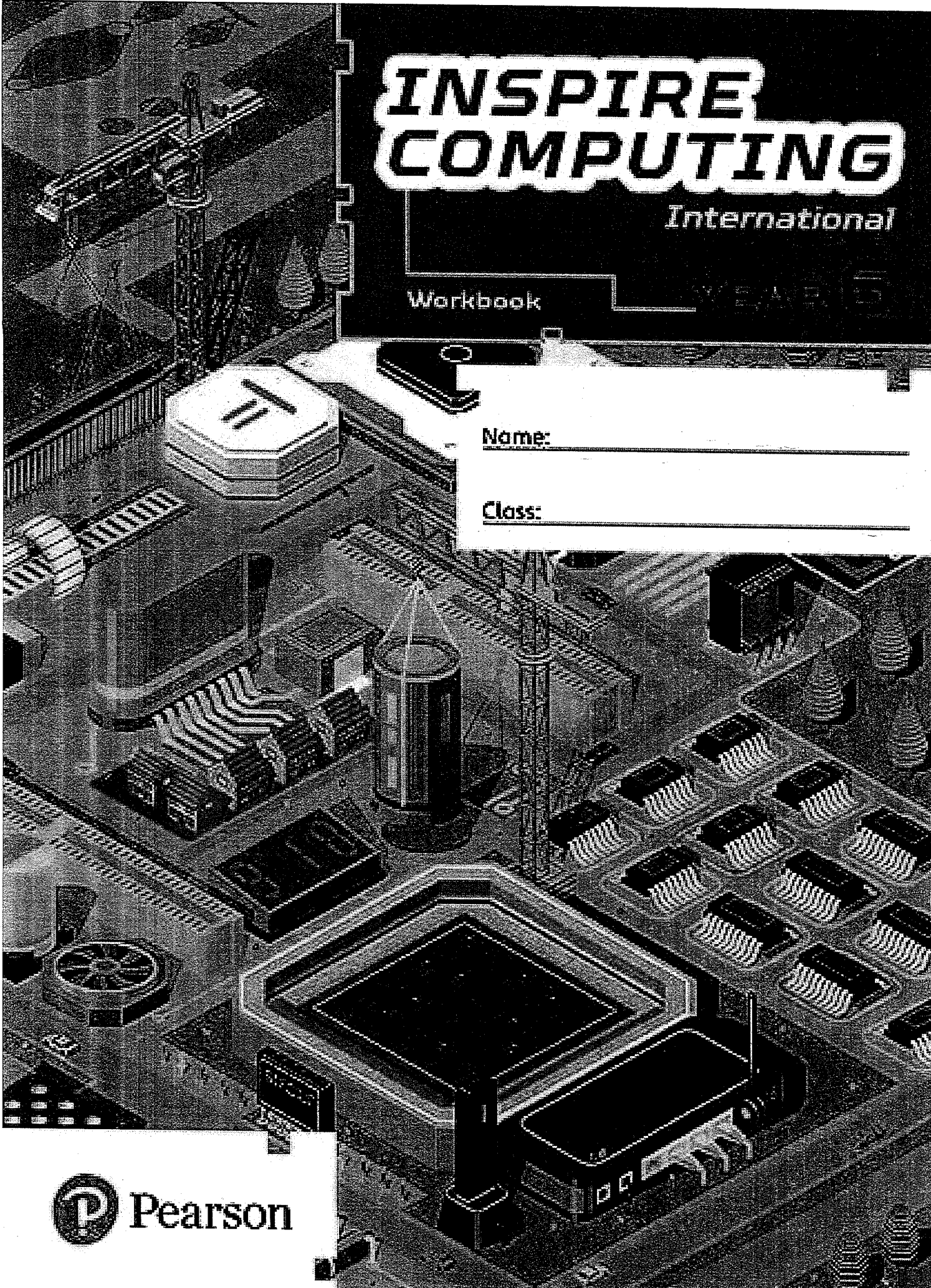




INSPIRE COMPUTING

International

Workbook

YEAR 6

Name: _____

Class: _____

INSPIRE COMPUTING

International

Workbook

YEAR 6

Sabiha Munshi

Series editor: Paul Clowrey



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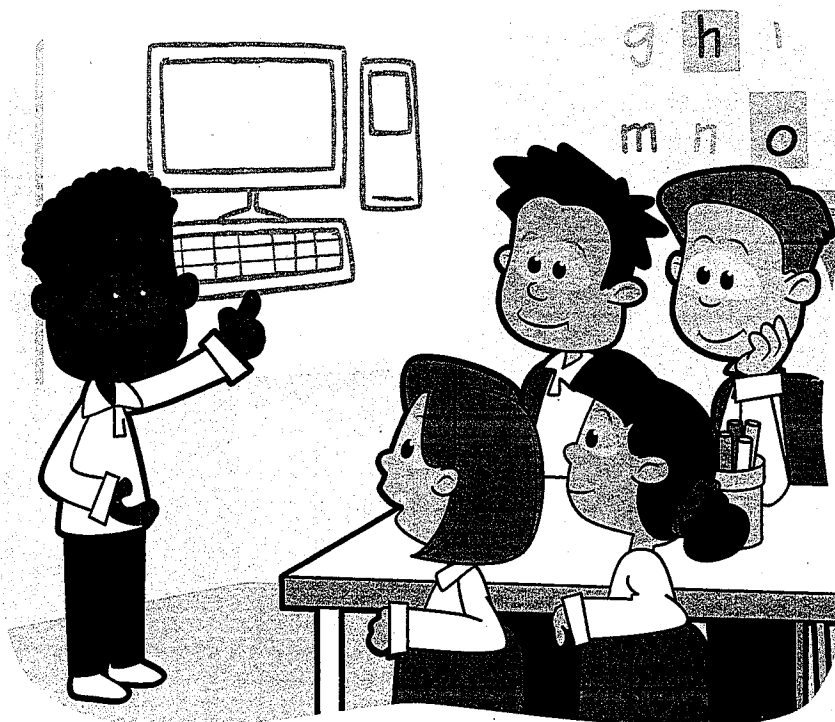
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Welcome to Inspire Computing

We are all living in a continually evolving digital world. By supporting learners in becoming confident and knowledgeable users of technology we can ensure you are prepared for the future.

Inspire Computing makes important topics accessible for all learners. You will understand how to stay safe online while still enjoying the freedom to explore the World Wide Web. You will delve deeper into understanding algorithms through creative approaches, exploring networks and systems, and create and film exciting animation projects!

Each topic includes easy to understand theory, real-world examples, and ideas for further investigation. You will also have the chance to show off your knowledge and understanding through supportive assessments and student checkpoints!



Lessons 3 and 4

Making a video about using digital devices safely

You have been asked to create a video that provides advice on how to use devices safely. For each of the following, write a list of key points on health and safety.

- a) Using a desktop computer at a desk:



- b) Using a tablet computer around the home:



- c) Using a laptop computer at home:



Match the filmmaking terms to the correct descriptions.

close-up, wide, pan

plan of shots, movement and backgrounds

splicing video

types of transition

fade and wipe

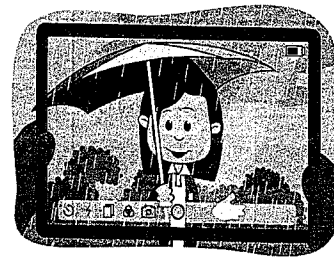
types of camera shot

storyboard

combining two or more clips into one clip

Describe three health and safety issues to consider when filming.

1. _____
2. _____
3. _____



Unit 6

End-of-unit assessment

1. What is a variable?

(1 mark)

2. Which of these is a variable?

- A an algorithm
B the movement of a sprite
C the score in a game
D the backdrop

☐
☐
☐
☐

(1 mark)

3. Which of these is not an example of repurposing an algorithm?

- A editing variables
B rearranging commands
C deleting and starting again
D changing input questions

☐
☐
☐
☐

(1 mark)

Unit 6 Checkpoints

I understand the purpose of a given algorithm and can use logical reasoning to explain how it works.

☐ ☐ ☐ ☐ ☐

I can repurpose an algorithm to solve new problems.

☐ ☐ ☐ ☐ ☐

I can create a program that includes variables such as scoreboards and timers.

☐ ☐ ☐ ☐ ☐

I can decompose a problem into smaller subproblems.

☐ ☐ ☐ ☐ ☐

I know how to make a sprite draw 2D shapes in Scratch.

☐ ☐ ☐ ☐ ☐

Unit 1

Databases

In this unit, you will use simple database methods, structures and types. You will develop your skills in using databases and software to collect, present and evaluate data. You will learn some of the differences between a spreadsheet and a database, and the reasons why databases are used in schools and businesses. Finally, you will use advanced search methods to gather information from large databases online and present your solutions to a problem.



Lesson 1

Looking at ways to store information

1 a) Describe what you think a database is.

A database is...

