Module 5
Revision with Scratch Cards

Lesson 1 Scratch Cards – Easy

Students revise some basic Scratch ideas using 5 Scratch Cards, including movement, changing colour of sprites and drawing basic shapes.

Lesson 2 Scratch Cards - Difficult

These 5 Scratch Cards move to the next level. Students solve more difficult problems using Scratch. Problems include costume changes and using conditional statements and variables.

Lesson 3 Scratch Cards - Extreme

These 5 cards are the most challenging of Scratch Cards and involve a more complex use of variables, broadcast statements, nested loops as well as drawing more complex shapes.

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Lesson 1 – Easy Scratch Cards[1]

Resources:

Scratch Cards Easy (Resource 1), Scratch Files with Solutions (Resource 2), Scratch Cards Progress Sheet (Resource 3)

Key Vocabulary:

Costume, Sprite

Description:

Students revise a number of topics in Scratch using Scratch Cards. There are 5 easy cards in this lesson (1 being the easiest and 5 being the most difficult). Scratch Cards are available with this pack. If there is a requirement for more cards the teacher should copy and cut out the Scratch Cards from resource 1 and keep the solution to check students' work. Students attempt the problems on the Scratch Cards, using the images as guidance. The teacher can give hints to students if necessary but should not show the solution card.

Learning Objectives:

1. To revise basic concepts in Scratch such as movement, costume changes, colour changes, pick random command and using a repeat loop to draw a basic shape.
2. To ensure students are confident with basic concepts before moving on to Lesson 2 – Difficult Scratch Cards.

Lesson Introduction:

- Tell students that they are going to revise some concepts in Scratch such as animation, changing colour and drawing shapes by using Scratch Cards.
- Tell them that they will revise the basic concepts today, in preparation for moving on to more challenging cards in the next lesson.

Lesson Breakdown:

1. Give students Scratch Card 1 and ask them to look at the instructions and pictures.
2. Ask students to attempt the problem in Scratch. Ask them to work alone, but tell them that they may consult a friend if necessary, once they have attempted the problem themselves.
3. Use the 'Sample Solution' section on the teacher's solution to give hints if necessary, but do not show the solution card to the students while they attempt to solve the problem.

[1]This lesson is based on Scratch Cards from the Scratch Website http://scratch.mit.edu/cards

4. Once students have completed the problem they may receive Scratch Card 2.
5. Continue to hand out the Scratch Cards, until students have completed Card 5.
6. The Scratch Cards Progress Sheet (Resource 3) can be used to keep track of student progress.

Extension activity

Students may add some other functionality of their choice to their solutions. For example they could make their sprites talk or add more shapes.

Resource 1

Scratch Cards Easy

5 Scratch Cards at an easy level. Copy these, cut them out and give them to students. A teacher's solution card is also included.

Move to a Beat

Click on a sprite to make it dance to a drum beat.

Scratch Cards

Easy 1

Cut around the line to make a card

Fold the card along the centre line and glue in the middle

Move to a Beat

Sample Solution

Check that the sprite moves when clicked. Make sure that drum beats are included in the script. Encourage the use of costume changes.

Solution Cards

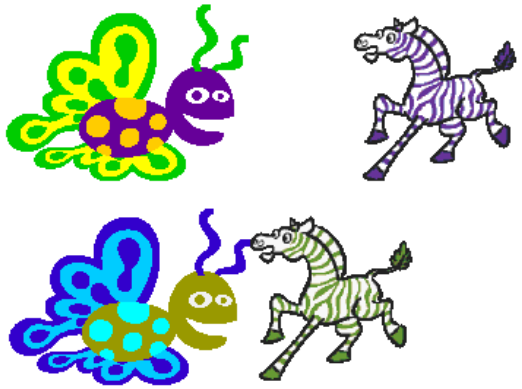
Easy 1

Cut around the line to make a card

Fold the card along the centre line and glue in the middle

Colour Burst

Start the program by clicking the green flag. When 2 sprites collide, change their colour.



Scratch Cards

Easy 2

Cut around the line to make a card

Fold the card along the centre line and glue in the middle

Colour Burst

Sample Solution

Check that the green flag starts the program. Both sprites require code to change colour.

Zebra Script

Bug Script

Solution Cards

Easy 2

Cut around the line to make a card

Fold the card along the centre line and glue in the middle

Polly Moves About

Using costume changes, program the parrot to flap his wings and travel across the stage. The parrot should bounce when it touches the edge of the stage.

