

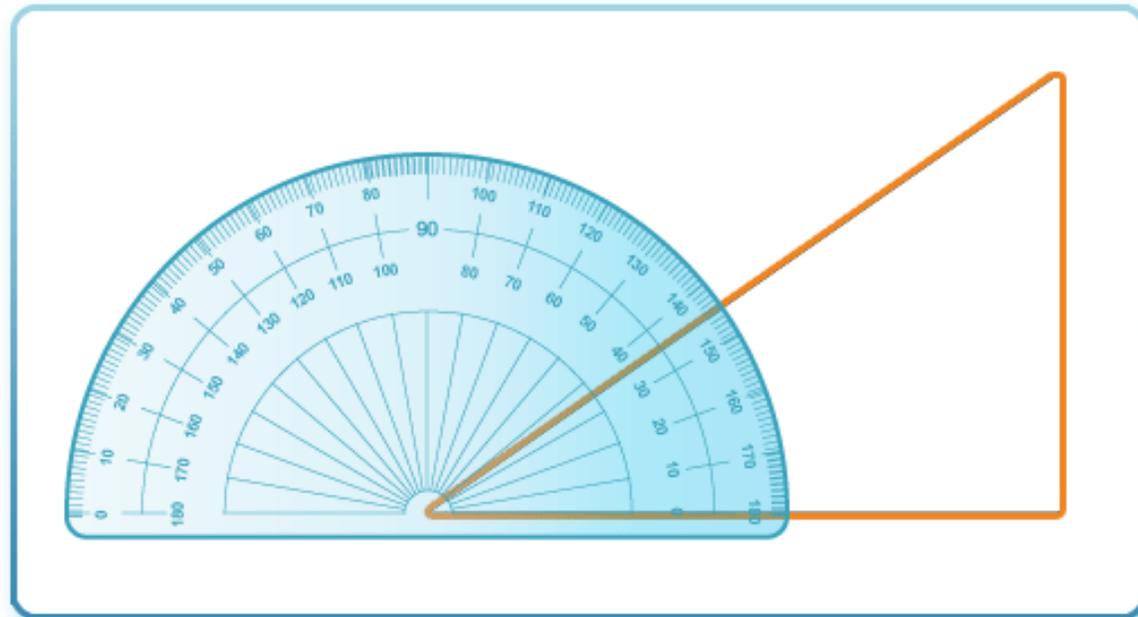
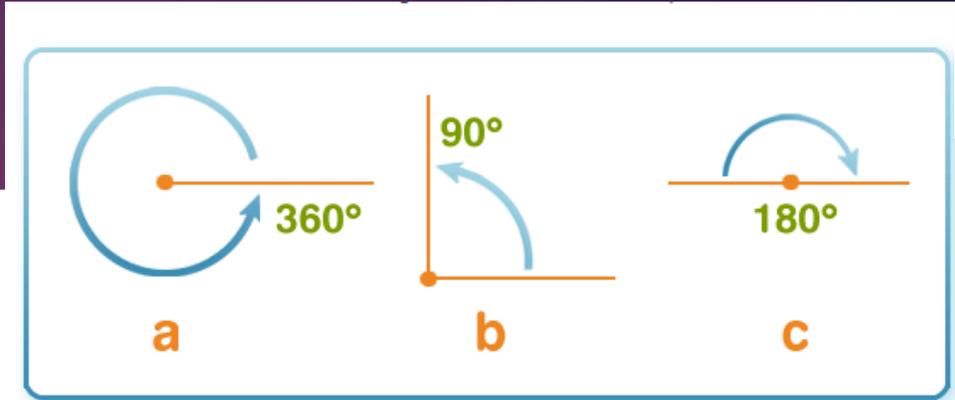
Programming using Logo