Tip

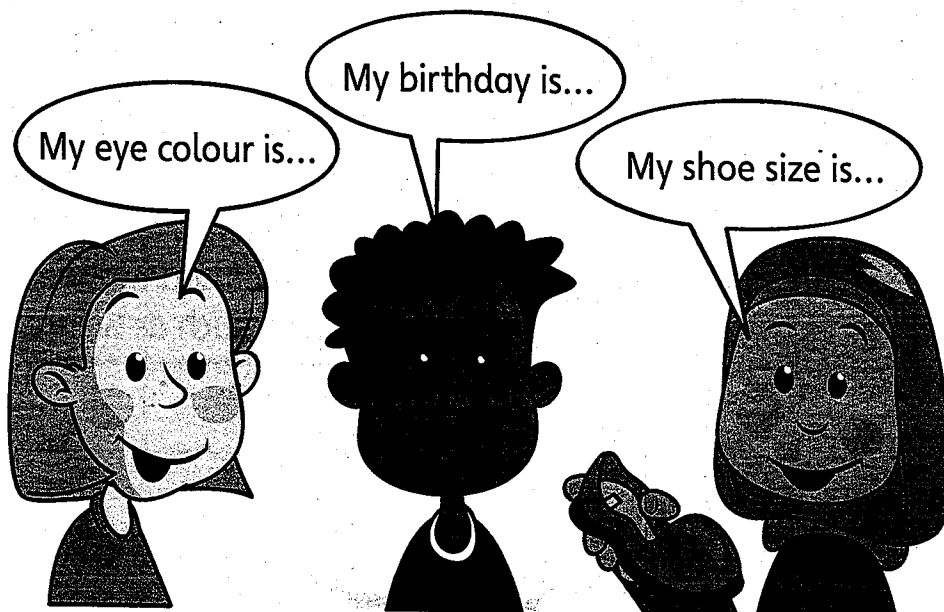
There is a clue in the word itself!

b) List three places where a database could be used.

- 1 _____
- 2 _____
- 3 _____

2

Using the examples shown below as a guide, write down five different features that describe you on page 4.



- 1 _____
- 2 _____
- 3 _____
- 4 _____
- 5 _____

3.

Complete the record card below for a friend.

Name: _____	
Gender: _____	Height: _____ (cm)
Date of birth: ____ / ____ / ____	Eye colour: _____
Favourite food: _____	Hair colour: _____
Favourite activity: _____	

4.

Match the terms, below left, to the examples, below right, from a table of information about a class.

record field database	the whole collection of class records one student and all the information linked to them a piece of information about the student, such as height
---	---



Lesson 2

Creating a data table and running basic queries

1.

Using the record card you made in Lesson 1, complete the table below for up to 10 members of your family. One row has been completed as an example.

Name	Gender	Height	Date of birth	Eye colour	Hair colour	Favourite food	Favourite activity
Layla	F	1.3 m	3.5.2014	brown	black	pizza	swimming

2.

Use the information in your table to provide the information requested below.

a) Write down the names of everyone with black or brown hair.

b) Write down the names of everyone born between September and March.

c) How many have the same favourite food and the same favourite hobby? _____

d) Who is taller than 1.3 m?

e) What hair colours do the ones with brown eyes have?

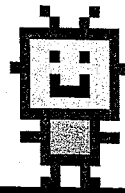
3.

Describe the meaning of the following database terms:

a) Query: _____

b) Filter: _____

c) Sort: _____



Lesson 3

Using spreadsheet software to work with a single table database

1

List three formatting tools that can be used to improve the look of a database created using spreadsheet software.

1 _____

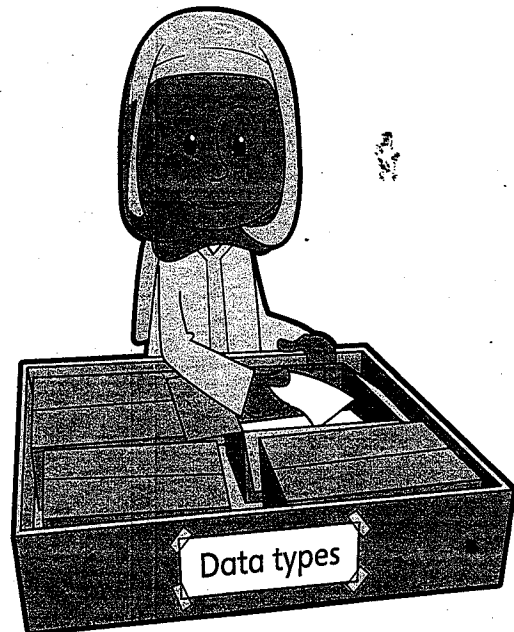
2 _____

3 _____

2

Complete the table below, stating the correct data type for each of the examples. The first one has been done for you.

Data	Data type
Layla	text
27/05/1977	
All3	
27	
Oct 3	
1.75	



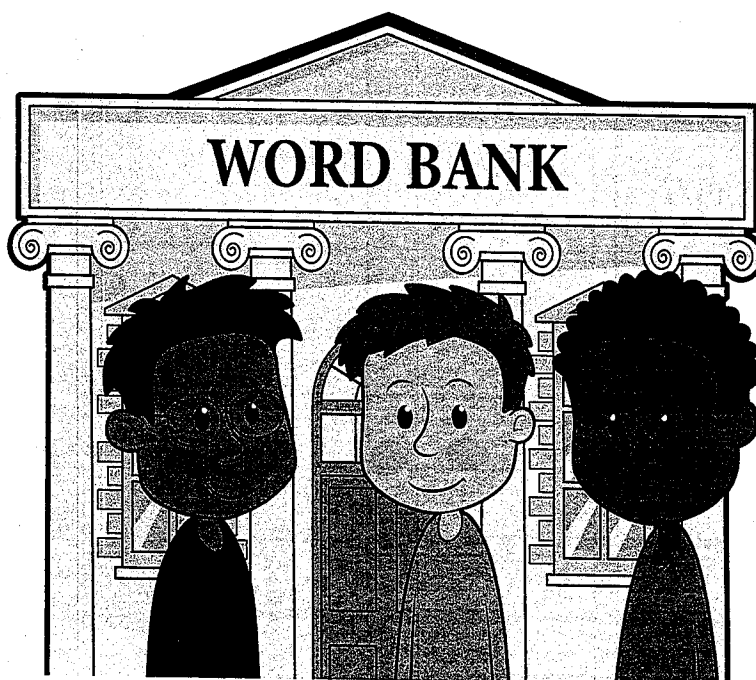
3.

Complete the paragraph below about using a spreadsheet to create a database. Use the words in the word bank to help you.

Word bank

criterion filter query sort

A _____ will show only the parts of the table that you have selected and will hide the rest. This is very useful if you have more than one _____ you want to find. Using the sort function on a table is easy to do with one _____, but a table can't _____ two different columns at the same time. Using filters allows you to select the criteria and sort afterwards if necessary.





Lesson 4

Investigating the use of databases in school

1.

Describe two things a database management system (DBMS) can do that aren't possible using a spreadsheet.

1 _____

2 _____

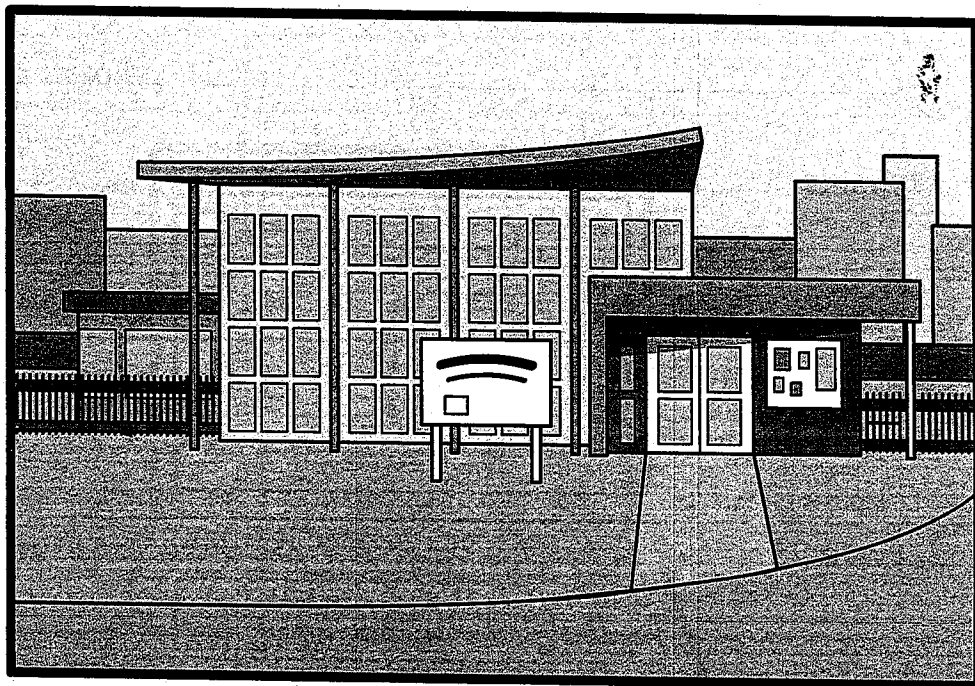
2.

List three different school databases that might be protected with a password.

1 _____

2 _____

3 _____



3.

For each of the databases listed in the table below, tick which users should have access to it.

