Pieces of Eight

Year:	**Year 3 / 4**
Task:	Pieces of Eight
Computing Focus:	Algorithms, creating a sequence of commands, testing, debugging
Aims:	To create, test and debug simple programs.
KS 2 National Curriculum coverage:	Create and debug simple programs (Algorithms). That programs execute by following precise and unambiguous instructions. Use logical reasoning to predict the behaviour of simple programs (algorithms).
Unplugged activity:	Load the treasure. The crew have to get the treasure from the Island to the pirate ship. This activity is based on the 'Human Crane' from Phil Bagge (http://code-it.co.uk/philbagge). Pupils have to create programs to load the treasure, this involves sequencing, repeat loops, repetition. There are a range of challenges with support materials.
Resources:	Command cards and challenge cards with a range of activities.
Plugged activity:	High seas adventure.
Resources:	Google CS-first

Load the treasure

In this activity, based on the ‘Human Crane’ from Phil Bagge (code-it.co.uk), pupils work in pairs to create and test algorithms that move treasure from the island to the Pirate ship.

The Pirate ship needs loading with treasure. To make life easier, Captain jack has invented the Acme pirate wonder grabber. This device is a cross between a crane and a robot. A robot crane in fact! The problem is, none of the crew know how to work it. The pupils job is to write programs to control the Acme pirate wonder grabber.

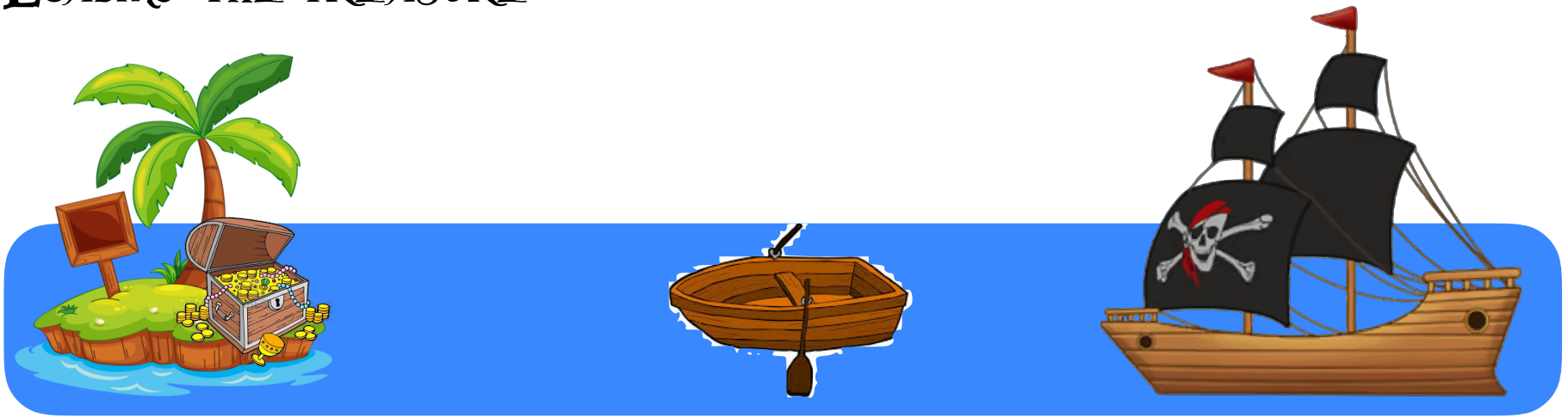
Pupils are presented with a challenge card, a base sheet with Island, rowing boat and pirate ship and a number of different action cards. It is also useful to have some ‘treasure’ (lego bricks, sweets) to physically move from island to ship.

Pupils arrange the action cards and test and debug their algorithms. An interesting extension is to ask the pupils to find a way to record their final program. Initially pupils write out their commands long hand i.e. up, right, down etc, this usually quickly develops into shorthand symbols of arrows and ultimately ways of doing repeat loops. Rather than ‘teaching’ these recording systems, it is useful to allow children to experiment and develop their own coding language.

Once the algorithm is written, pupils can ask another group to test it out.

