Scratch Workbook Solutions

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Say "hello" to Scratch

Sample Solution

When the green flag is clicked the sprite will go to the position x:100 y:100 on the stage. The sprite will then pause for 1 second, move downwards by 200 steps, pause for .5 seconds, move left 100 steps and turn forward by 90 degrees. The sprite will glide for 1 second to the stage position x:0 y:0 and point facing in a forward direction.



B The Scratch Interface Quiz



Playing With Pictures

0		
	when 🥅 clicked	
	switch to costume	costume1 =
	wait 1 secs	
	move 50 steps	
	switch to costume	costume2 *
	wait 1 secs	
	move 50 steps	
	switch to costume	costume3 •
	wait 1 secs	
	move 50 steps	
	switch to costume	costume4 🔻
	wait 1 secs	
	move 50 steps	

Tell me what to do

Sample Solution

- 1. Buy a top up voucher in a shop or at a vending machine.
- 2. Dial 1741 on your phone.
- 3. Listen to the instructions.
- 4. Enter the code on the voucher and press the # key on your phone.
- 5. Listen for your new balance to make sure it's correct.
- 6. Hang up.

2 Sample Solution

- 1. Making a cup of tea
- 2. Brushing your teeth
- 3. Playing a dvd
- Sample Solution
 - 1. Begin on side A
 - 2. Take goat across to side B
 - 3. Return with empty boat to side A
 - 4. Take dog across river to side B
 - 5. Return with goat to side A
 - 6. Take cabbage to side B
 - 7. Return with empty boat to side A
 - 8. Take goat to side B
 - 9. END

Playing With Music



when space key pressed play note 48 for 0.5 beats play note 50 for 0.5 beats play note 52 for 0.5 beats play note 53 for 0.5 beats play note 55 for 0.5 beats play note 57 for 0.5 beats play note 57 for 0.5 beats play note 59 for 0.5 beats play note 59 for 0.5 beats

End of Module 1 Quiz

0	С.
2	В.
₿	Α.
4	D.
6	Match the following parts of the Scratch interface to the images
	Sprite List Blocks Palette Tool Bar Tabs
	Internet for the formation of the formation

6 Match the letters from the diagram of the Scratch paint Editor to the correct description.



- ОС.
- **8** A.
- **9** B.
- •В.

Think Like a Computer

Sample Solution

In the centre of the page draw a rectangle about 3mm high 3 cm wide. At the midpoint of the top side of rectangle draw a line upwards 5cm in length. Draw a rectangle 4cm high 2 cm wide with the midpoint of the bottom side touching the top of the upwards line. Draw 3 circles inside the top rectangle all 1cm in diameter that are centred horizontally across the

2 Sample Solution

- 1. Draw 3 circles on top of each other. The top circle is the smallest, the middle circle is middle sized and the bottom circle is the largest
- 2. On top of the top circle, draw a square with a line underneath it extending out at the sides of the square
- 3. In the top area of the bottom circle draw a coloured small circle

rectangle and spaced evenly vertically in the rectangle.

- 4. In the centre of the middle circle draw two small coloured circles
- 5. In the top circle, draw two small solid circles side by side in the upper part of the circle
- 6. In the top circle, draw three small circles side by side in the bottom part of the circle in a U shape.
- 7. In the top circle, draw a left facing right angled triangle in the centre of the circle with the base twice the side of the height.
- 8. On the right hand side of the middle circle, draw a line facing north east direction and at the end of the line draw a small hexagon
- 9. On the left hand side of the middle circle, draw a line facing north west direction and at the end of the line draw a small hexagon



B

Could You Repeat That Please?



Over and Over Again







End of Module 2 Quiz

- **O** C.
- **2** B.
- **B** D.
- **4** C.
- **6** A.

Where Are You now?