YEAR 3 & 4

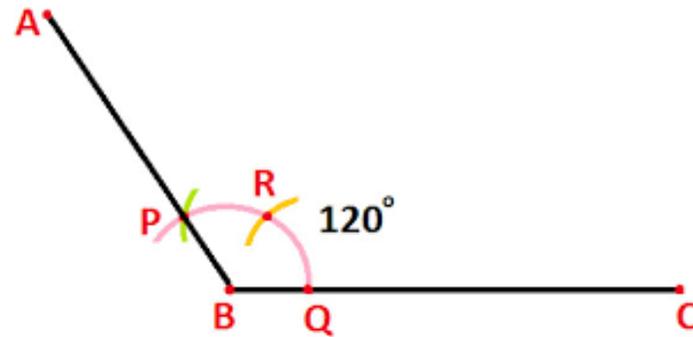
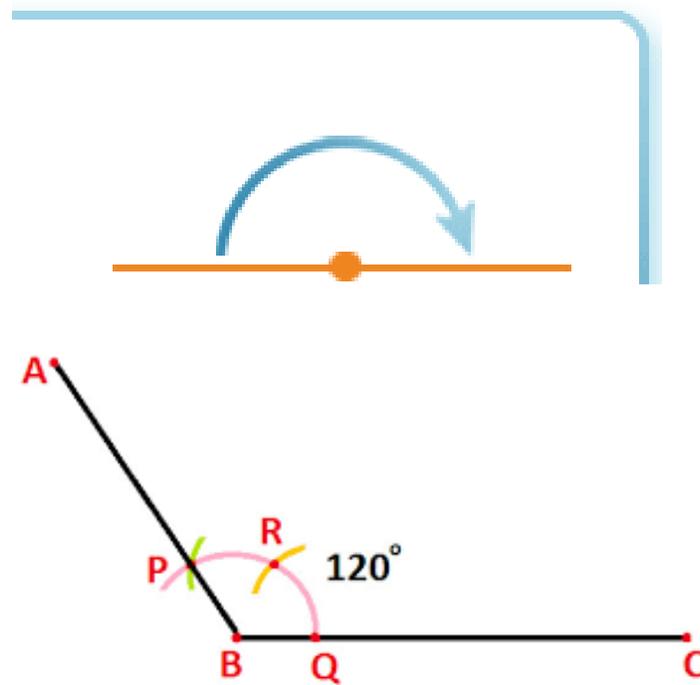
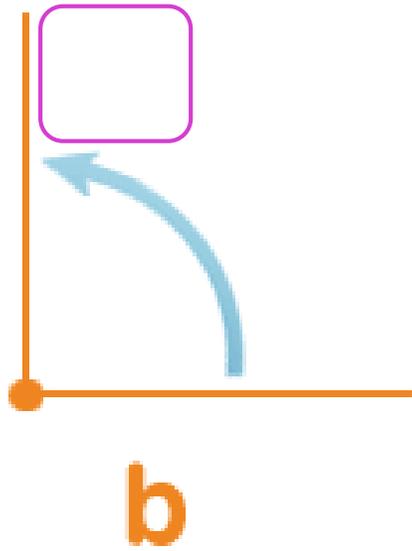
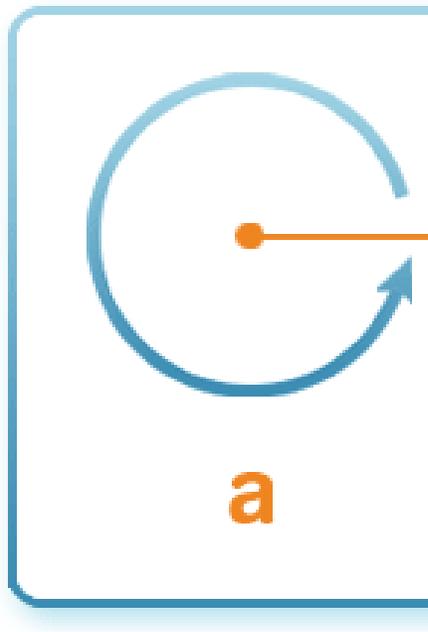
Week 1