Resources needed:
Action cards - cut out
Challenge cards
3 coloured blocks (or sweets!)
3 bowls
1 Base sheet
Recording sheet

Loading the treasure



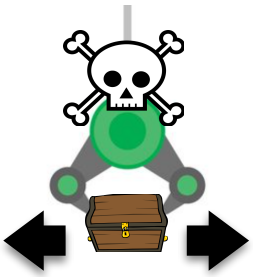
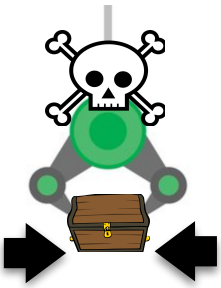
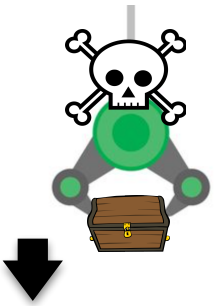
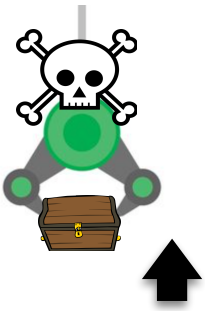
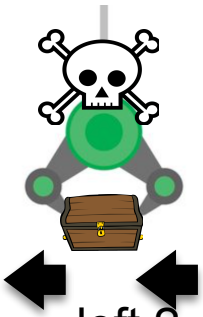
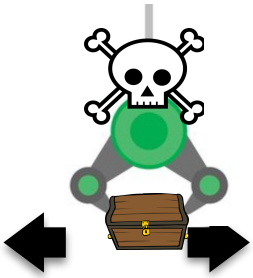
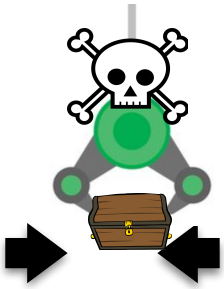
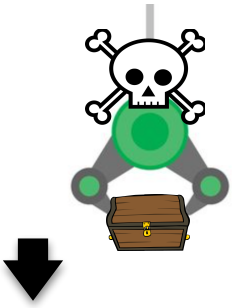
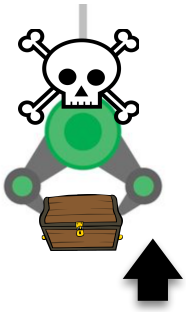
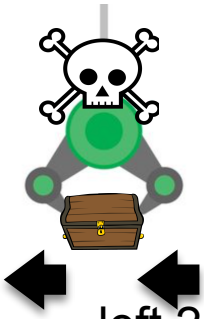
Place bowl here

Place bowl here

Place bowl here

Activity Cards

Use the activity cards to control the Acme pirate wonder grabber - load your ship in double time - no pirate ship should be without it!

 open	 close	 left	 right
 down	 up	 left 2	 right 2
 open	 close	 left	 right
 down	 up	 left 2	 right 2

Challenge cards

Starting point for crane

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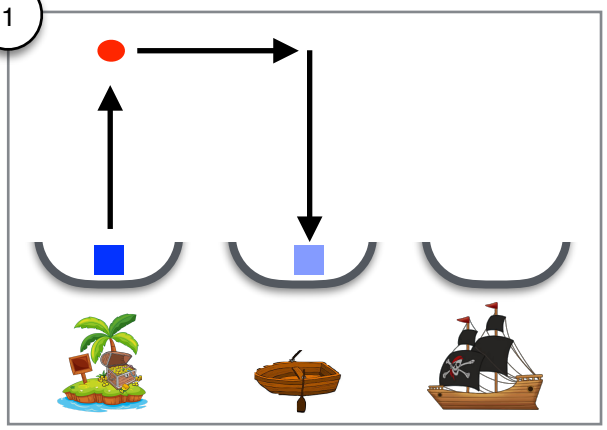

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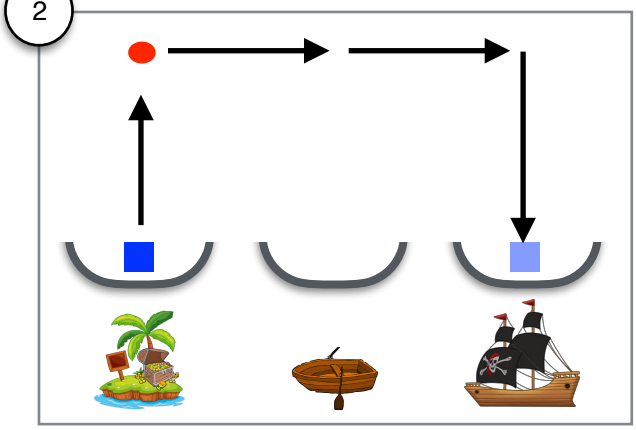