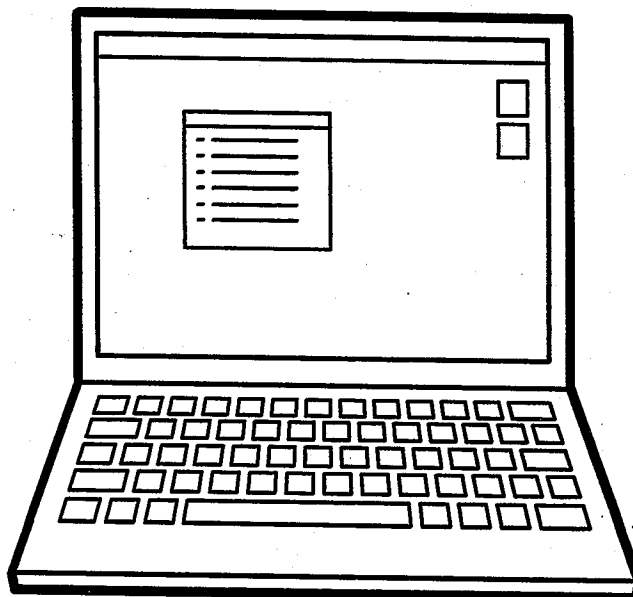
Database	Students	Teachers	Admin staff	Headteacher
Library books				
Library users				
Assessment results				
Staff records				

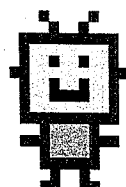
4.

A database of assessment results is set to read-only for all users.

a) What does this mean?

b) Why might this be done?





Lesson 5

Investigating the use of databases outside school

1.

Think about the three types of organisation below, and list two common databases they might all use.

- football club
- dental surgery
- fast-food restaurant

1 _____

2 _____

2.

The manager of a new swimming pool is setting up a member database. Decide which fields are needed and give reasons for your answers.

Field	Needed	Not needed	Reason
Personal details			
Bank details			
Bank PIN			
Ethnicity			
Car details			
Profession			

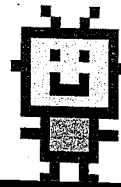
3.

Give three examples of personal or sensitive information that should be password protected or limited to certain users in a database.

1 _____

2 _____

3 _____



Lesson 6

Investigating database management systems

1. Which of the following is **not** an example of database software?

- A Microsoft Access®
- B Apache OpenOffice Base®
- C Microsoft Outlook®
- D Claris FileMaker Pro®

☐
☐
☐
☐

2. Some databases contain a primary key. What is the purpose of this?

3. Three records for a car have been created using Microsoft Access DBMS. Match the fields to the data types.

registration

passengers

year of release

integer [INTEGER]

text [VARCHAR]

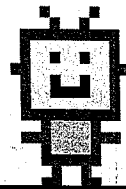
date [DATE]

4. Which **two** of the following are advantages of creating searches using a DBMS?

- A Databases can contain more than one datatype.
- B A query can contain multiple criteria.
- C Only unique fields can be searched.
- D A query can be saved within the database.

☐
☐
☐
☐

Lesson 7



Searching online databases

1.

Describe the difference between a simple and an advanced database search.

2.

Give three search options that commonly appear in a search engine advanced search.

1.

2.

3.

3.

Complete the paragraph below about using characters in an advanced search. Use the words in the word bank to help you.

Word bank

* symbol

+ (plus)

exact

wildcard

The _____ sign is placed between keywords to find pages that contain all of the words. Quotation marks are used to search for a (an) _____ phrase with more than one word, rather than individual keywords. The _____, also called a _____, represents any missing or unknown character in a search.

Lessons 8 and 9



Carrying out an online research project

1.

Read the research brief below and complete the table with the key criteria for each person.

Two friends, Rio and Penny, are looking to get new smart speakers. Both would like voice control and Penny would also like to take hers into the garden, so she would like it to be rechargeable and waterproof. Rio is a fan of dance music with loud bass, so he wants a smart speaker with a sub-woofer. Penny's budget is £150, and Rio's is £200. When it comes to colours, both would like the option to choose.

Name	Criteria 1	Criteria 2	Criteria 3	Criteria 4	Criteria 5

2.

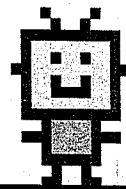
Complete the paragraph below about internet search advice. Use the words in the word bank to help you.

Word bank

advertising assume judge most suitable

When researching online, using basic or advanced methods, remember to carefully _____ the results you find. _____, or paid-for results, will often appear at the top of the list of websites, and may not always be the _____. It is also important not to _____ the first two or three are the best results.

Lesson 10



Reviewing research findings

Using the table in Lessons 8 and 9, research has been carried out and the following results collected for available smart speakers.

Brand/Model	Voice control	Rechargeable	Waterproof	Sub-woofer	Colour choices	Price (£)	Most suitable for
NoiseBoxA	Yes	Yes	Yes	No	Yes	120	
NoiseBoxB	Yes	Yes	Yes	No	No	250	
SPKR50	Yes	No	Yes	Yes	Yes	195	
Msx	Yes	Yes	No	Yes	Yes	160	
SPKR100	Yes	Yes	Yes	No	Yes	135	
XTube	Yes	Yes	Yes	Yes	Yes	145	

Complete the table, adding either Rio or Penny to each row, depending on the criteria you created in Lessons 8 and 9.

Tip

Some of the devices may be suitable for both or neither!

2.

Use the completed database to answer the following questions.

a) Sorting by price, which device is the cheapest?

b) Are any devices not suitable for either Penny or Rio?

If not, why not?

c) How many devices are rechargeable and have a sub-woofer?

d) Which device would you recommend to Rio, and why?

Tip

You might find it easier to type the table into a spreadsheet application so that filter and sort tools can be used to help.



Unit 1

End-of-unit assessment

1 In which part of a database is a single piece of data stored?

A record

☐

B field

☐

C table

☐

D fence

☐

(1 mark)

2 What is the main function of a filter?

A to place records in numerical order

☐

B to check spelling and grammar

☐

C to remove duplicate records

☐

D to narrow down results based on a particular criterion

☐

(1 mark)

3 Which **two** of the following are true when comparing databases and spreadsheets?

A Databases can carry out more complex queries.

☐

B Spreadsheets can carry out more complex queries.

☐

C Spreadsheets cannot link databases together.

☐

D Spreadsheets and databases are exactly the same.

☐

(1 mark)

- 4 You are searching for a waterproof smart speaker with voice control but without a sub-woofer. Which advanced search would be appropriate?

A "speak" +waterproof -woofer - smart

B "smart speaker" +waterproof -woofer

C "smart speaker" +waterproof +woofer

D "smart speaker" -waterproof -woofer

☐☐☐☐

(1 mark)

- 5 Which is true when carrying out online searches?

A The best results are always first.

B Ignore all results after the first page.

C Only simple searches can be done online.

D Paid for advertisements appear first.

☐☐☐☐

(1 mark)

Unit 1 Checkpoints

I understand what the key features of a database are.


☐

☐

☐

I understand the structure of a database, such as records, fields and tables.


☐

☐

☐

I can investigate the different types of database.


☐

☐

☐

I can create a simple database and know how to search a database to find information.


☐

☐

☐

I can format databases and use the filter function to answer search queries.


☐

☐

☐

Unit 2

Programming (part 1)

In this unit, you will look at programming algorithms and create a simple game. You will learn to check for errors and make changes, plus look at variables and values. Finally, you will learn how to use the 'repeat' block when planning and writing algorithms for games.



Lesson 1

Introduction to writing algorithms

1.

Match the algorithm types you studied in Year 5 to their descriptions.

sequence

steps are based on the decisions within the algorithm

selection

a series of step-by-step instructions

iteration

repeating an action until a condition is met

2.

Put the steps for making a strawberry milkshake into the correct order by numbering them from 1 to 10.

☐

Finish.

☐

Turn off blender.

☐

Pour milk into blender.

☐

Put lid on blender and switch on.

☐

Chop strawberries and put into blender.

☐

Clean strawberries and remove any leaves.

☐

Open milk carton.

☐

Take lid off blender.

☐

Start.

☐

Pour milkshake into glass.

3.

It is important to debug every algorithm when complete. What does the term 'debug' mean?

Lesson 2



Creating an algorithm using loops

1.

Which of the following algorithms for a toy robot would **not** benefit from adding a loop?