Purple Mash Logo

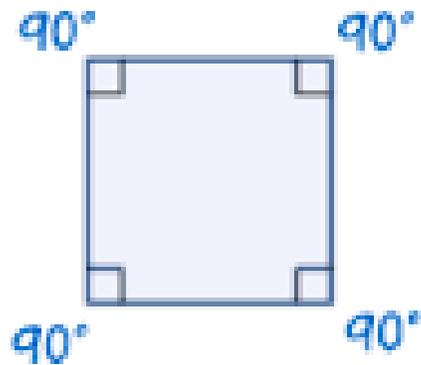
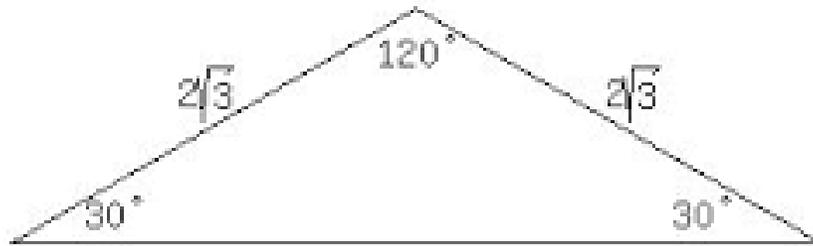
45°
90°
180°
270°
360°



Week 1



Angles – divide by number of sides $180 -$
 360



360

4 sides = 90

3 sides = 120

5 side = 72

Lesson 1

To learn the structure of the language of Logo. To input simple instructions in Logo.

- ▶ Know what the common algorithms (instructions/commands) are in Logo and how to type them in.
- ▶ Can demo how to program Logo algorithms to make sprite move around the maze.
- ▶ Know that a turn is represented by programming in a 90° (degree) code.

Today you will move the sprite around the maze using Logo abbreviations of algorithms (instructions/code).

Week 1

- ▶ Learn common commands and constructs of the Logo programming language.
- ▶ Develop ability to compose algorithms for drawing mathematical structures and turn these into Logo code.
- ▶ Discuss what an algorithm is (instructions/ commands)
- ▶ Remind what a 90° turn is demo together
- ▶ Understand the abbreviated code `FD 5 RT 90 LT 90 LT 90 FD 7`
- ▶ Today's task The **Minotaur Maze**
- ▶ PLAY – RESET – CHECK – buttons work

Logo Commands

fd (forward)

bk (backwards)

rt (right)

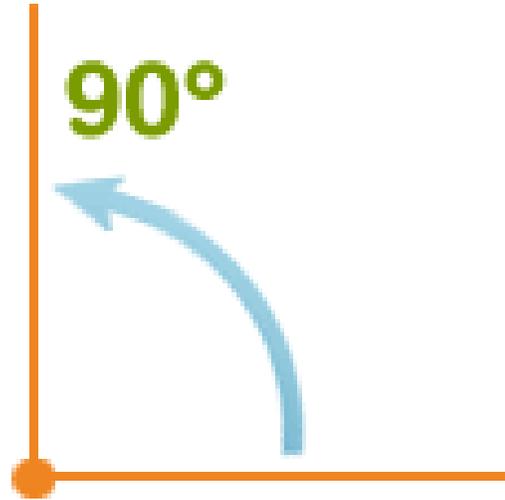
lt (left)

rpt (repeat)

pd (pen down)

pu (pen up)

setpc (pen colour)



- Abbreviated algorithms – can type in or click on the code in Logo Commands box.
- Then type the number of moves or the degree turn.
- Press space in between code and numbers.

```
> FD 2 rt 90 fd 6 lt 90 fd 5 fd rt
```

Logo Commands

fd (forward)

bk (backwards)

rt (right)

lt (left)

- Abbreviated algorithms – can type in or click on the code in Logo Commands box.
- Then type the number of moves or the degree turn.
- **Press space in between code and numbers.**

```
> FD 2 rt 90 fd 6 lt 90 fd 5 fd rt
```

Week 1 - The Minotaur Maze

The screenshot shows a Scratch-based maze game. The maze is a 3D-rendered grid with a Minotaur in the center. A red line shows a path from the start to the Minotaur. The interface includes a toolbar with play, repeat, and checkmark buttons, a speed slider, and a command list on the right.