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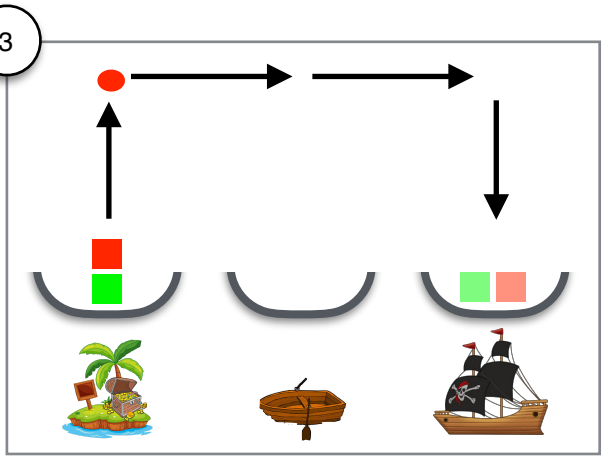

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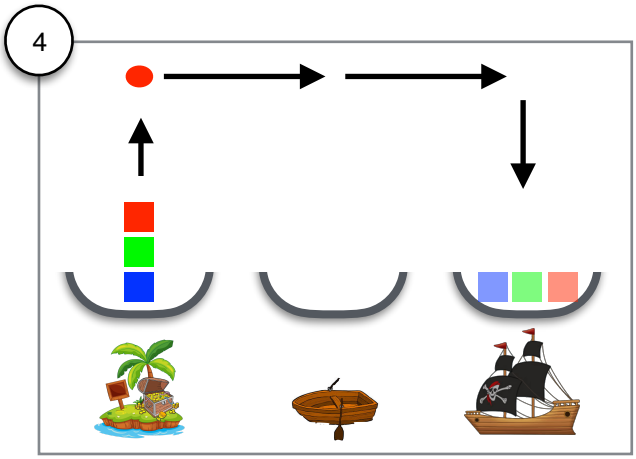

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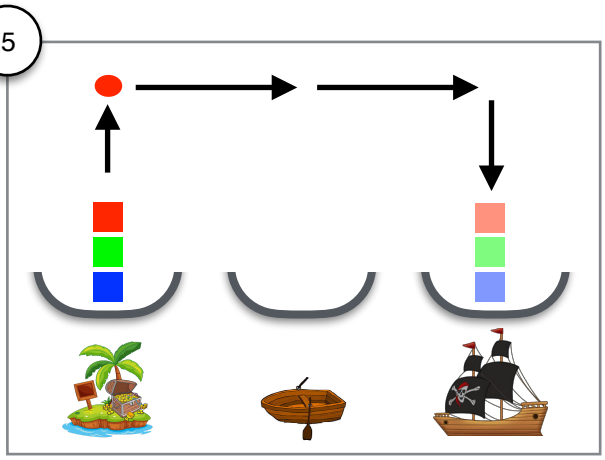

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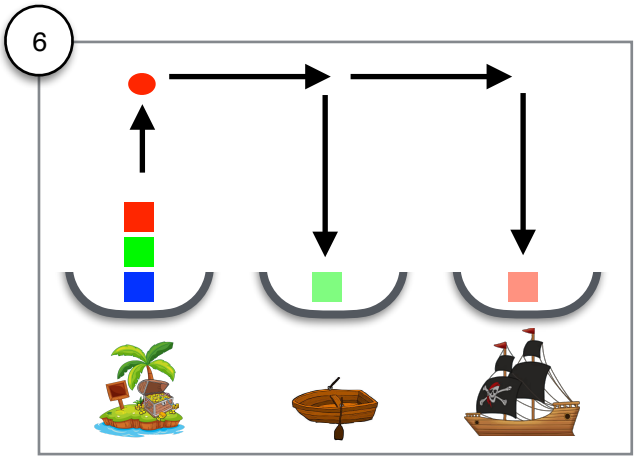

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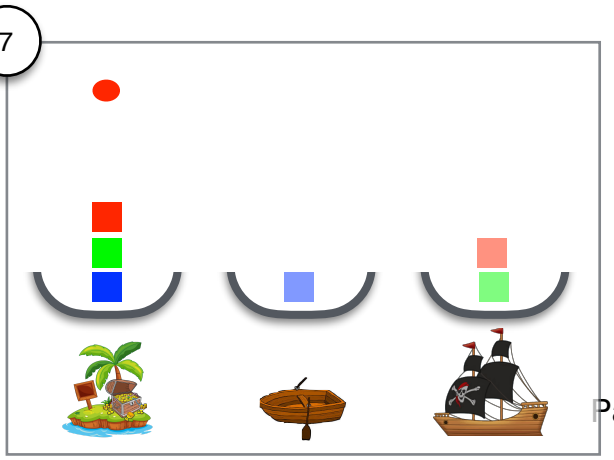