Scratch Cards

Easy 3

Cut around the line to make a card

Fold the card along the centre line and glue in the middle

Polly Moves About

Sample Solution

A wait command can be used to control the speed of the parrot. Use the "if on edge, bounce" command to make the parrot bounce off the edge of the stage.

Solution Cards

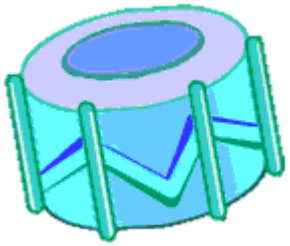
Easy 3

Cut around the line to make a card

Fold the card along the centre line and glue in the middle

Random Drum

Every time you click on the drum change the drum to a random colour and play five random drum beats.



Scratch Cards

Easy 4

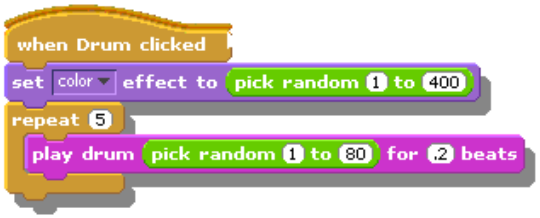
Cut around the line to make a card

Fold the card along the centre line and glue in the middle

Random Drum

Sample Solution

Use the pick random command. The most efficient way of playing 5 random beats is using a repeat loop rather than 5 separate "play drum" commands.



Solution Cards

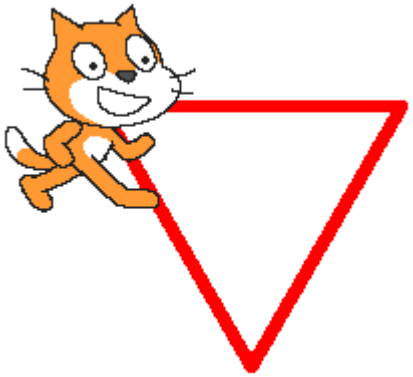
Easy 4

Cut around the line to make a card

Fold the card along the centre line and glue in the middle

Draw a Triangle

Draw a triangle using a red pen.



Scratch Cards

Easy 5

Cut around the line to make a card

Fold the card along the centre line and glue in the middle

Draw a Triangle

Sample Solution

The most effective way of drawing a triangle is by using a repeat loop to draw and rotate 3 times instead of 3 separate draw and 3 rotate commands. Don't forget to put the pen down to start drawing!

Solution Cards

Easy 5

Cut around the line to make a card

Fold the card along the centre line and glue in the middle

Resource 2

Scratch Files with Solutions

Folder containing Solutions in Scratch for Easy Scratch Cards.

CD Resource

“M5L1R2 Scratch Files with Easy Solutions”

Resource 3

Scratch Cards Progress Sheet

Teachers can print out and use this sheet to track the progress of students when using Scratch Cards.

Scratch Cards Progress Sheet

First Name	Surname	Easy 1	Easy 2	Easy 3	Easy 4	Easy 5	Difficult 1	Difficult 2	Difficult 3	Difficult 4	Difficult 5	Extreme 1	Extreme 2	Extreme 3	Extreme 4	Extreme 5

Lesson 2 – Difficult Scratch Cards[2]

Resources:

Scratch Cards Difficult (Resource 1), Scratch Files with Solutions (Resource 2), Scratch Cards Progress Sheet (Resource 3, Lesson 1)

Key Vocabulary:

Costume, Conditional Statement, Sprite, Variable

Description:

Students revise a number of topics in Scratch using Scratch Cards. There are 5 difficult cards in this lesson (1 being the least difficult and 5 being the most difficult). Scratch Cards are available with this pack. If there is a requirement for more cards the teacher should copy and cut out the Scratch Cards from resource 1 and keep the solution to check students' work. Students attempt the problems on the Scratch Cards, using the images as guidance. The teacher can give hints to students if necessary but should not show the solution card. Students will encounter concepts such as drawing more complex shapes, editing a costume for animation, changing the whirl effect according to the x position of the mouse, conditional statements and variables.

Learning Objectives:

1. To revise more difficult concepts in Scratch, building on Lesson 1 Easy Scratch Cards.
2. To ensure students are comfortable with these concepts, before moving on to Lesson 3 – Extreme Scratch cards.

