly rotate and then stop.
7. Check the directions with a compass. One end of the needle (the one that you rubbed on the north pole of the magnet) should point to north and the other south.
8. Label the circle with the corresponding N (north) and S (south) directions. You now have a homemade compass!

Source: <https://www.rookieparenting.com/make-your-own-compass/>

Learn about: How reflection and refraction work in periscopes

Make your own Periscope

A periscope allows you to look over at objects or people from around a corner, or from a higher vantage point than normal. While modern submarines and other high-tech vehicles usually use a more complex system of prisms and lenses, or multiple 360° rotating photonics masts with high resolution cameras, the basic mirror periscope described below is easy to make at home, and provides a clear enough image that it was widely used for military purposes well into the twentieth century.



You will need:

- Large cereal box or an A4 size or larger piece of cardboard
- Glue stick or Masking tape
- Craft knife / Scissors
- Paint for decoration (Optional)
- 2 mirrors 2" by 2" (5cm x 5cm) or aluminium foil
- [Periscope template](#)
(Click on me to download)

Making the periscope:

1. Print off the Periscope template and glue it onto the cardboard.
2. Once the glue has dried carefully cut out the template along the solid lines being careful not to cut off the end flaps.
3. Using the ruler as a guide, ask an adult to score down the dotted lines with the craft knife.
4. Fold all of the scored lines inwards. Folding over the ruler will help keep the folds straight.
5. Fold the periscope over to make a tube, glue and secure with masking tape if needed.
6. Glue the flaps at the end of the periscope down.
7. Glue and insert a mirror into each opening of the periscope.
Note: If you do not have a mirror, stick some aluminium foil to a 5cm x 5cm piece of card. Make sure there are no wrinkles and the shiny side is facing out.
8. The edges of the periscope can sometimes end up looking a bit untidy in the places where you scored it. You can tidy them up with a little masking tape if you like.
9. It's a good idea to paint your periscope in a neutral colour or something that will blend into its surroundings. So if you're using it in the garden, you may want to paint it green!
10. For the ultimate secret stakeout, you may want to consider camouflaging your periscope with a little of its surroundings, if you're outside think about sticking some leaves or twigs to it!

<https://www.cnhs.org/ourpages/auto/2018/5/9/54422247/Periscope.pdf>

Learn about: Spelling

Naval Wordsearch

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

Find the following words in the puzzle.

Words are hidden ← → ↑ ↓ and ↘

ADMIRAL
CAPTAIN
LIEUTENANT
RAYTHEON
SHIP

AIRCRAFTCARRIER
COMMODORE
MARINER
ROYALMARINE
STEM

BARRACKS
ENGINEERING
MARITIME
ROYALNAVY
SUBMARINE

BOAT
FLEET
MATHS
SAILOR
TECHNOLOGY

Meet our STEM Ambassador

Kevin



1. How do STEM subjects fit into your role at work?

Science, Technology, Engineering and Maths... I am involved at all levels of the Design and Manufacture of Electronic Equipment, dealing with components some no larger than 0.25mm x 0.25mm x 0.125mm to machines that weigh several tonnes.

We work in an environment where these parts may reach high temperatures of 260°C and low temperatures of -40°C...

Every day we think in terms of how much, how quickly, how safely, how best, how to improve. We use all the tools we can get our hands on from screwdrivers and spanners to software and simulation.

We make and model, create and transform...using S.T.E.M at every turn, on every decision, on every fact and sometimes on every assumption.

We, try and prove and establish processes and procedures, and combine all our knowledge to build one thing of beauty, then ten things of beauty, then maybe even hundreds or even thousand of things and this enables us to make each one as identical to the last as is feasible. Now that's Engineering...

2. Have you found STEM working in unexpected places?

STEM is in everything we make and has been used to make everything that you use and see in your day to day life, from a Pencil to the International Space

station, to the ships and planes of the Royal Navy!

3. What advice would you give to someone who wanted to study STEM subjects or follow a STEM career path?

Find out what you love and enjoy doing and then turn that thinking on its head. Where in the world would I use those skills in a work place environment?

For me it was Engineering and believe me when I say everything is Engineered, OK maybe not a tree or a bumble bee... but everything in our 'made' world has been through the head of a designer and the hands of an Engineer. Imagine doing things you like and getting paid for it.

4. Who is your STEM inspiration or role model, and why?

Growing up, I was influenced primarily by my family. My great-granddad, granddad, dad and my brother have all been boat builders! So, from a young age, I have always been around engineering and boats. I guess it was no surprise when I joined the Royal Navy as an Engineering Officer Cadet. This was the best move I could have made, and I owe everything I am today to those years in the Navy, not only did it teach me about engineering but also how to deal with tough situations – it was an invaluable experience!