Linear Search – 14 checks. Check names 1 by 1. Binary Search – 3 checks. > 10 Levey, >15 Moloney, =18 Power Hash Search – 5 checks. Hash key 5, 4th item under this hash key list

Me First Sorting

First Name (A to Z)
Anna
Brian
Mary
Ruth
Shane

Surname (Z to A)	
Scott	
Ryan	
Ryan	
Horgan	
Hogan	

PPSN (low to high)
7860133C
7860277B
7861212F
8392109D
9058693D

Exercise

3 times through the list 3 swaps required

Anna, Ruth, Brian, Shane, Mary (Original List) Anna, Brian, Ruth, Shane, Mary (First Pass through list – Swap 1) Anna, Brian, Ruth, Mary, Shane (First Pass through list – Swap 2) Anna, Brian, Mary, Ruth, Shane (Second Pass through list – Swap 3) Anna, Brian, Mary, Ruth, Shane (Third Pass through list no swaps required)

CSI – Finding Information on the Internet

Exercise 1

- 1. Maroon
- 2. Laithreoirí
- 3. Unplug
- 4. Somali Shilling
- 5. Elleboog
- 6. Aerophobia
- 7. Transport
- 8. Iguazu

Letters 1 – 8: M L U S E A T I

Magic Word Unscrambled: SIMULATE

End of Module 3 Quiz

0	С.
2	D.
ß	D.
4	D.
6	Α.

Module 4

Look at Me

0

End of Module 4 Quiz

- **1** A.
- **2** C.
- **B** B.
- **4** C.
- **6** B.
- **6** B.
- **7** C.

Easy Exercises

Move to a Beat

changes.

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

when Dancer clicked
forever
move (100) steps
play drum (48 🗸 for (0.2) beats
next costume
move (-100) steps
play drum (47 🗸 for (0.2) beats
next costume

Colour Burst

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

Zebra Script



Bug Script



Polly Moves About

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.



Random Drum

4

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.



Oraw a Triangle

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!



Difficult Exercises

0

Build a House

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.



2

Spooky Surprise

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.



Extraordinary Whirl

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.



4 Scribbling Dog

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.



G Score goes Up and Down

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



Extreme Exercises



What's the Answer?

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.





Keeping Track

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.

	۱
5	l
-	



5,4,3,2,1

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.



4 Bigger and Bigger

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.



G Shape Sensation

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.

hide clear pen up change pen color by pick random 1 to 100 set pen size to 3 go to x: 40 y: 70 point in direction 90 pen down set sides to 3 set angle to 360 / sides repeat until sides > 8 repeat sides move 100 steps turn (+ angle degrees change sides by 1 set angle to 360 / sides	
<pre>clear pen up change pen color by pick random 1 to 100 set pen size to 3 go to x: 40 y: 70 point in direction 90 pen down set sides to 3 set angle to 360 / sides repeat until sides > 8 repeat sides move 100 steps turn (> angle degrees change sides by 1 set angle to 360 / sides</pre>	when 🏴 clicked
<pre>pen up change pen color by pick random 1 to 100 set pen size to 3 go to x: =40 y: 70 point in direction 90 pen down set sides to 3 set angle to 360 / sides repeat until sides > 8 repeat sides move 100 steps turn (> angle degrees change sides by 1 set angle to 360 / sides</pre>	hide
change pen color by pick random 1 to 100 set pen size to 3 go to x: 40 y: 70 point in direction 90 pen down set sides to 3 set angle to 360 / sides repeat until sides > 8 repeat sides move 100 steps turn (angle degrees change sides by 1 set angle to 360 / sides	clear
set pen size to 3 go to x: 40 y: 70 point in direction 90 pen down set sides to 3 set angle to 360 / sides repeat until (sides > 8) repeat sides move 100 steps turn (+ angle degrees change sides by 1 set angle to 360 / sides	pen up
go to x: 40 y: 70 point in direction 90 pen down set sides to 3 set angle to 360 / sides repeat until sides > 8 repeat sides move 100 steps turn (+ angle degrees change sides by 1 set angle to 360 / sides	change pen color by pick random 1 to 100
point in direction 90 pen down set sides to 3 set angle to 360 / sides repeat until sides > 8 repeat sides move 100 steps turn + angle degrees change sides by 1 set angle to 360 / sides	set pen size to 3
pen down set sides to 3 set angle to 360 / sides repeat until sides > 8 repeat sides move 100 steps turn + angle degrees change sides by 1 set angle to 360 / sides	go to x: -40 y: 70
set sides to 3 set angle to 360 / sides repeat until sides > 8 repeat sides move 100 steps turn & angle degrees change sides by 1 set angle to 360 / sides	point in direction 90 🔻
set angle to 360 / sides repeat until sides > 8 repeat sides move 100 steps turn ~ angle degrees change sides by 1 set angle to 360 / sides	pen down
repeat until sides > 8 repeat sides move 100 steps turn (> angle degrees change sides by 1 set angle to 360 / sides	set sides to 3
repeat sides move 100 steps turn (+ angle degrees change sides by 1 set angle to 360 / sides	set angle to 360 / sides
move 100 steps turn (angle degrees change sides by 1 set angle to 360 / sides	repeat until sides > 8
turn (angle degrees change sides by 1 set angle to (360 / sides	repeat sides
change sides by 1 set angle to 360 / sides	move 100 steps
set angle to (360 / sides)	turn 🕞 🔒 angle degrees
set angle to (360 / sides)	
	change sides by 1
abaran and calm by side used as (1 to (10))	set angle to 360 / sides
change per color by pick random 1) to 100	change pen color by pick random 1 to 100