Lesson Introduction:

- Tell students that they are going to revise some more concepts in Scratch using cards and that these will build on Lesson 1 Easy Scratch Cards.
- Tell them that they will revise more challenging concepts today, in preparation for moving on to the most challenging cards, the Extreme Cards, in the next lesson.
- Tell students that they will encounter concepts such as drawing more complex shapes, editing costumes to animate a sprite and keeping score.

[2] This lesson is based on Scratch Cards from the Scratch Website http://scratch.mit.edu/cards

Lesson Breakdown:

1. Give students Scratch Card 1 and ask them to look at the instructions and pictures.
2. Ask students to attempt the problem in Scratch. Ask them to work alone, but tell them that they may consult a friend if necessary, once they have attempted the problem themselves.
3. Use the Sample Solution section on the teacher's solution to give hints if necessary, but do not show the solution card to the students while they attempt the problem.
4. Once students have completed the problem they may receive Scratch Card 2.
5. Continue to hand out the Scratch Cards, until students have completed Card 5.
6. The Scratch Cards Progress Sheet (Resource 3) can be used to keep track of student progress.

Extension activity

Students may add some other functionality of their choice to their solutions. For example they could add a 3rd costume in Card 2 (Spooky Surprise) to change the animation or they could add a different effect to Card 3 (X-traordinary Whirl).

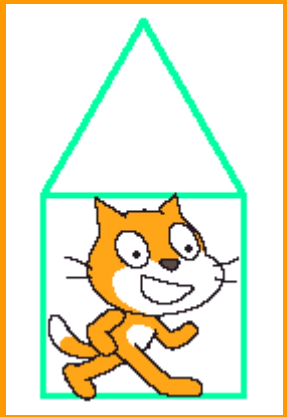
Resource 1

Scratch Cards Difficult

5 Scratch Cards at a difficult level. Copy these, cut them out and give them to students. A teacher's solution card is also included.

Build a House

Draw a house and position your sprite inside the house as shown.



Scratch Cards

Difficult 1

Cut around the line to make a card

Fold the card along the centre line and glue in the middle

Build a House

Sample Solution

You will need to use 2 repeat loops for the triangle and square parts of the house. Make sure your sprite is pointing in the right direction and that you position the sprite correctly inside the house.

Solution Cards

Difficult 1

Cut around the line to make a card

Fold the card along the centre line and glue in the middle

Spooky surprise

Copy and edit a costume to create the facial expression animation shown.

Scratch cards

Difficult 2

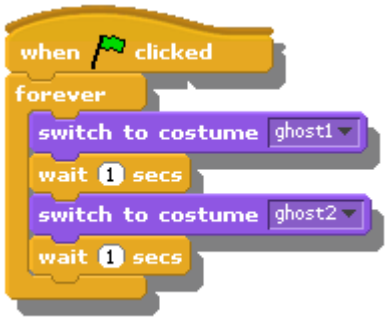
Cut around the line to make a card

Fold the card along the centre line and glue in the middle

Spooky surprise

Sample Solution

Create costume 2 by copying and editing costume 1 in the paint editor. Use a forever loop to repeat the switch between costume 1 and costume 2 continuously. A wait command can be used to decrease the speed of the animation.



Solution cards

Difficult 2

Cut around the line to make a card

Fold the card along the centre line and glue in the middle

X-traordinary Whirl

Set the whirl effect, to the x position of the mouse on the stage. This will distort your hamster as shown.

Scratch Cards

Difficult 3

Cut around the line to make a card

Fold the card along the centre line and glue in the middle

x-traordinary whirl

Sample Solution

The set whirl effect should be placed in a forever loop. The forever loop allows the whirl effect to change continuously as the x position of the mouse changes. The “mouse x” command is found in the sensing block.

Solution cards

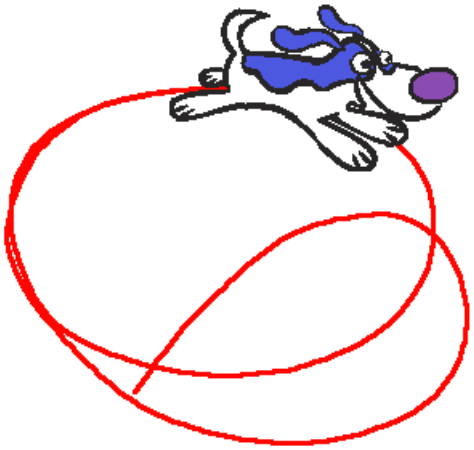
Difficult 3

Cut around the line to make a card

Fold the card along the centre line and glue in the middle

Scribbling Dog

Use the point towards command to program your sprite to follow the mouse pointer and scribble on the stage as shown.