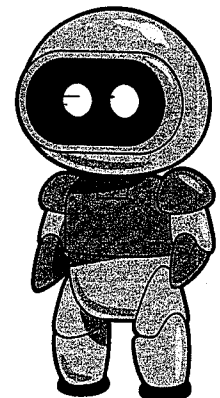
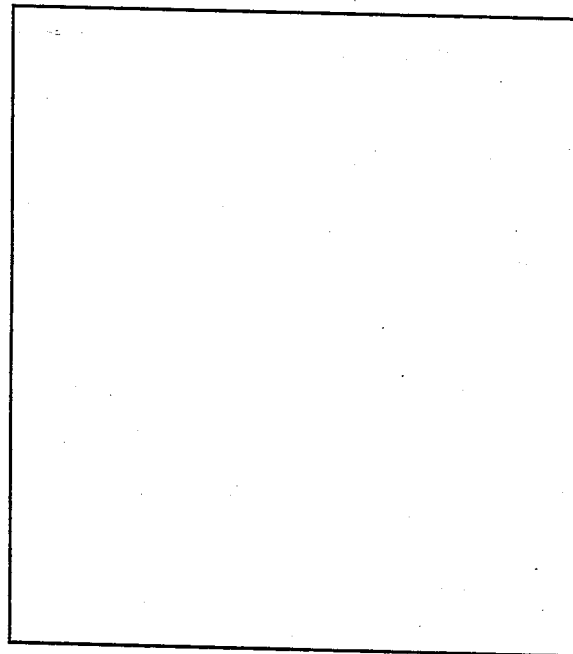
- A Forward, Forward, Left, Forward
- B Left, Left, Forward, Right
- C Right, Forward, Left, Stop
- D Forward, Left, Forward, Stop

☐
☐
☐
☐

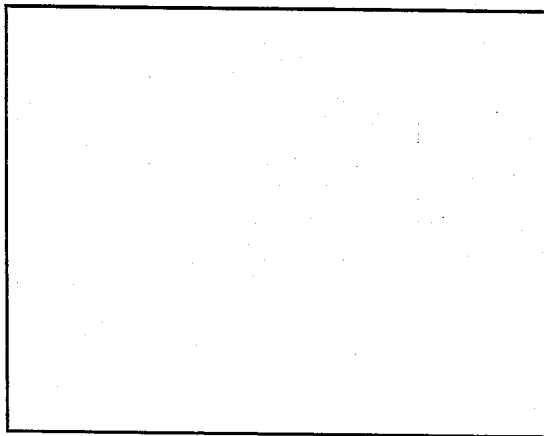
2.

Using a loop, make the following control algorithms more efficient by reducing the number of steps.

- a) Forward
Forward
Forward
Right
Forward
Forward
Forward
Left
Left



b) Left
Forward
Forward
Forward
Right
Right
Forward



3

When programming a robot, you are told that the whole section below can be removed to make the algorithm more efficient. Why is this?

Loop 4

Forward

Loop 2

Right

Loop 4

Forward

Loop 2

Left

4

When programming the same robot to follow a square drawn on the floor, it doesn't finish the path.

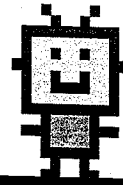
Loop 3

Forward

Right

a) Why is this?

b) How can this be resolved?

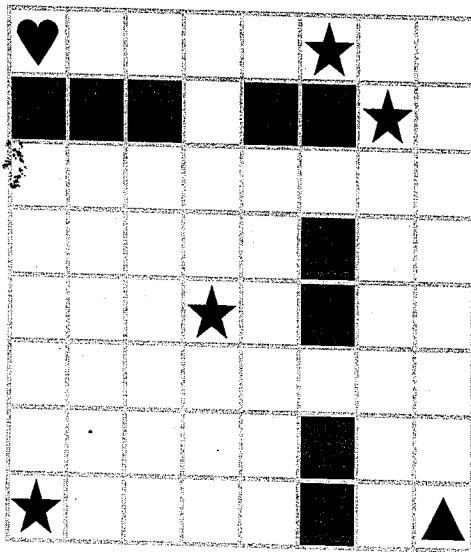


Lesson 3

Programming a solution to a problem that contains loops (part 1)

All of the questions in this lesson are based on the map shown here.

You will start on the space with the triangle.



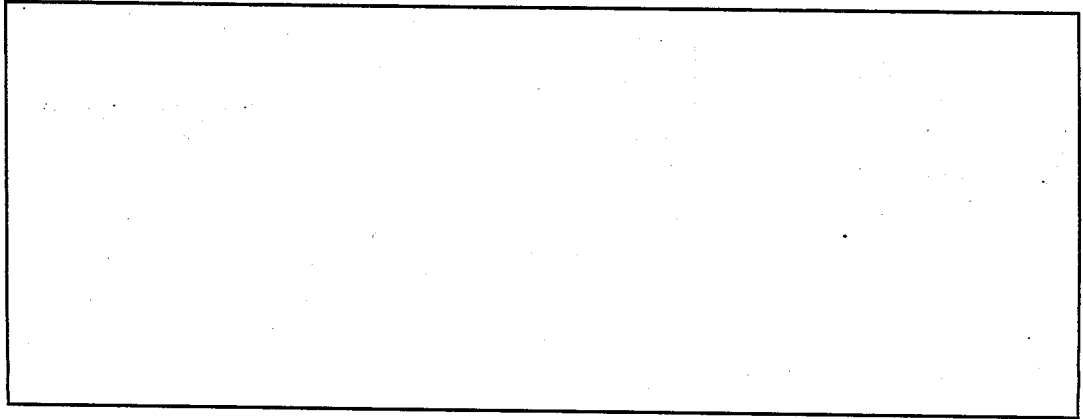
The following commands are available:

- Forward (one square)
- Left (turn left 90 degrees)
- Right (turn right 90 degrees)

The grey squares are walls that cannot be passed through.

- a) Create the shortest route possible to the heart using only the three commands shown. You can pass through the stars.

- b) Create an efficient algorithm using loops when appropriate.



2.

Another version of the algorithm is required with additional criteria: to collect all of the stars before reaching the heart.

Tip

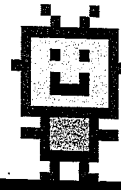
It may be helpful to write these algorithms on a spare piece of paper before trying to answer the questions.

- a) What is the fewest number of commands needed to collect all the stars and reach the heart, without using loops? _____
- b) What is the fewest number of commands needed if loops are allowed? _____

3.

Ask a partner to add three more stars to the grid and then repeat question 2. Try to make your algorithms as efficient as possible.

- a) What is the fewest number of commands needed to collect all the stars and reach the heart, without using loops? _____
- b) What is the fewest number of commands needed if loops are allowed? _____



Lesson 4

Programming a solution to a problem that contains loops (part 2)

1.

When using Scratch to create programs, a loop is created using which command?

- A wait
- B loop
- ☒ C go to
- D repeat

☐
☐
☐
☐

2.

Commands and functions in Scratch are located in objects called what?

- A bricks
- B blocks
- C blips
- D balloons

☐
☐
☐
☐

3.

The cat and other controllable characters in Scratch are known as what?

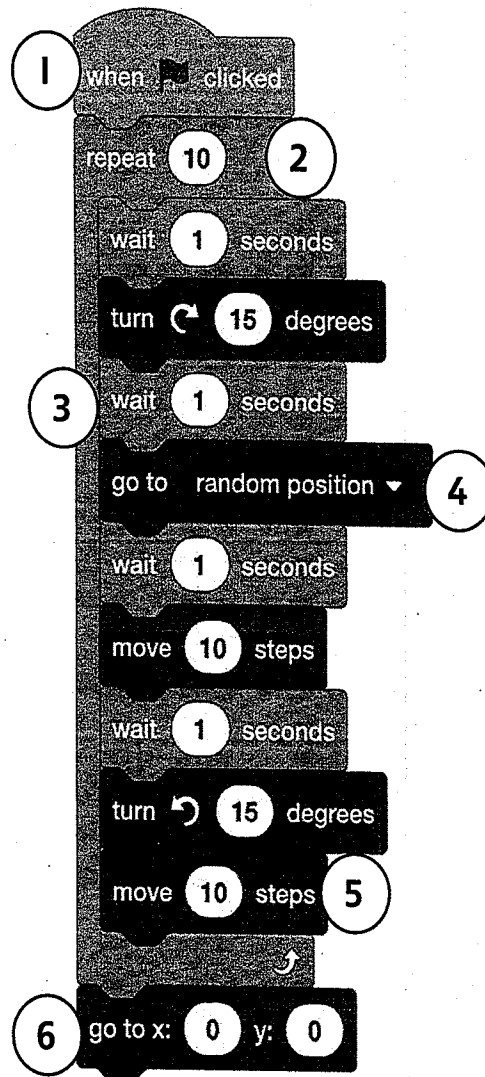
- A pixels
- B blocks
- C sprites
- D operators

☐
☐
☐
☐

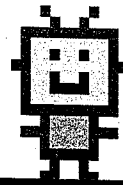
4.

The following Scratch program moves an image of a cat to a random position on the screen every second.

Match the numbers on the program to the description of their purpose.



1	the green flag starts the program
	returns to the centre of the screen
	creates a 1 second pause
	repeats the blocks within it 10 times
	used to change angles and add movement
	move to any x and y co-ordinate on the screen



Lessons 5 and 6

Planning an original game

1.

What are the associated block colours for the following commands in Scratch?

a) Motion

b) Look

c) Sound

d) Events

2.

You are planning to create movement in a game by linking the press of a key on the keyboard to the movement of a sprite.

a) Which control block is required?

A stop

☐

C IF... THEN...

☐

B forever

☐

D IF... THEN... ELSE...

☐

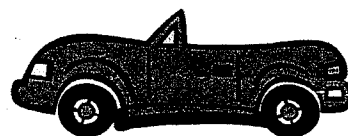
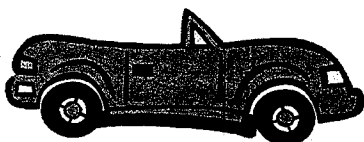
b) Which two categories of block then need to be embedded within it?

1 _____

2 _____

3.

What action has been carried out on the sprite below?