Break Dance Project

1. **Change the background**.

The following images show the steps needed to change the background for your stage sprite.









2. Import another sprite into the project and make it dance in different ways when the green flag is clicked.

The following image shows how to import a new sprite into the project.



The sprite chosen for the solution is the 'breakdancer1' sprite from the people folder in the Scratch library. 3 new costumes were imported for this sprite, as shown in the following 2 images.



Once you have chosen your new costume, click on OK. The costumes for the sprite should appear in a list as shown.



The sample script for making this sprite dance when the green flag is clicked is shown below.

	vhen P clicked
	epeat 5
	switch to costume costume2
l	wait 0.5 secs
	switch to costume costume3
	wait 0.5 secs
	switch to costume costume4
	wait 1 secs
	switch to costume costume1

Aquarium Project

1. **Animate the seaweed**.

When you open the Aquarium project, the seaweed sprites are plant1, plant2 and plant3. Click on the plant1 sprite first, to select it, as shown in the following image. You can then add a forever loop, as shown, to move plant1 backwards and forwards.



Similar steps may be taken to animate the sprites plant2 and plant3.

2. If Creature1 touches Creature6, make Creature1 say 'hello'.



Make Creature6 say 'hi there' in response to Creature1.

SCRATCH 🕀 🗄 🎦 File Edit Share Help	
Motion Control Looks Sensing Sound Operators Pen Variables when posser key pressed when chicked when posser key pressed of edge, bounce when forever if on edge, bounce if on edge, bounce if on edge, bounce when is accs if on edge, bounce if on edge, bounce if on edge, bounce wait is accs if on edge, bounce if on edge, bounce if on edge, bounce wait is accs if on edge, bounce if onever if on edge, bounce if on edge, bounce if on edge, bounce if on edge, bounce if on edge, bounce if on edge, bounce if on edge, bounce if onever if one edge, bounce if onever if one edge, bounce if one edge, bounce if one edge, bounce if one edge, bounce if one edge, bounce if onever if one edge, bounce if one edge, bounce if one edge, bounce if onever if one edge, bounce if one edge, bounce if one edge, bounce	6 Aquarium

3. Add a suitable soundtrack.

		<u>س</u> رے ب
SGRATCH 🕀 🗃 🎦 File Edit Share Help	(2 × 53 XK)	
Motion Control Looks Sensing Sound Operators Pen Variables New sound: Record when 2. Click on the import button and the import Eggs 00016 681	6 1. Select the stage sprite for the sprite list and then click on the sounds tab. Import Sound	
when pp sound box appears.		
when Stage clicked	brendan.osulivan	
3. Choose music loops from the list of sounds folders. You can then choose your music and click OK. The sound should appear in the stage sprite's list of sounds.	C Instruments Desktop Wusic Loops Percussion Vocals	
broadcast v broadcast v and wait		
vien I receive	ОК	Cancel
	Stage plant1 plant2 plant3	

Once you have chosen your sound, click on the scripts tab for the stage sprite and the following image shows the code you will need to play the sound as a soundtrack for the Aquarium project.