Scratch Cards

Difficult 4

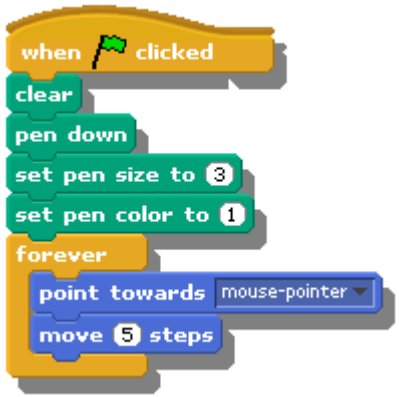
Cut around the line to make a card

Fold the card along the centre line and glue in the middle

Scribbling Dog

Sample Solution

Use the pen down command to allow the sprite to scribble on the stage. Set the pen to any size or colour. Use the "point towards mouse-pointer" inside a forever loop to follow the mouse. Move the sprite to leave a trail.



Solution Cards

Difficult 4

Cut around the line to make a card

Fold the card along the centre line and glue in the middle

Score goes up and Down

Use 3 sprites small, medium and large. When your sprite touches the small sprite increase the score. When your sprite touches the large sprite decrease the score. Program your sprite to say something each time it touches another sprite.

Scratch Cards

Difficult 5

Cut around the line to make a card

Fold the card along the centre line and glue in the middle

Score goes Up and Down

Sample Solution

Create a variable score. Use the wait command to decrease the speed of the animation.

Solution Cards

Difficult 5

Cut around the line to make a card

Fold the card along the centre line and glue in the middle

Resource 2

Scratch Files with Solutions

Folder containing Solutions in Scratch for Difficult Scratch Cards.

CD Resource

"M5L2R2 Scratch Files with Difficult Solutions"

Lesson 3 – Extreme Scratch Cards[3]

Resources:

Scratch Cards Extreme (Resource 1), Scratch Files with Solutions (Resource 2), Scratch Cards Progress Sheet (Resource 3, Lesson 1)

Key Vocabulary:

Nested loops, Sprite, Variable

Description:

Students revise a number of topics in Scratch using Scratch Cards. There are 5 Extreme cards in this lesson (1 being the least difficult and 5 being the most difficult). Scratch Cards are available with this pack. If there is a requirement for more cards the teacher should copy and cut out the Scratch Cards from resource 1 and keep the solution to check students' work. Students attempt the problems on the Scratch Cards, using the images as guidance. The teacher can give hints to students if necessary but should not show the solution card. Students will encounter concepts such as drawing a very complex shape.

Learning Objectives:

1. To build on the concepts in Scratch revised in Lesson 1 and 2 of this module.
2. To challenge students to use their knowledge of Scratch to solve more difficult problems and to think creatively to solve these problems.

Lesson Introduction:

- Tell students that they are going to revise some more ideas in Scratch using cards and that these will build on Lesson 2 Difficult Scratch Cards.
- Tell them that these are the Extreme cards and that these are the most challenging but fun to figure out.
- Tell students that they will encounter cards such as counting down a rocket launch, making a sprite explode and drawing complex shapes.
- Tell them they may work with a partner.

Lesson Breakdown:

1. Give students Scratch Card 1 and ask them to look at the instructions and pictures. Students may need to work with a partner for these cards.

[3] This lesson is based on Scratch Cards from the Scratch Website http://scratch.mit.edu/cards

2. Ask students to attempt the problem in Scratch.
3. Use the Sample Solution section on the teacher's solution to give hints if necessary, but do not show the solution card to the students while they attempt the problem.
4. Once students have completed the problem they may receive Scratch Card 2.
5. Continue to hand out the Scratch Cards, until students have completed Card 5.
6. The Scratch Cards Progress Sheet (Resource 3) can be used to keep track of student progress.

Extension activity

Students may add some other functionality of their choice to their solutions. For example they could decrease the size of the sprite in card 4 (Bigger and Bigger) or change the look of the shape in card 5 (Shape Sensation).

Resource 1

Scratch Cards Extreme

5 Scratch Cards at an Extreme level. Copy these, cut them out and give them to students. A teacher's solution card is also included.

What's the Answer?

Using a conditional 'if else' statement write a program to check your addition skills. Click the sprite to check the answer.

