



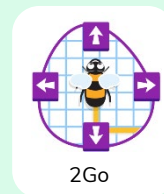
Year 3

Route Planners

Key Learning

- To create 2Go commands to move a turtle along a route.
- To create commands in 2Go in which the turtle turns using rotation.
- To plan algorithms and write 2Go code that uses angle of turn.
- To use 90° and 45° angles in 2Go.
- To use the repeat algorithm and coding in 2Go.

Key Resources



Key Vocabulary

Algorithm

A set of instructions in order.

Degrees

The unit used to measure rotation.

Repeat

This can be used to make a block of commands run a set number of times.

Angle

(In relation to rotation), this gives a number value to the amount of rotation movement. For example, a quarter-turn is 90 degrees (°).

Route

A path an object takes to get from one place to another.

Rotation

The action of turning around a centre point. This is a circular movement where an object changes its direction.

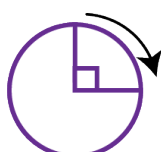
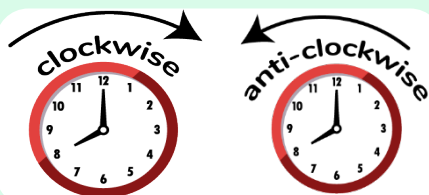
Command

A single instruction, such as, turn left'.

Turtle Object

A type of object that moves by coding either directions or angles of rotation and distance to move.

Key Images



90° clockwise

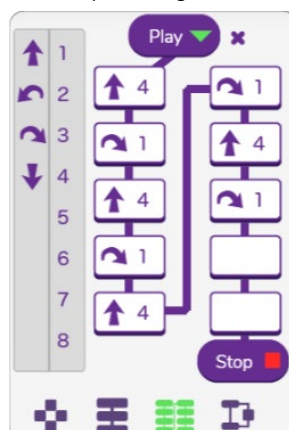


45° clockwise

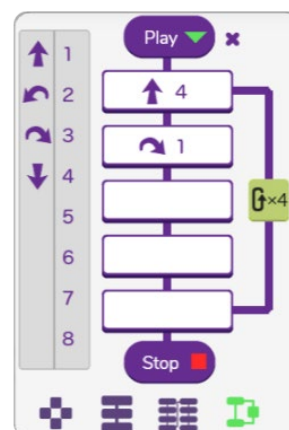


Rewind

Sequence algorithm



Repeating algorithm





Year 3

Route Planners

Key Questions

Which angles can the turtle rotate in one rotation?

90° and 45°.

How many commands can be in a program with a sequence?

Up to 10 commands.

How do you work out the angle and direction for a command?

Decide whether the turtle needs to rotate clockwise or anti-clockwise then decide whether the turn uses 90° or 45° angles turns and how many for each turn.

Which shapes can you make using repeat?

Square, rectangle, triangle, octagon.



Wheelwright Lane Knowledge Organiser for: Design Technology - Moving Robots



Key questions:



How can you strengthen a product to reinforce the structure?

What objects use air to make them move?

What is a pneumatic system?

How does a pneumatic system make something move?

What everyday objects use a pneumatic system to help them move?

Key facts:

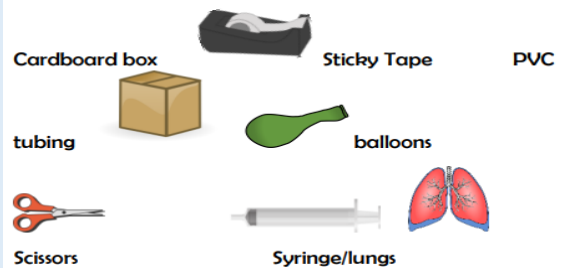


Pneumatics is similar to hydraulics, but rather than the movement of water or oil, it uses gas or air.

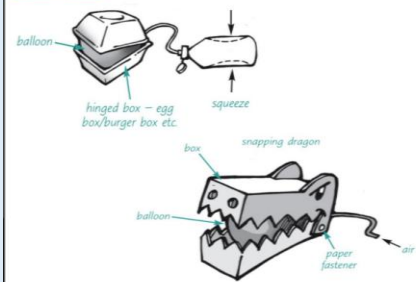
Pneumatics is **how air pressure powers and moves something**. Essentially, pneumatics puts compressed air to practical use by moving applications like the tools and machinery used in the engineering, manufacturing and construction industries.