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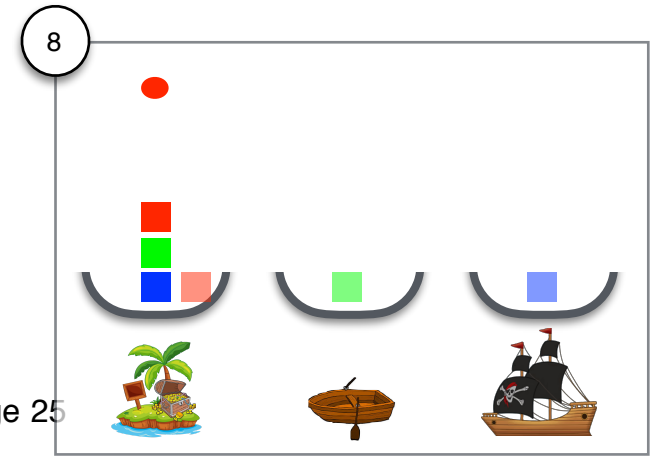


High seas adventure

High Seas is an introductory activity from Google CS First.

CS First is a free program that increases student access and exposure to computer science (CS) education.

The materials:

- are completely free and available online
- are targeted at students ages 9-14
- can be tailored to fit your schedule and needs
- involve block-based coding using Scratch and are themed to attract students with varied interests

High Seas" is a one-time, standalone activity and not part of a regular CS First theme, so it does not use or provide printed materials.

Using the high seas adventure materials is a great way to trial CS first with your pupils. The full suite of resources includes 10 activities with supporting print and online resources.

CS First High Seas Adventure

High seas adventure is available at:

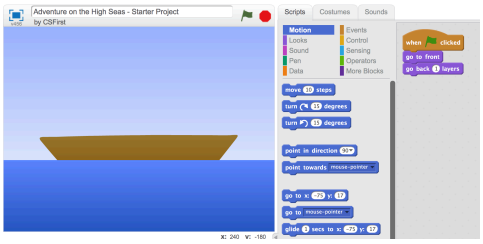
https://www.cs-first.com Click on I am a **Teacher**

and then click **explore materials.**

Under sample activities choose High Seas Activity and click t**ry now.**

The CS First projects have two main kinds of resources:

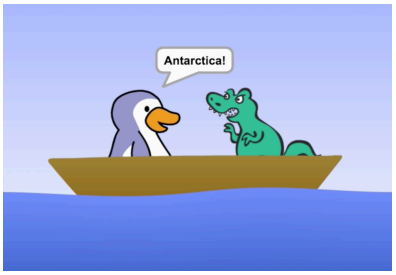
Video files which provide step by step instructions throughout the task and Scratch project files with all the key resources to complete the project.



Click on the video and follow the instructions in the video which explain how you move from video instruction to practical Scratch activities.

It is recommended that with year 3 / 4 pupils you work through the activities as a class. So, first watch the video introduction and explanation of the first Scratch activity. Then demonstrate the scratch activity to the pupils. Next ask the pupils to complete the Scratch activity themselves.

Then come back together as a class and watch the next section of video, similarly demonstrate the practical task, ask the pupils to complete it and so on.