A Rotated 180 degrees

B Flipped vertically

C Rotated 90 degrees

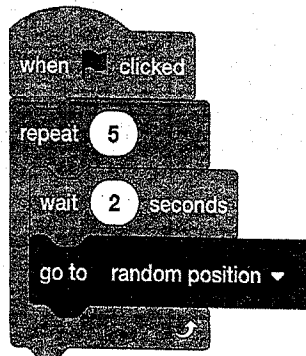
D Flipped horizontally

☐
☐
☐
☐

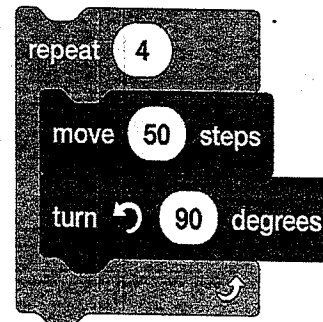
4.

Write the letter from the Scratch program extracts below next to the matching description of what will happen to the sprite.

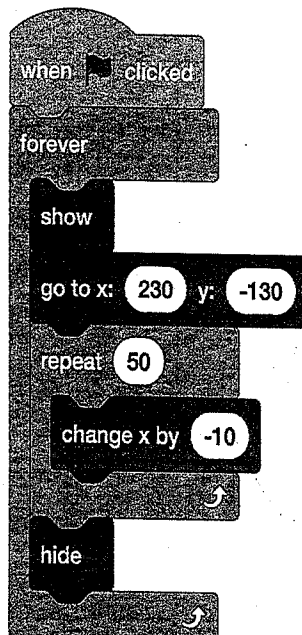
A



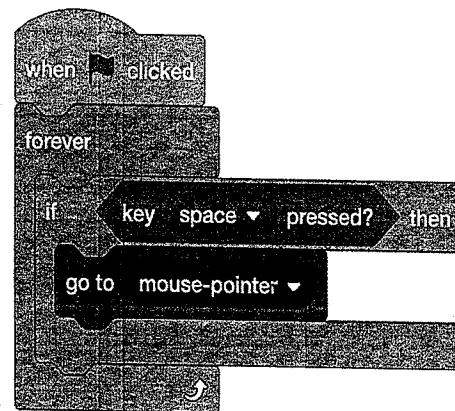
B



C



D



Description	Letter
move to the position of the mouse every time the space bar is pressed	
move to the bottom right of the screen and move left off the screen before repeating	
jump to 5 different positions with a 2 second gap between each jump	
follow the outline of a square	

Lesson 7



Using IF... THEN... in a game to add interaction

1.

Describe the meaning of the term 'decomposition'.

2.

You want your sprite to display a message above it.

- a) Write the code section and block required to display a text string of 'Hello there'.

Code section: _____

Block: _____

- b) How does the 'think' block display a text string?



3

Which Scratch code section contains the block required for detecting sprite collision?

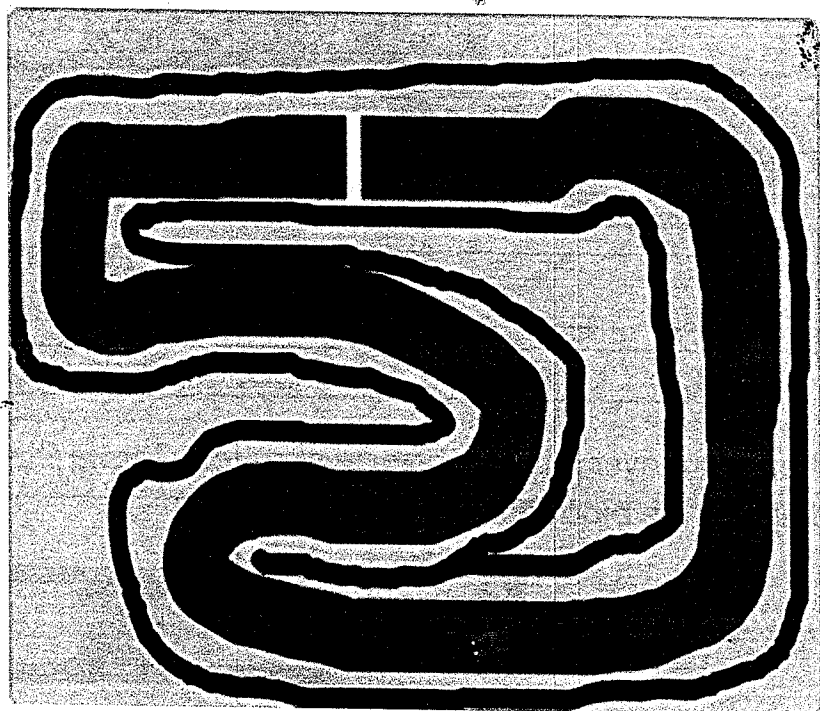
- A Motion
- B Sensing
- C Events
- D Control

4

You are creating a game using cars that includes collisions.

- a) Describe the purpose of the Costumes section in Scratch.

- b) Describe an example of how it could be used in the game shown below.



Lesson 8

Using a variable to create a scoreboard

1.

Describe the meaning of a 'variable' when writing a program.

2.

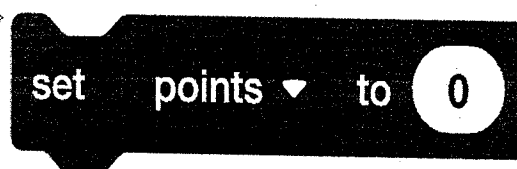
You have created a new variable called 'points' in a Scratch game.

a) A blue tick next to the 'points' variable in the Code menu means that:

- A it will not be seen on the output screen
- B it is linked only to one sprite
- C it will be displayed on the output screen
- D it is linked to all sprites

☐
☐
☐
☐

b) Describe two reasons why the following block might be used.

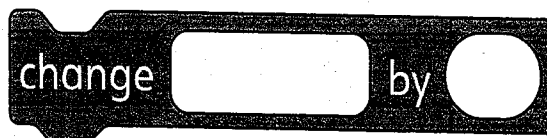


1 _____

2 _____

3.

When the player hits an obstacle, they lose 2 from the 'points' variable. Complete the block below.





Lessons 9 and 10

Alpha and beta testing and reviewing a game

1.

Complete the paragraph below about testing a program. Use the words in the word bank to help you.

Word bank

beta external programmers testers users

When creating an original computer program, alpha testing is carried out by the _____ or their colleagues before any _____ users are able to try it. _____ testing is carried out away from the original people involved, either by potential _____ or professional _____.

2.

Tick whether the scenarios described are examples of alpha testing or beta testing a new game program.

Scenario	Alpha testing	Beta testing
co-programmers checking for errors		
asking a group of gamers to play and look for errors		
hiring an expert to check your code		
double checking your own code		

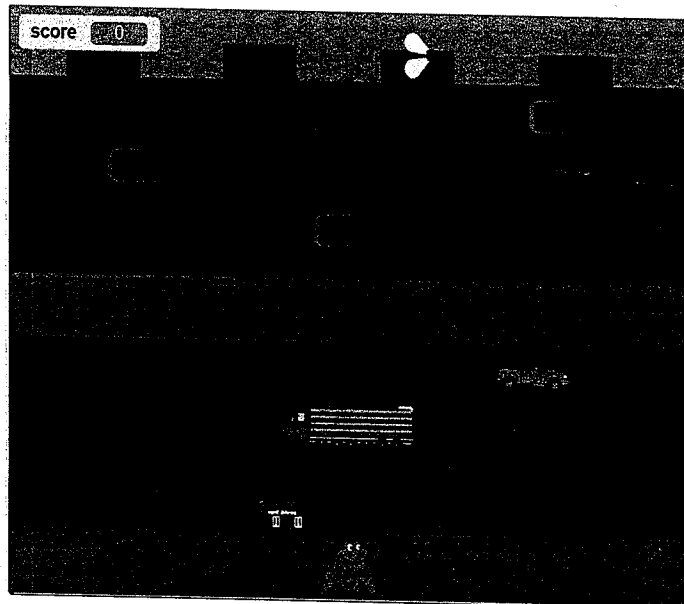
3.

You have finished programming a 'Frogger' style game, like the one described in the Student Book. Describe three common bugs that you might find when testing this sort of game.

- 1 _____

- 2 _____

- 3 _____



4.

Describe the purpose of a test plan.

- _____
- _____
- _____

5.

Suggest three things that could be included in a user guide for a new game created in Scratch.

- 1 _____
- 2 _____
- 3 _____

Unit 2

End-of-unit assessment

1 Which of the following best describes a variable?

- A a Scratch block
- B a place to store information
- C a program
- D a control switch

☐
☐
☐
☐

(1 mark)

2 Read the following algorithm.

Step 1: Put cereal into a bowl.

Step 2: Pour milk over the cereal.

Step 3: Pick up a spoon.

Step 4: Scoop up cereal and milk with the spoon and eat.

Step 5: Repeat Step 4 until all the cereal is gone.

Step 6: Wash bowl and spoon.

Step 5 could also be described as using which of the following?

- A alpha testing
- B selection
- C iteration
- D sequencing

☐
☐
☐
☐

(1 mark)

- 3 Write down one advantage of using a loop/iteration/repeat step.

(1 mark)

- 4 Which of the following will move a sprite vertically down the screen?