4. Change the colour of Creature5 if it is touching plant1.

Make sure that Creature5 is selected in the sprite list area. The second 'if' block below can then be added to the existing code. This means that if Creature5 is touching plant1, it will change colour by a random number between 1 and 100.

when foreve		
if	pick random 1 to 6 = 1	
tur	n 🕀 180 degrees	
wait	1 secs touching plant1 ?	
<u></u>	inge color v effect by pick random 1 to 100	

5. Increase the size of Creature3 if touching Creature2.

Make sure Creature3 is selected.

Add the 'set size to 50%' block to the first block of code. This ensures that each time the green flag is clicked, Creature3 returns to 50% of its size.



The second 'if' block in the following script ensures that Creature3 increases in size each time it touches Creature2.

when produced
if pick random 1 to 6 = 1
turn 🗣 180 degrees
wait 1 secs
if touching Creature2 ?
change size by 3

Tamara Project

1. Change the name Tamara to the name JACK.

First delete the last 2 of the existing letter sprites i.e. r and a, so you are left with 4 letters for the word 'JACK'. **Remember** when you delete a sprite you also delete the script associated with that sprite! It is better therefore for this exercise to keep 4 of the letters to change to the letters for 'JACK' so we will still have the scripts for these.

SGRATCH 🖶 🗃 🎦 File Edit Share Help	
Notion Control Looks Sensing Sound Operators Pen Variables	
play sound play drum CD for CD beats play drum CD for CD beats play note COV for CD beats play note COV for CD beats set instrument to CD for CD for CD beats set instrument to CD for CD for CD beats set instrument to CD for	press Green Flag to start, then move the mouse over the letters
change volume by 20 ret volume to 100 % volume change temps tempo to tempo to	x 105 yi-215 New sprite:

Follow the instructions over to change the 4 remaining letters to J A C K.

SCR ATCH 🔿 🖬 🎦 File Edit	Share Help	2 × 23 ×		
Hotion Control Looks Sensing Pen Variables 1. Select the first letter from the sprite list and click on the costumes tab. point in direction CO point two 2. Click on the import	t - 194 y. 141 desctor: 90 Costumes Sounds Taint Import Camero 1 1 229660 0 168 Cdit Copy O	7 Tamara	e Groom Elos és céané	
button and the import costume box appears. drange x by 10 3. Click on the costumes button and then select your letter from the letters library.	Cestames Animals Things	Fantasy Letters	People	speed 22 1-08 yi-211
y position direction		_	OK Cancel	



Repeat the previous steps until you have the letters J A C K as your new sprites. You can change the names of the sprites as shown in the following image.



2. When the mouse touches the letter K, draw a triangle. Change the pen size to 4 first and use the wait command to slow things down.

SCRATCH 🕀 🗄 🔁 🛛	File Edit Share Help		
Motion Control	x 33 yr 135 direction: 90	7 Tamara	/ A
Looks Sensing Sound Operators	Scripts Costumes Sounds	JACK	
Pen Variables			
clear	when A clicked go to x: 33 y: 135		
pen down	pen down forever if touching mouse-pointer ?	This sets the pen size to 4.	
pen up	broadcast k-music	press Green Flag to start,	
set pen color to change pen color by 10		epeat loop then move the mouse over the letters	
set pen color to ()	repeat 3 K is to	a triangle if The letter K is uching the selected.	
change pen shade by 10		e pointer.	
set pen shade to 50			speed
change pen size by 1	when I receive k-music	New sprite: 🔗 🏠 👔	×1-566 y1-320
set pen size to 1	play note 657 for speed beats	JACK-	
stamp		3 A C K instructi	
		Stage	