Logo Commands

- fd (forward)
- bk (backwards)
- rt (right)
- lt (left)
- rpt (repeat)
- pd (pen down)
- pu (pen up)
- setpc (pen colour)

My Procedures +

```
> FD 2 rt 90 fd 6 lt 90 fd 5 fd rt
```

Week 1

The image shows a screenshot of the Scratch software interface with several key elements highlighted by purple boxes and arrows:

- Play:** A purple box labeled "Play" has an arrow pointing to the green play button icon.
- Check:** A purple box labeled "Check" has an arrow pointing to the checkmark icon.
- Speed of Sprite:** A purple box labeled "Speed of Sprite" has an arrow pointing to the slider control, which is currently set between "slow" and "fast".
- Reset - reverse to beginning:** A purple box labeled "Reset - reverse to beginning" has an arrow pointing to the blue circular arrow icon.

Other visible interface elements include the "Logo Commands" button at the bottom right, a red back arrow button, and a monitor icon.

Code in logo

- ▶ FD 5
- ▶ RT 90
- ▶ LT 90
- ▶ FD 5 RT 90 FD 6 LT 90 FD 7 LT 90

Week 2

- ▶ Can follow Logo code to predict the outcome.
- ▶ Can create shapes using the Repeat function.
- ▶ Can find the most efficient way to draw shapes.

Week 2

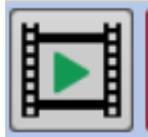
- ▶ I can.....Confidently define what an algorithm is
- ▶ I can....Successfully input the correct command to move the sprite in the precise direction
- ▶ I can effectively predict the correct outcome of the commands I have generated
- ▶ I can...efficiently use the repeat function key to navigate the sprite
- ▶ Re-cap what a 90° turn is demo together
- ▶ Enforce that a turn is represented by programming in a 90° (degree) code.
- ▶ Recap the abbreviated code FD 5 RT 90 LT 90
- ▶ Pen up/down abbreviation
- ▶ Introduce today's task The Dream Time

Week 2 - Coding

- ▶ Go to command
- ▶ Pen down
- ▶ Pen up
- ▶ Colour of pen
- ▶ Be able to demo how to type in fd for forward movement
- ▶ Be able to type in the correct ° for an angle turn

Lesson 2

- ▶ Using 2Logo to create shapes.
- ▶ Can create Logo instructions to draw patterns of increasing complexity.
- ▶ Understand the pu (pen up) and pd (pen down) commands.
- ▶ This week's task is set as a to do in Purple Mash the name of the task is The Dream time.
- ▶ Watch the video before you begin it will help you to understand the task. Click on the video icon top right hand corner



Week 2 - Dream time

The screenshot shows a Logo programming environment. The main workspace displays a drawing of a cave wall with two handprints at the bottom. Several dotted paths are drawn on the wall, each with a letter label and dimension lines. A green arrow points to the start of a square path with side length 6. Other paths include a square with side length 4, a triangle with side length 6, and a pentagon with side length 4. The paths are labeled 'a', 'b', 'c', and 'd'. The toolbar at the top includes icons for file operations, a play button, a refresh button, a checkmark, a speed slider, and a back button. The right-hand panel lists Logo commands and procedures.

Logo Commands

- fd (forward)
- bk (backwards)
- rt (right)
- lt (left)
- rpt (repeat)
- pd (pen down)
- pu (pen up)
- setpc (pen colour)

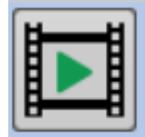
My Procedures +

- gotoa
- gotob
- gotoc
- gotod

> eg. fd 5 rt 90...

Week 3 - Coding

- ▶ Enforce that a turn is represented by programming in a 90° (degree) and 45° (degree) code.
- ▶ Introduce today's task River Rapids
- ▶ Watch the video before you begin it will help you to understand the task. Click on the video icon top right hand corner



Week 3 - Coding

- ▶ Go to command
- ▶ Pen down
- ▶ Pen up
- ▶ Colour of pen
- ▶ Be able to demo how to type in fd for forward movement
- ▶ Be able to type in the correct 90° or 45° for an angle turn
- ▶ Be able to click on the correct go to procedure