A positive x

B negative x

C positive y

D negative y

☐☐☐☐

(1 mark)

- 5 What happens if the sequence is wrong in an algorithm?

A The program will not change.

B The program will produce unintended results.

C The program will run for ever.

D The program will not run.

☐☐☐☐

(1 mark)

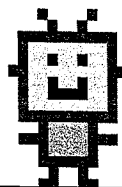
Unit 2 Checkpoints

I understand what algorithms are and know how to write them.	  	<input data-bbox="1313 275 1382 353" type="checkbox"/> <input data-bbox="1313 365 1382 443" type="checkbox"/> <input data-bbox="1313 454 1382 533" type="checkbox"/>
I know the importance of sequencing my code correctly.	  	<input data-bbox="1313 566 1382 645" type="checkbox"/> <input data-bbox="1313 656 1382 734" type="checkbox"/> <input data-bbox="1313 745 1382 824" type="checkbox"/>
I can use logical reasoning to explain how an algorithm works.	  	<input data-bbox="1313 857 1382 936" type="checkbox"/> <input data-bbox="1313 947 1382 1025" type="checkbox"/> <input data-bbox="1313 1037 1382 1115" type="checkbox"/>
I can use conditional statements when writing code.	  	<input data-bbox="1313 1149 1382 1227" type="checkbox"/> <input data-bbox="1313 1238 1382 1317" type="checkbox"/> <input data-bbox="1313 1328 1382 1406" type="checkbox"/>
I understand the importance of testing and how it helps with programming.	  	<input data-bbox="1313 1440 1382 1518" type="checkbox"/> <input data-bbox="1313 1529 1382 1608" type="checkbox"/> <input data-bbox="1313 1619 1382 1697" type="checkbox"/>

Unit 3

Networks in society

In this unit, you will look at the impact that technology has on our lives. You will research the uses of the global network (internet), online communities and social networks. You will look at the dangers that can be found in these communities and learn how to stay safe when using them. Finally, you will consider the positive effects and benefits of physical networking and create a code of conduct to share with others.



Lesson 1

The impacts of technology

1.

Think about contacting a member of your family for a chat on their birthday. How has this action changed since your parents or older family members did the same thing when they were your age?

2.

For each of the scenarios below, describe two positive and two negative things. These might relate to either cost, environmental issues or ease of use.

Tip

It may help to talk to your teacher or a family member for their experiences with technology. Internet research will also help.

Scenario 1

Once, you would buy a record from a shop and play it on a record player. Then CDs came along, but you still had to play them on a special device. Nowadays, you can buy and download music straight to a phone or other device to play it.

Positives

1. _____

2. _____

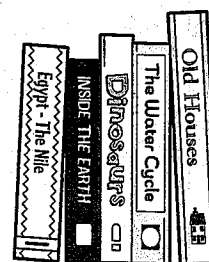
Negatives

1. _____

2. _____

Scenario 2

Books printed on paper can be bought from bookshops or online. Many books are now also available in an electronic format (eBooks), which you can download and read on a device anywhere, at any time.



Positives

1 _____

2

Negatives

1 _____

2 _____

Scenario 3

People once booked holidays by visiting a travel agent, who would advise on the best hotels and ways to travel and make the booking for the customer. Now, you can book a holiday online yourself, using forums and communities to find advice on where to stay, visit and eat.



Positives

1 _____

2 _____

Negatives

1 _____

2 _____

Lesson 2

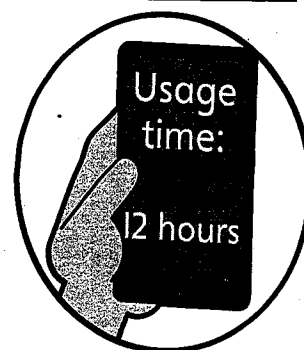


The impacts of technology on information services

1.

At a school parents evening, the staff want to give parents advice on the warning signs to look for that a student is spending too much time online.

Describe two warning signs they might give to parents.



1 _____

2 _____

2.

Describe two ways computer technology is used in a modern hospital, and two ways it might be used 30 years from now.

Currently:

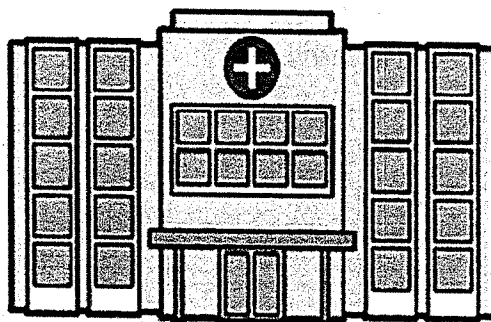
1 _____

2 _____

30 years from now:

1 _____

2 _____

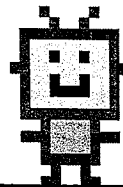


3.

Below are three scenarios that have changed directly because of technology, and specifically the internet. For each one add three bullet points to describe what would have been done in the past and how it would be done now using the internet.

Scenario	In the past	Now
A student has been given a homework research project about the 1969 moon landing.		
Three school friends have made their own short film about a 1950s style monster from outer space and want to share it with friends.		
An amateur athlete wants some new running shoes but is worried about how they fit and whether they will be available locally.		

Lesson 3



Planning a research project

1

When planning a research project, it is important to look at options before choosing a subject. For example, the impact of technology on a chosen industry requires some thought on the choice of industry.

List a minimum of three industries you could choose to research.

2

A typical research project might be to consider what impact technology has had on classrooms around the world.

Suggest four questions that could be used to plan the research for the project. For example, *What examples of technology have been introduced in the classroom?*

1

2

3

4

3.

Give three sources of information that could be used in a research project.

1 _____

2 _____

3 _____

4.

Deciding how to present your findings is also important. Describe one advantage and one disadvantage for each of the following methods.

a) A visual presentation using slides:

Advantage: _____

Disadvantage: _____

b) A spoken presentation:

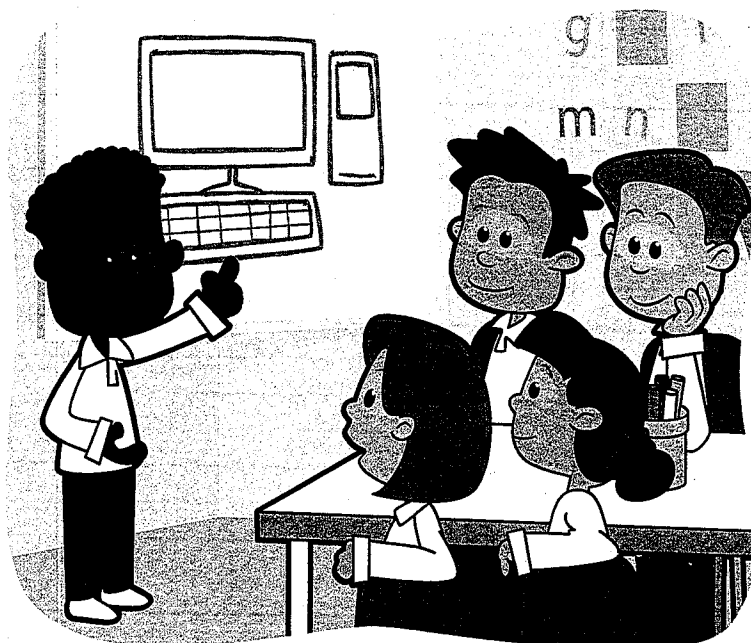
Advantage: _____

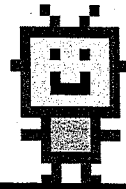
Disadvantage: _____

c) A written report:

Advantage: _____

Disadvantage: _____





Lessons 4 and 5

Analysing and presenting a research report

1

The following terms are important when analysing your research. Describe the meaning of each one.

a) Reliability:

b) Appropriateness:

c) Bias:

2

Online communities can be a great source of opinion from around the world.

a) Give two examples of online communities.

1 _____

2 _____

b) Describe two concerns that should be noted when carrying out research using online communities.

1 _____

2 _____

3

Provide two pieces of advice for anyone giving a verbal or visual presentation.

1 _____

2 _____



Lesson 6

A class survey on the social impact of technology

1.

Describe three benefits and three potential dangers of social networking.

Benefits:

1 _____

2 _____

3 _____

Potential dangers:

1 _____

2 _____

3 _____

2.

Give three different methods for carrying out a survey.

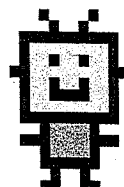
1 _____

2 _____

3 _____

3.

What is the difference between a closed question and an open question?



Lesson 7

The benefits of physical social networking

1.

Describe what is meant by 'physical social networking'.

2.

In addition to making new friends, give four benefits of someone taking part in a physical network.

1 _____

2 _____

3 _____

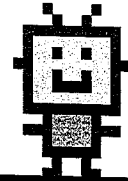
4 _____

3.

The following examples of physical social networks can be supported using technology. For each one, describe how technology might be of use. The first one has been completed for you.

Activity	How technology might help
Two friends arranging to visit a busy ice-rink.	■ they can message each other to arrange a time ■ tickets could be booked online ■ online research will show when the rink is not as busy
A group of friends going for a walk through a local valley.	
Travelling to a basketball competition.	