3. Change the letter C to a cat when clicked. Import a cat costume first.

SCRATCH 🕀 🗃 🎦 File Edit S	hare Help			
Mation Control Looks Sensing 3. Click on the costumes button and then select a cat	c A x -44 y 134 drection 90 Costumes Sounds	7 Tamara	C K	<i> </i>
sprite from the animals library. When you click OK, the cat sprite should appear in the list of costumes for	e: Paint Import Camera 50x70 1 KB Edit Copy &	1. Select the costab for the 'C' s 2. Click on the import	sprite.	
sprite 'C'.		button and the import costume box appears.		
change pen color by E	Impor	t Costume		'5
set pen color to () Computer	Animals	• 9) <mark>2</mark>	
change pen shade by set pen shade to 50	bati-a b	at1-b bat2-a	bat2-b	speed 0.2
change pen size by 1 set pen size to 1 Desktop	Alle	le ma	- Contraction of the second se	x:-116 y:-152
stamp @ Costumes	bee1 bird	d-flying Deffalo1	butterfly1-a	
	butterfly1-b but	terfly2 butterfly3	ati-a	
		unity boundary a	OK Cancel	

To make the C sprite change to a cat when clicked, use the first block of script in the following image.

talilara changeu- Scratch		
SCRATCH 🖶 🖬 🏠 🕫	ile Edit Share Help	
	Scripts Costumes Sounds	
eet x to 0 change y by 10 set y to 0 if on edge, bounce x position y position direction	vhen I receive <u>Crounce</u> play sound <u>Cat</u> until done	Stage

4. When the mouse is touching the letters J, A and K play a different sound. Play 'meow' when the letter C is clicked.

Import your sound from the Scratch sounds library first.

SCRATCH 🖶 🗄 🎦 FI	le Edit Share Help	(2 × 55 ¥)	
Motion Control		7 Tamara	/ A
Sound Operators Pen Variables	ort Impor	1. Click on the sounds tab for the sprite for which you want to import a sound. 3. Choose a sound from the Scratch library of sounds. Your sound should appear on the list of sounds	to start, ver the letters x: 114 y: - 306

Once you have imported your sound, the following image shows you how to apply your sound to your sprite e.g. the cat's 'meow' sound.



Repeat the steps above to add sounds of your choice to the other letters.

Dance Dress Up Project

1. Introduce a new sprite called Ella.



2. Give her 3 different costumes like the other sprites.



3. When the green flag is clicked, Ella should be the smallest sprite and make sure to position her at the end of the line of other sprites on stage.

The next biggest sprite, Dana, is set at 72% in size when the green flag is clicked, so set new sprite Ella's size to approximately 60%, when the green flag is clicked.

Figure out the (x,y) position Ella needs to be in when the green flag is clicked. She should also switch to her first costume, each time the flag is clicked. The script solution for question 3 is below.



4. **When sprite Ella is clicked, she should change costume**. See script below.



5. When the e key is pressed, make Ella dance on the brown platform, in whatever way you like, before returning her to her original position. (Tip: you may duplicate some code from the other sprites by right-clicking on the block of code and dragging it to the Ella sprite).

The other sprites already have scripts associated with them when a key is pressed. First copy the code from one of these sprites and drag and drop it onto the Ella sprite as shown. This will eliminate the need to build this part of the script from scratch.



Edit the script for the Ella sprite when the 'e' key is pressed, as shown.



6. When the letter keys for the other sprites are pressed (i.e. a, b, c, d), make Ella dance in line like the other sprites. (Tip: you may duplicate some code from another of the sprites by right-clicking on the block of code and dragging it to the Ella sprite).

To make Ella dance in line like the other sprites, right click on the block of code which begins with 'when I receive dance' and drag it across to the Ella sprite as shown. This will make Ella dance in a whirl like the other sprites, when the keys a, b, c or d are pressed.



Robot Dance Project

1. **Delete a robot from the floor**.