Week 3 – Coding River Rapids

Logo Commands

- fd (forward)
- bk (backwards)
- rt (right)
- lt (left)
- rpt (repeat)
- pd (pen down)
- pu (pen up)
- setpc (pen colour)

My Procedures +

```
> rt 45 fd 5 lt 45 fd 6
```

The Turning Test Task

The image shows a Logo programming environment with a maze and a control panel. The maze is a complex path with various turns and dimensions. A robot is positioned at the top center of the maze, facing up. The maze is defined by a yellow dashed line and contains several obstacles, including a battery pack and a red 'b' icon. The control panel on the right lists Logo commands and procedures. The command list includes: fd (forward), bk (backwards), rt (right), lt (left), rpt (repeat), pd (pen down), pu (pen up), and setpc (pen colour). The procedure list includes: gotoa, gotob, and gotoc, each with a lock icon. A red arrow points to the 'gotoa' procedure. The command list is titled 'Logo Commands' and the procedure list is titled 'My Procedures +'. The command list is on a purple background and the procedure list is on a blue background. The maze is on a green background. The robot is a yellow arrow with a black dot. The maze has a yellow dashed line and a red dashed line. The maze has a battery pack and a red 'b' icon. The maze has dimensions: 12, 10, 143°, 6, 11, 8, 16, 14, 3, 11, 21, 24, 9, 6, 10, 53°, 10, 143°, 127°. The command list includes: fd (forward), bk (backwards), rt (right), lt (left), rpt (repeat), pd (pen down), pu (pen up), setpc (pen colour). The procedure list includes: gotoa, gotob, gotoc. A red arrow points to the 'gotoa' procedure. The command list is titled 'Logo Commands' and the procedure list is titled 'My Procedures +'. The command list is on a purple background and the procedure list is on a blue background. The maze is on a green background. The robot is a yellow arrow with a black dot. The maze has a yellow dashed line and a red dashed line. The maze has a battery pack and a red 'b' icon. The maze has dimensions: 12, 10, 143°, 6, 11, 8, 16, 14, 3, 11, 21, 24, 9, 6, 10, 53°, 10, 143°, 127°.

> pd setpc yellow fd 4

Logo Commands

fd (forward)
bk (backwards)
rt (right)
lt (left)
rpt (repeat)
pd (pen down)
pu (pen up)
setpc (pen colour)