This can be demonstrated easily using the items below.

Materials:



Examples



Skills:

To follow a design to make a moving monster using pneumatic system.

To successfully assemble a pneumatic system.

To design and make a model monster with at least one moving part controlled by a pneumatic system.

Key vocabulary:



Compressed – something that is squashed, such as air in a tube.

❓ **Input** – what goes into a system.

❓ **Output** – what comes out of a system.

❓ **Pivot** – a point about which a lever turns

❓ **Lever** – a beam which turns about a point.

❓ **Pneumatic** – a system that works using gases (air)

❓❓ **Pressure** – the force used on an object or surface.

❓ **Inflate** – fill something with air or a gas to make it swell up.

❓ **Deflate** - remove the pressurised air to allow an object like a balloon to shrink.

❓ **Syringe** – a tube with a nozzle and plunger for sucking and blowing air or liquids.



Wheelwright Lane Knowledge Organiser for:

PE - Swimming & Body Strengthening and Conditioning

Key questions:



Key facts:



Key vocabulary:

Freestyle (Front Crawl): The fastest stroke, swam face-down with alternating arm pulls and a flutter kick.

Backstroke: Swam on your back with alternating arm pulls and a constant flutter kick.

Breaststroke: Swam face down, with circular arm movements and a frog kick.

Butterfly: Swam face down with symmetrical arm movements and a dolphin kick.

Dolphin Kick: A powerful, undulating leg movement used in butterfly and underwaters

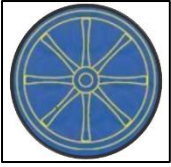
Bilateral Breathing: Breathing on both the right and left sides while swimming freestyle.

What strategies can you use to stay afloat in a pool if you feel difficult? ones and demonstrate improvement.

What helps you get better at holding poses with control?

distances.

Swimming safely includes knowing pool rules, safe entries and exits, and awareness of others in the



Wheelwright Lane Knowledge Organiser for:

Forces and Magnets

Key questions:



What are forces?

How do they work?

How do you measure a force?

What is gravity?

What is friction?

What is special about a magnet?

What is a pole?

What does attract and repel mean?

Key facts:

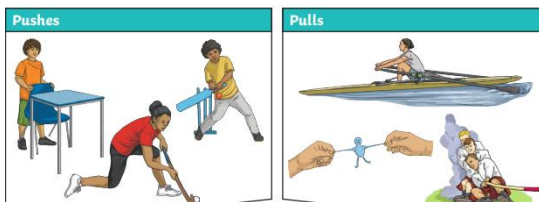


A force is a push or pull acting upon an object. This allows movement, for example pulling a door open. Resistance or 'drag' is a force when air pushes against an object, slowing it down. We measure forces in newtons, which is named after the scientist Sir Isaac Newton.

Gravity is a special force that pulls us towards the earth. It holds things on the earth otherwise they would float off!

Friction acts between two surfaces. Different surfaces create different amounts of friction. The rougher the surface, the more friction is created. This helps objects to slow down, like a bike on a rough, bumpy path.

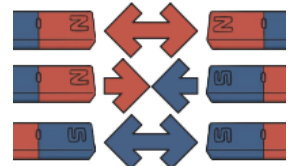
A **magnet** is an object with a magnetic force that pulls things towards it. It is made from iron, nickel or cobalt. Magnets have two poles – north and south – which either attract (pull together) or repel (push away). North will repel another north pole (and the same for two south poles) whereas a north and a south pole will attract each other.



Forces will change the motion of an object. They will either make it start to move, speed up, slow it down or even make it stop.



The needle in a compass is a **magnet**. A compass always points north-south on Earth.



Like **poles repel**.
Opposite **poles attract**.

Key vocabulary: force, push, pull, resistance, Newton, gravity, friction, magnet, pole, repel, attract.