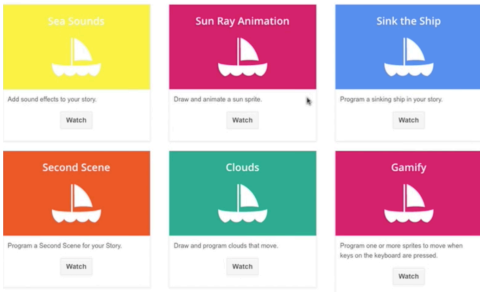


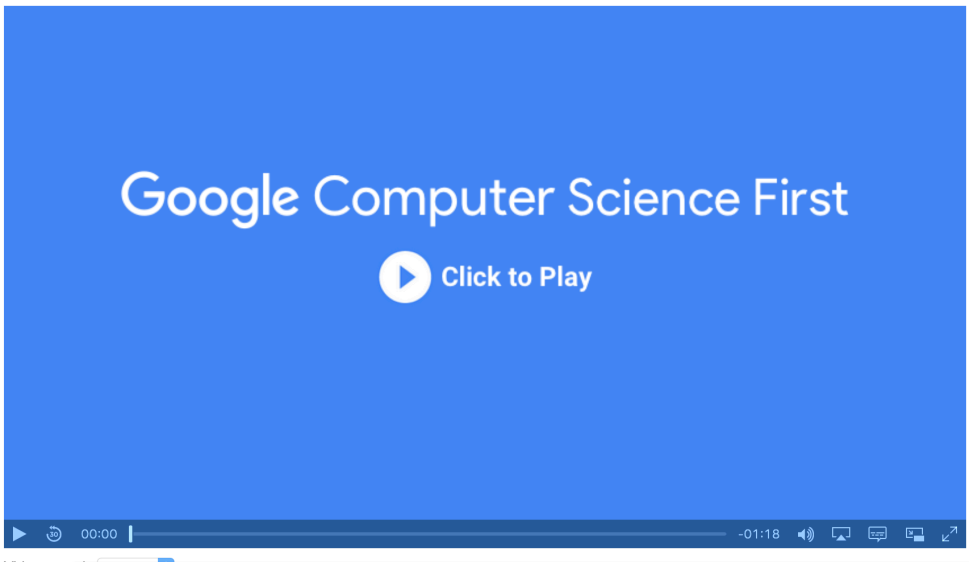
The pupils will complete an animated story with two characters in a boat.

Once completed the pupils can use the Scratch skills they have developed to create their own animated story with a Pirate theme.

The resource also includes extension activities where pupils can add clouds, another scene or sink the ship!

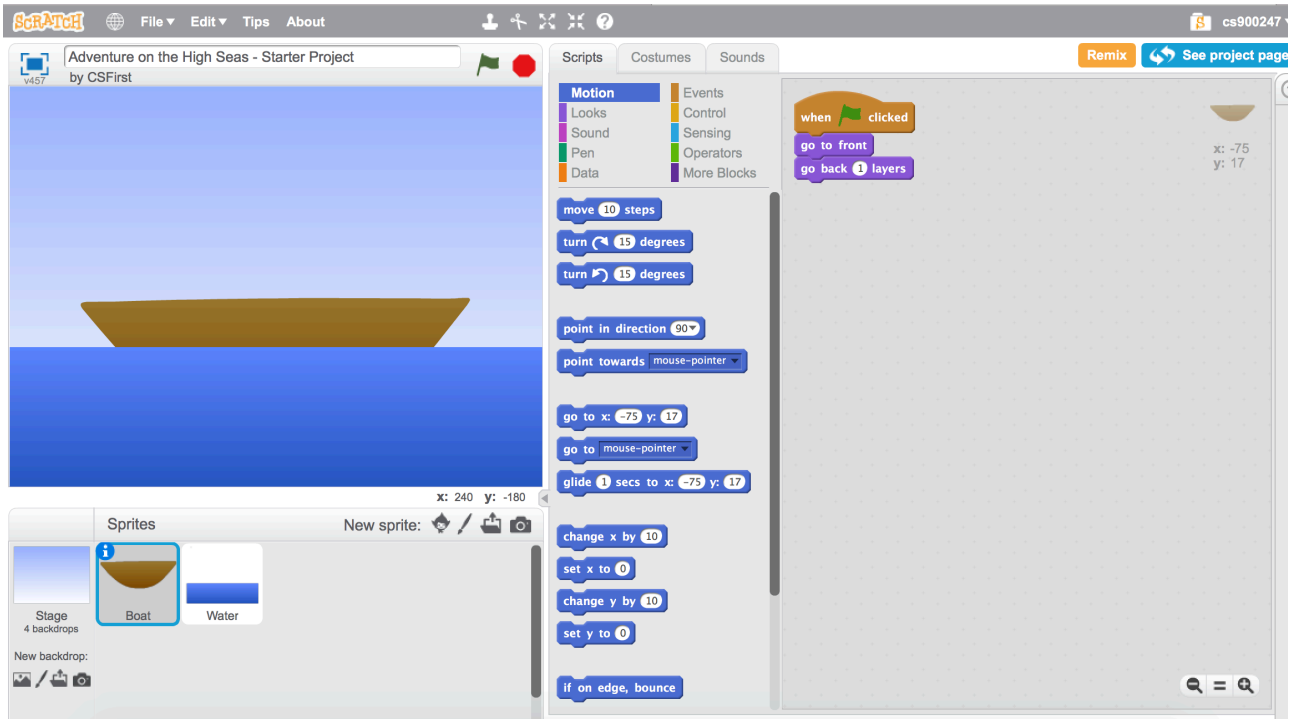
Older pupils, can work through the videos themselves and self programme.





CS - First provides full instructional videos with links down the side to associated Scratch tasks.

As a reminder and check list for pupils the tasks set out in the video are listed in the instructions so pupils are clear what their next task is.



Links are provided to launch the associated Scratch activities and any resources, sprites, sound files etc are provided.