Scratch Cards

Extreme 1

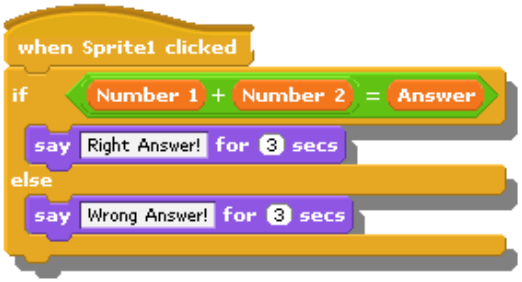
Cut around the line to make a card

Fold the card along the centre line and glue in the middle

What's the Answer?

Sample Solution

Create 3 variables: Number 1, Number 2 and Answer. Use an if else statement. By using the 'when Sprite 1 clicked' command, clicking on the sprite should tell you if the answer is right or wrong. Remember to double click on your variables to make them into sliders as shown on the card.



Solution Cards

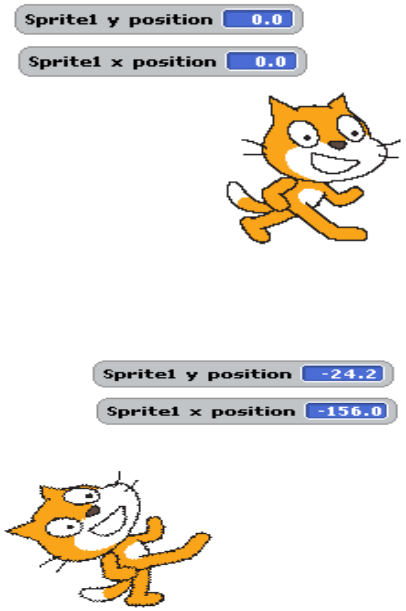
Extreme 1

Cut around the line to make a card

Fold the card along the centre line and glue in the middle

Keeping Track

Set up 2 variables to track the x and y position of the sprite as it moves around the stage.



Scratch Cards

Extreme 2

Cut around the line to make a card

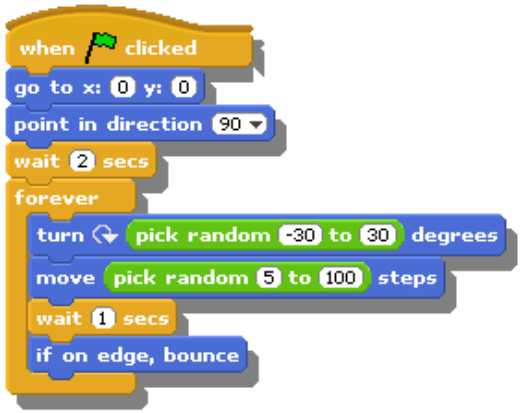
Fold the card along the centre line and glue in the middle

Keeping Track

Sample Solution

To make the variables for x position and y position appear on the stage, click the check box next to the block as shown here:

Once the variables appear on stage, you can then use a forever loop and pick random commands to make the sprite move randomly. The variables track the position of the sprite.



Solution Cards

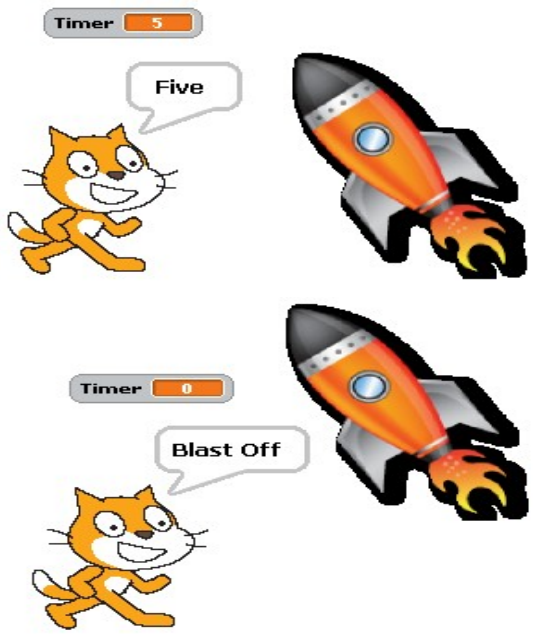
Extreme 2

Cut around the line to make a card

Fold the card along the centre line and glue in the middle

5, 4, 3, 2, 1

Count down a rocket to blast off.



Scratch Cards

Extreme 3

Cut around the line to make a card

Fold the card along the centre line and glue in the middle

5, 4, 3, 2, 1

Sample Solution

Draw a rocket or just use a picture of a plane from the Scratch image library. Create a variable called Timer and set it to 5. Use a 'repeat until' loop. When Timer = 0, broadcast 'blast off' to the rocket sprite.