Lesson 8



Online social networking

1. Many social networking sites include a minimum age restriction of:

A 8 years old

☐

C 13 years old

☐

B 10 years old

☐

D 18 years old

☐

2. Match the social network functions to the correct descriptions.

block

copying a file from your device to the internet

report

asking, or being asked, to make a direct online connection

friend request

ensuring a person cannot send you messages

upload

telling the social network about an abusive user

3. Describe the role of a social network moderator.

4. People are advised to stay anonymous when they are online. Write three ways this can be done.

1

2

3



Lessons 9 and 10

Staying safe on social networking sites and creating a code of conduct

1 Give three examples of cyberbullying.

1 _____

2 _____

3 _____

2 Complete the following paragraph about staying safe online. Use the words in the word bank to help you.

Word bank

adult hurtful location log out messaging
passcodes photographs physically report

Make sure you research any _____ app before installing it, especially if it shares your _____. Never post anything that might be _____ to or untrue about another person, including any _____ without their permission. Always _____ of social networks on shared computers and use extra _____ when possible. Only accept friend requests that are from people you _____ know and keep privacy settings to the highest level. Always _____ anything inappropriate to the site (look for a report button) and also to a responsible _____.

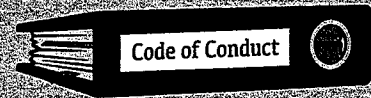
3.

Young people learn about staying safe online at school, but many older people didn't get any advice at school.

Write a code of conduct for an older audience about using social networks. Try to include at least five points.

Tip

Remember, a code of conduct is a set of rules that everyone is expected to follow.



Code of conduct

Unit 3

End-of-unit assessment

1 Which of these is an example of an online community?

- A a group that meets up every Saturday to play tennis ☐
- B a web-based group in which members share tips about basketball ☐
- C a team that plays hockey on Saturdays ☐
- D any pickle ball team that plays at weekends ☐

(1 mark)

2 Which of these should you use to find an online community?

- A email ☐
- B database management software ☐
- C web browser ☐
- D word processor ☐

(1 mark)

3 Which of these is **not** an example of cyberbullying?

- A calling people names in the playground ☐
- B repeated bullying behaviour that takes place on electronic devices ☐
- C a single occasion of bullying behaviour that takes place on a smartphone ☐
- D writing hurtful comments about people on social media ☐

(1 mark)

- 4 Are the following statements true or false? Tick the correct boxes.

Statement	True	False
People always tell the truth online.		
Your personal information could be stored, so think carefully about what you share.		
You can never be sure who you are talking to online.		
It's okay to lie online. Most people do.		

(4 marks)

- 5 What does it mean to 'block' someone online?

- A to report the person's posts ☐
- B to stop the person from contacting you ☐
- C to check the messages have been sent by a real person ☐
- D to ensure that the person's messages meet required standards ☐

(1 mark)

Unit 3 Checkpoints

I understand the impacts of networks on learning, entertainment and leisure services.

	☐
	☐
	☐

I understand the negative aspects and risks of online social networks, including cyberbullying, anonymity, meeting face to face and social media.

	☐
	☐
	☐

I understand the key features of online communities.

	☐
	☐
	☐

I know how to use different software applications to design and create content.

	☐
	☐
	☐

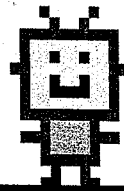
I know how to keep safe and be responsible and respectful when using digital technologies. I know how to report any concerns.

	☐
	☐
	☐

Unit 4

Video editing

In this unit, you will learn about responsible and safe behaviour when using or broadcasting videos. You will learn how to use sound and text in videos, which you will plan using storyboards. You will also edit videos and add special effects. The final outcome will be a video that you can share with others.



Lesson 1

Staging on screen

1

Describe two problems you may have if you don't plan a film before you begin filming it.

1 _____

2 _____

2

Match the film terms to the correct descriptions.

staging

a series of frames running in sequence

shot

a single still picture in a film

frame

planning out everything that is going to be filmed

3

Think of four questions to answer when planning a film. For example, *Who is the intended audience?*

1 _____

2 _____

3 _____

4 _____

4.

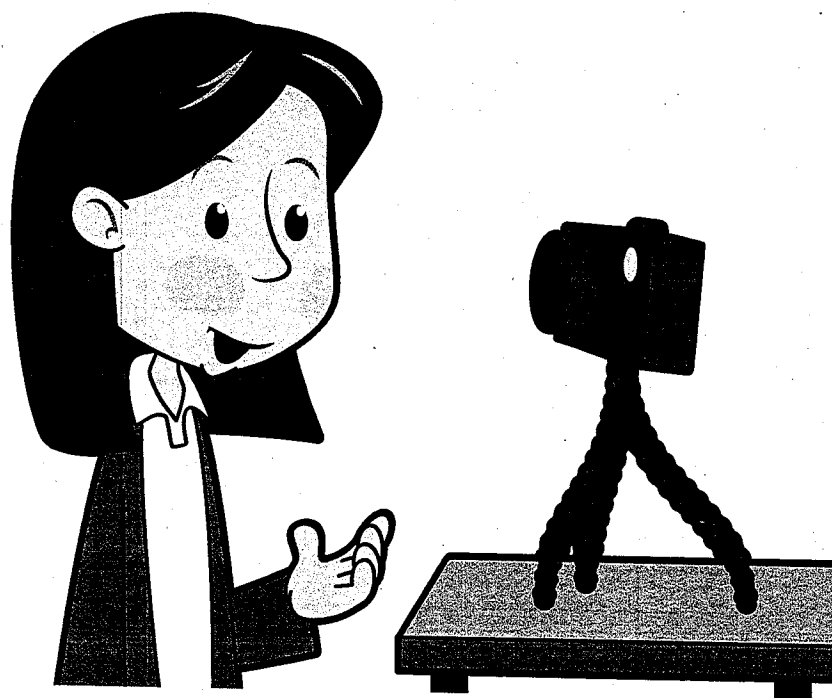
Imagine you are creating a short scene about what to do if the school fire alarm rings. Answer the following questions that you might consider when planning it.

a) What locations might be used?

b) What props would be needed?

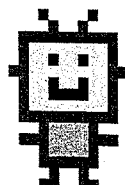
c) Who might you include?

d) What is a potential problem in making a film like this in school?



Lesson 2

Using sound



1.

Three different film scenes are described below. For each one, give examples of the sorts of sounds the audience would expect to hear during the scene. These can include speech, natural sounds and effects.

Tip

Don't just think about the people; also think about their surroundings and objects they might interact with.

- a) Two people are driving home at night in the rain through a forest. There are no streetlights, and it has been raining for a long time.

- b) Three friends are walking a dog on the beach, early in the morning.

- c) A couple are eating a meal in a restaurant to celebrate a birthday.

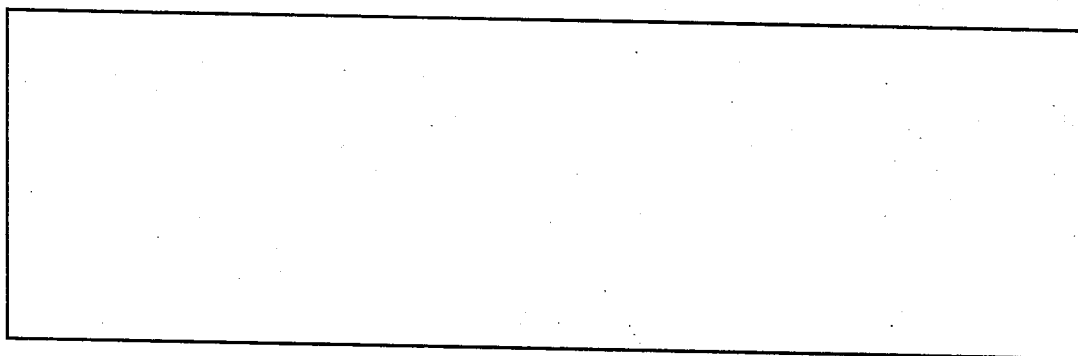
2

Thinking about the same three scene descriptions, now describe the type of music you might expect to hear in the background.

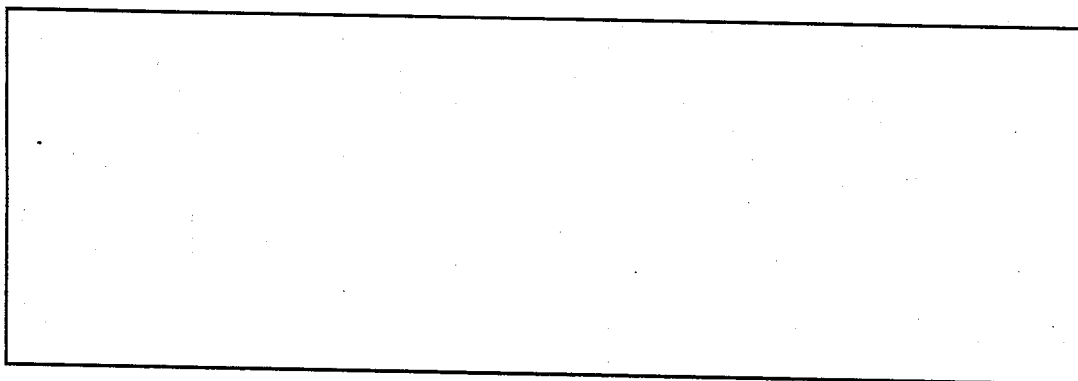
Tip

You could include styles, instruments, tempo and how it might make the viewer feel.