2. Change the stage.



3. Add a new robot called Robot 4 and make it jump up and down and say "Yippee" when the space bar is pressed.

		الشاقا
SCRA Noto Looke Sound Pen move Et Lurn & E point in point tou go to x: go to x: go to x: change x by 10 set x to 0 change y by 10 set y to 0 if on edge, bounce	Fantasy JetPack Girl Jump-flip More monkeyking monster1-a Jump filt for an antiperson robot1 robot2	2. Click on the costumes button and then select the robot from the fantasy folder. Click on OK and the robot should appear in your sprite list area. Image: Constrained on the select the robot from the robot should appear in your sprite list area. Image: Constrained on the select the robot from the robot should appear in your sprite list area. Image: Constrained on the list area. Image: Constrained on the select the robot from the skull Image: Constrained on the list area. Image: Constrained on the select the robot from the skull Image: Constrained on the list area. Image: Constrained on the select the robot from the south robot from the select the robot from the south robot from the select the robot frobot from the select the robot from the robot from the select the robot from the select the robot from the select the robot from the robo
change y by 10		TTT TTTOO TO A THE



4. Add a new soundtrack. You can add your own soundtrack or music from the Scratch library of sounds.

The following shows you how to add a soundtrack from the Scratch library of sounds.

SCRATCH 🖶 🗄 🎦	File Edit Share Help	(2 × 13 ¥)	
2. Click on the imp button and the imp sound box appear Pen Variables switch to costume robots next costume	Ort Ort x 0 y 0 director 90 S. tpts Costumes Sounds New sound Record Import	1. Click on the sounds tab for the stage sprite.	
costume # say HellOl for 2 secs say HellOl think Hmm for 2 secs think Hmm change color effect by 23 set color effect to 0 clear graphic effects change size by 20 set size to 100 %	Computer Computer Derendanosallivan Desktop Counds	ats ops 3. Choose a soundtr	
size show hide go to front go back 1 layers		OK Cancel	floor robot 4

The following script should be added to the stage sprite to allow the imported soundtrack to play continuously when the green flag is clicked.



5. Add a new variable 'speed' and change the speed at which one of the robots dances.

SCRATCH 🕀 🗄 🏠	File Edit Share Help		
Motion Control Looks Sensing Sound Operators Pen Variables Make a variable Delete a variable	2. Create a new variable called speed by first clicking on the variables button and then on the make a variable button.	1 RobotDance	
note note to 0 change note by 3 show variable note to hide variable note to Hake a list	 ariable name? 3. Type the name of variable i.e. speed, int as shown. 4. Choose the variable name? 	variable to be for r i.e. for robot2, ick OK.	ect a robot from the sprite In this case robot2 is selected. Xr=sz1 y: -278
		Stage	

You can double click on the variable on stage to make it into a slider and then the code below will change the speed of robot 2 as you move the slider.

SCRATCH 🕀 🖥 🏠 File Edit Share Help	2 × 23 XK	
<pre>Index to Control Index Typerators Cound Operators Pen Variables C. Set the speed to 0 at the start when the green flag is clicked.</pre>	1 RobotDance Trobot2 speed Trobot2 move as many steps as are on the speed variable counter on stage. New sprite: Decimation of the robot2 move as tage.	I. Double click on the speed variable to make it into a slider. You can then vary the speed of robot2 by moving the slider. Image: speed of robot2 by moving the sli

Fish Chomp Project

1. Add a variable called score for the hungry fish sprite.



2. Change the score if the hungry fish sprite eats any of the 3 goldfish sprites.

Remember each of the gold fish sprites has the following script, so that if the blue mouth of the hungry fish touches the orange of the goldfish, the message 'got me' is broadcast:

when producted
point in direction 90 -
forever
move (2) steps
turn 🗣 pick random -20 to 20 degrees
if on edge, bounce
if color is touching ?
broadcast got-me v
hide
wait 3 secs
go to x: -200 y: pick random -200 to 200
show

The following image shows the script for the hungry fish sprite. When the message 'got me' is received by the hungry fish sprite (i.e. it has eaten one of the goldfish), the score will change by one. Remember to set the score to 0 each time the green flag is clicked.