The rocket sprite contains the following code.

Solution Cards

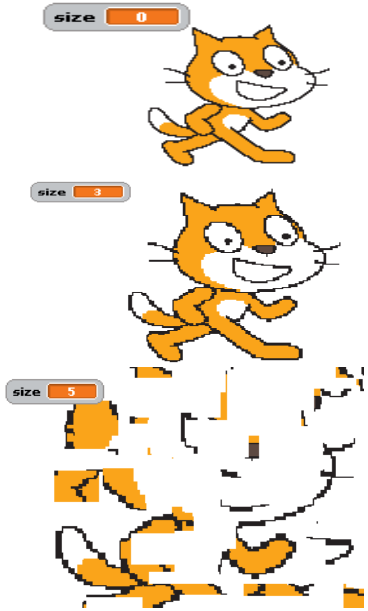
Extreme 3

Cut around the line to make a card

Fold the card along the centre line and glue in the middle

Bigger and Bigger

Use a variable to store the size of your sprite. Set the size to zero and then use a ‘repeat until’ command to grow your sprite back to full size and make it explode.



Scratch Cards

Extreme 4

Cut around the line to make a card

Fold the card along the centre line and glue in the middle

Bigger and Bigger

Sample Solution

Make the sprite shrink to zero. Create a variable named size. Use a repeat until loop to make the sprite grow to until it reaches full size (100%) again.

Solution Cards

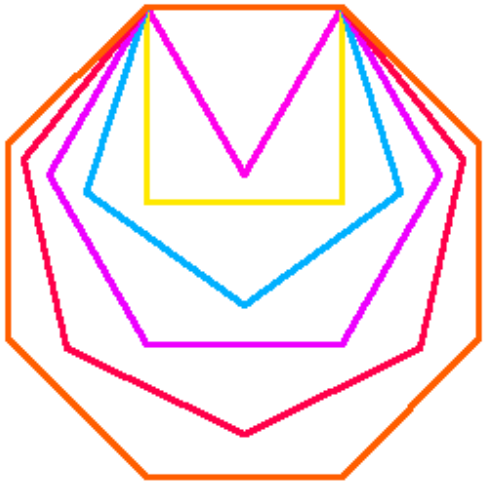
Extreme 4

Cut around the line to make a card

Fold the card along the centre line and glue in the middle

Shape Sensation

Draw a triangle, a square, a pentagon, a hexagon, a heptagon and an octagon (8-sided shape) inside each other as shown.



Scratch Cards

Extreme 5

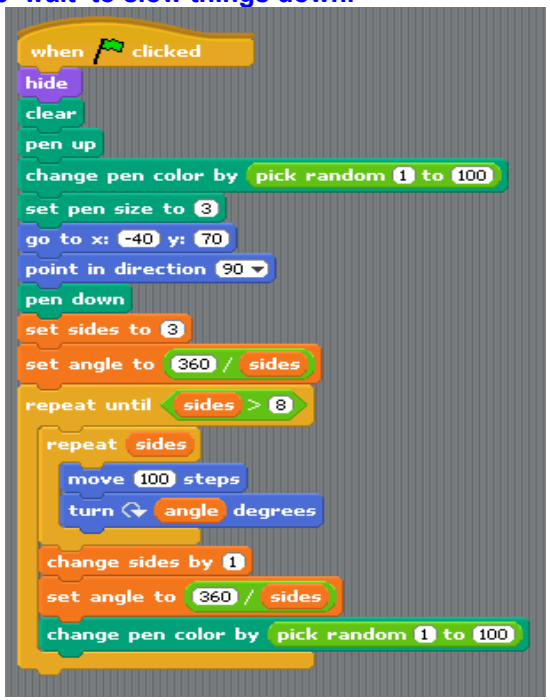
Cut around the line to make a card

Fold the card along the centre line and glue in the middle

Shape Sensation

Sample Solution

Use variables to store sides and angle. Start with a triangle. Use a 'repeat until' loop to stop when sides = 9. Use 'wait' to slow things down.



Solution Cards

Extreme 5

Cut around the line to make a card

Fold the card along the centre line and glue in the middle

Resource 2

Scratch files with Solutions

Folder containing Solutions in Scratch for Extreme Scratch Cards.

CD Resource

“M5L3R2 Scratch Files with Extreme Solutions”