My Procedures



gotoa



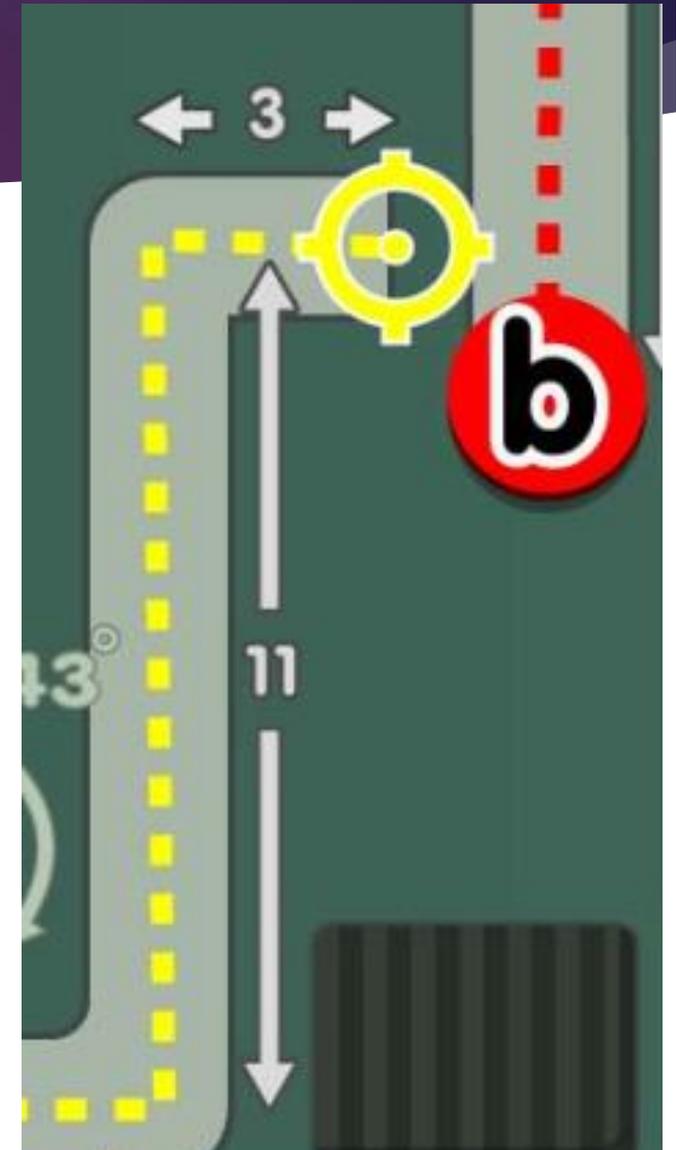
gotob



gotoc



- ▶ Jump from course A when it ends to the start of course B
- ▶ By using the **gotob** code in MY PROCEDURES



Flags: Starting a point a plot your algorithms to point d

The screenshot shows a Scratch-like environment with a boat on the water. The boat has four flags on poles. A green dashed path starts at point 'b' (a red circle) on the second flagpole, goes to the top of the second flag, then to the top of the third flag, then to point 'c' (a green circle) on the third flagpole, then to the top of the fourth flag, and finally to point 'd' (a blue circle) on the fourth flagpole. The path is labeled with '10' for the first segment, '143°' for the angle at the top of the second flag, 'b' for the segment from the top of the second flag to the top of the third flag, '120°' for the angle at point 'c', 'c' for the segment from point 'c' to the top of the fourth flag, '150°' for the angle at the top of the fourth flag, and 'd' for the segment from the top of the fourth flag to point 'd'. The environment includes a toolbar at the top with icons for file operations, a play button, a refresh button, a checkmark, a speed slider (set to 'slow'), and a back button. The title bar of the window says '4. Sir Francis' Flags'. On the right side, there are two panels: 'Logo Commands' and 'My Procedures'. The 'Logo Commands' panel lists: fd (forward), bk (backwards), rt (right), lt (left), rpt (repeat), pd (pen down), pu (pen up), and setpc (pen colour). The 'My Procedures' panel lists: gotoa, gotob, gotoc, and gotod, each with a lock icon.

4. Sir Francis' Flags

Logo Commands

- fd (forward)
- bk (backwards)
- rt (right)
- lt (left)
- rpt (repeat)
- pd (pen down)
- pu (pen up)
- setpc (pen colour)

My Procedures +

- gotoa
- gotob
- gotoc
- gotod

Protect the planets

The image shows a Scratch-like environment for a game titled "Protect the planets". At the top, there is a toolbar with icons for file operations, a play button, a refresh button, a checkmark, and a speed slider from "slow" to "fast".

In the top-left corner, there is a table with the following data:

Planet Name	Number of segments	Length of each segment	Angle of turn
Decca	10	1	36
Triakonta	30	2	36
Enenekonta	1	1	4

The main scene is a space-themed background with a sun, stars, and a rocket ship. Three planets are shown: Decca (orange), Triakonta (green), and Enenekonta (red). Each planet is surrounded by a dashed green circular path. A green arrow points to the Decca planet. A red circle with a white 'b' is on the path of Triakonta, and a green circle with a white 'c' is on the path of Enenekonta.

On the right side, there is a "Logo Commands" panel with the following list:

- fd (forward)
- bk (backwards)
- rt (right)
- lt (left)
- rpt (repeat)
- pd (pen down)
- pu (pen up)
- setpc (pen colour)

Below the commands is a "My Procedures" panel with a plus sign icon. It contains a list of procedures:

- gotoa (with a lock icon)
- gotob (with a lock icon)
- gotoc (with a lock icon)
- decca (with a pencil icon)
- triakonta (with a pencil icon)
- enenekonta (with a pencil icon)

Two red arrows point from the "My Procedures" panel to the dashed paths of the Triakonta and Enenekonta planets. At the bottom left, there is a text input field with the text "> eg. fd 5 rt 90...".