Contracting services			
SCRATCH 🕀 🗄 🟠	File Edit Share Help		
Motion Control	hungry fish	3 FishChomp	
Looks Sensing Sound Operators	xx -7 yr -63 direction: 3 Scripts Costumes Sounds	hungry fish score	Click the green flag. Move the mouse to eat the small fish
Pen Variables		12	
Make a variable	when 🛤 clicked		
Delete a variable	set score to 0		
Score	forever if distance to mouse-pointer	🥏 🗸 🖉 🖕	
1. Set the score to 0 at the start, each time the	point towards mouse-pointer		
green flag is clicked.			
hide variable score v		2. Each time the hungry fish to	uches a lu
Make a list		goldfish, 'got me' is broadcas	t. This 🚺 🗸
	when I receive got-mex change score by 1	part of the script will change hungry fish sprite's score by 1	
	play sound chomp	Time 'got me' is received	
	switch to costume closed-mouth		
	switch to costume open-mouth -		227 -
		goldfish goldfish goldfish hungry f	1CO
		Stage	

3. If the score is equal to 10, change the background, hide all the sprites and display the message 'You Win'.

A new background displaying the message 'You Win' is created first.



The letters to spell 'You Win' are then imported. It is also possible to paint the letters using the paintbrush tool in the paint editor.



You can change the colour of the letters you imported as shown.



Finally you need to change the script for the hungry fish and the gold fish when the score is equal to 10.

The script for the hungry fish sprite looks like this.

		eceive	200		
		d chomp			
cha	nge so	ore by			
if	sc	ore = (.0)		
Б	roadca	st winne	er 🔻 🛛	nd wait	
h	ide		TITITI		
-	top all				
Ľ	cop an				
rep	eat 2				
1			ume	closed-moi	Jt
١,	ait (0.	3) secs			
	witch 1	to costi	Ime	open-mout	h

The 'if score = 10' block means that if the score is equal to 10, the message 'winner' is broadcast to all sprites. The hide command hides the hungry fish and the stop all stops everything at the end, once the score is equal to 10.

The sprites goldfish 1, goldfish 2, goldfish 3 and the instructions sprite all have the following script.

when I receive	winner 🔻
hide	

This means that they will all be hidden then they receive the 'winner' message at the end of the game.

The stage sprite has the following script.



Module 7

Towers Of Hanoi

For 15 disks $(2^{n}-1) = 215-1 = 32768-1 = 32767$ For 25 disks $(2^{n}-1) = 225 - 1 = 33554432 - 1 = 33554431$ For 1,099,511,627,775 moves 1,099,511,627,775 = $(2^{n}-1)$ 1,099,511,627,775 + 1 = 2^{n} 1,099,511,627,776 = 2^{n} Log₂(1,099,511,627,776) = n n = 40

Number of Disks	Number of Moves Required to Solve the Problem
6	63
9	511
15	32,767
25	33,554,431
40	1,099,511,627,775
64	9,223,372,036,854,775,808

The Travelling Salesman Problem

2

Date	Journey From	Journey To	Distance
Jun-21	Dublin	Dublin Portlaoise	
Jun-22	Portlaoise	Thurles	65
Jun-23	Thurles	Tipperary Town	45
Jun-24	Tipperary Town	Limerick	45
Jun-25	Limerick	Tralee	110
Jun-26	Tralee	Cork	120
Jun-27	Cork	Clonmel	100
Jun-28	Clonmel	Waterford	55
Jun-29	Waterford	Kilkenny	60
Jun-30	Kilkenny	Dublin	125
		Total Distance	810

End of Module 7 Quiz

0	В.
0	D.
B	A.
4	C.
6	B.

End of Module 8 Quiz

0	D.				
2	В.				
ß	C.				
4	D.				

End of Module 9 Quiz

0	C.			
0	В.			
₿	C.			
4	В.			

End of Module 10 Quiz

0	С.	
2	В.	
B	Α.	
4	С.	