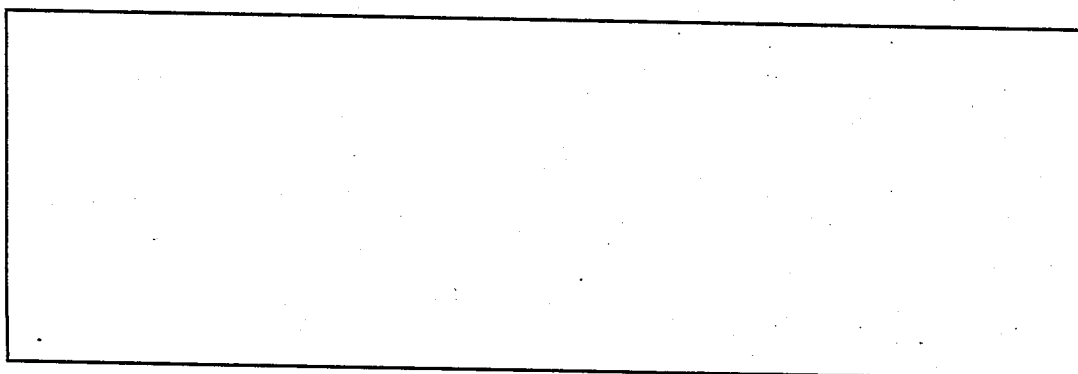
a) Driving in the rain:

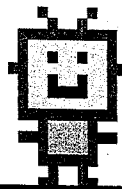


b) Walking on the beach:



c) A birthday meal:





Lesson 3

Good use of text

1.

Give three potential uses of on-screen text in a film.

1 _____

2 _____

3 _____

2.

Describe the difference between a script and a screenplay.

3.

One common element of a screenplay is given below. Name three others.

1 Camera position

2 _____

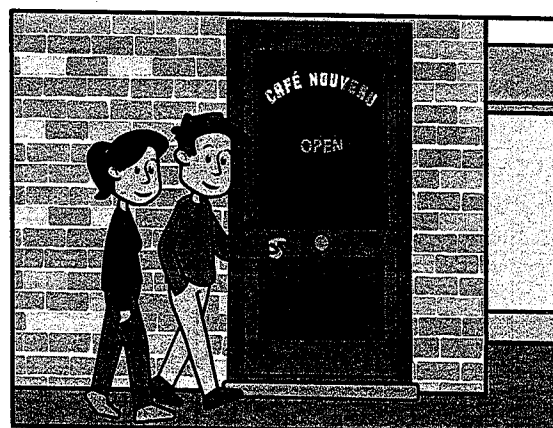
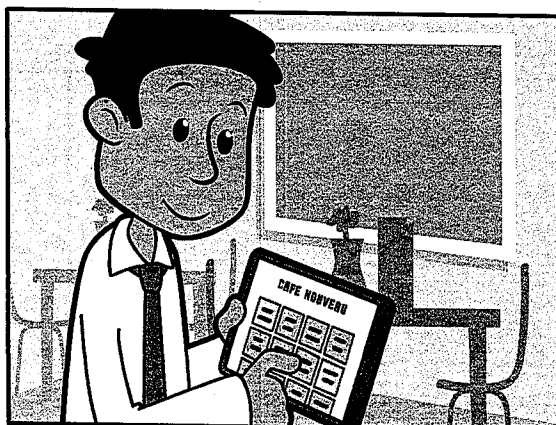
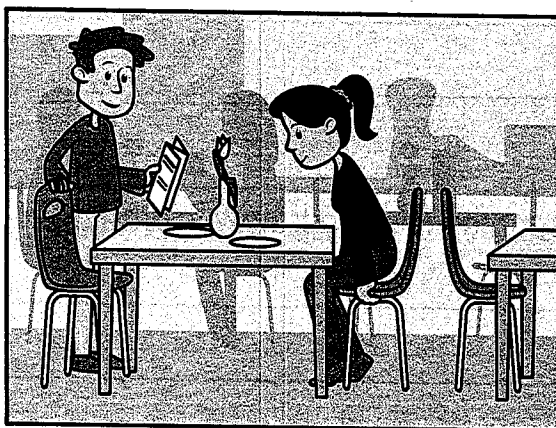
3 _____

4 _____

4.

Arrange the parts of a screenplay below into a logical order so it could be filmed. Put them into the correct sequence by numbering them from 1 to 8.

- | | |
|--|--|
| | Person 2: "Coffee please". |
| | Camera Close up: Person 2. |
| | Wide shot of two people sitting down. |
| | Owner: "What can I get you?" |
| | Camera looks at the two people outside a café. |
| | Person 1: "Tea please". |
| | Camera Close up: Person 1. |
| | Close-up of two people walking into a café. |





Lessons 4 and 5

Planning and storyboarding a short video

1.

Read the short film description below. Suggest what each scene would show if the film was divided into six scenes.

Short film description

An expert at the site of an erupting volcano describes what is happening.

Tip

Don't forget titles and end credits.

Scene	Scene description
1	
2	
3	
4	
5	
6	

2.

When planning a film, a storyboard is essential.

a) Describe the purpose of a storyboard.

b) List four examples of information a storyboard should include.

1

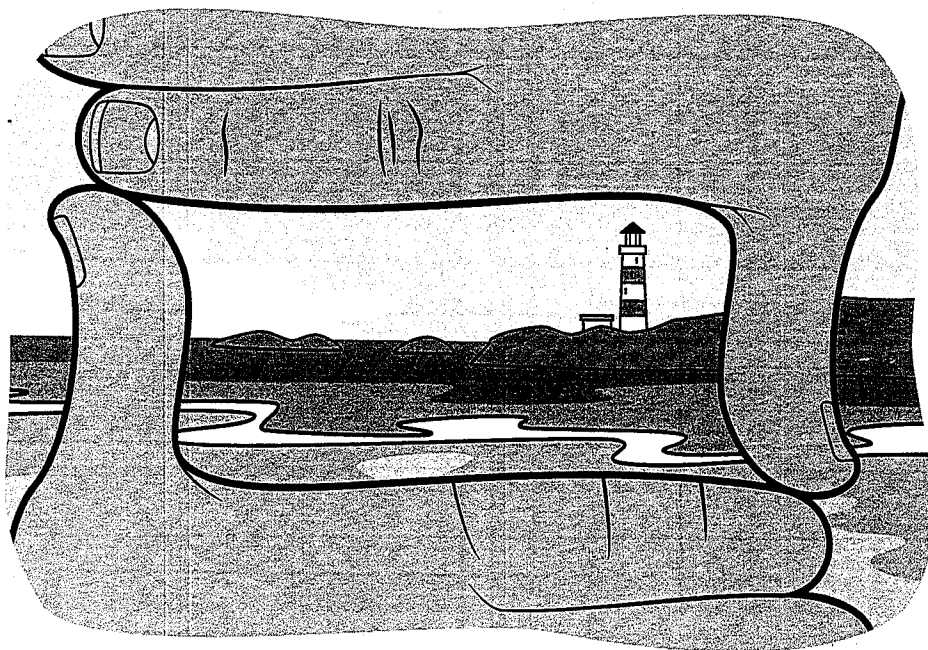
2

3

4

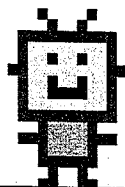
3.

Describe the purpose of 'finger-framing' when planning a film.



Lessons 6 and 7

Shooting a video



1. Give four pieces of safe practice advice for anyone about to start filming.

1 _____

2 _____

3 _____

4 _____

2. Complete the paragraph below about camera control. Use the words in the word bank to help you.

Word bank

digital frame optical ratio zoom

Increasing or decreasing the size of something, without moving the camera, is done using the _____ function. It is important to remember that using _____ zoom will not affect the clarity of your video, but _____ zoom may start affecting the clarity of the video as it stretches the image. The aspect _____ tool is also used to match the shape of the _____ to suit the screen the final film will be viewed on.

3.

Match the terms about shooting a video to the correct descriptions.

light balance

aiming the camera up or down towards the subject

focus

a fixed, stable device for mounting the camera

tripod

how much light is captured when filming

camera angle

used to decide which object is clear in the frame

4.

Give one example of when it might be necessary to re-shoot a portion of a film.



Lessons 8 and 9

Video editing



1

- a) Describe what the following editing techniques do.

Cropping: _____

Transitions: _____

- b) What is the difference between splicing and splitting video?

2

- Why is it often difficult to agree on a final edit of any film?

3

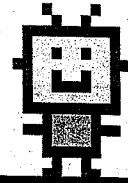
- You have been asked to peer review a film made by a classmate. Describe one thing to look for in each of the following areas.

- a) Planning:

- b) Shooting:

- c) Content:

- d) Editing:



Lesson 10

Safe and responsible use of videos

1.

Give three pieces of personal information that might accidentally be shared in an online video, without the person's permission.

1 _____

2 _____

3 _____

2.

Read the two scenarios below. Choose **one** and answer the questions that follow.

Scenario 1: A boy is bullied by three older boys while walking to school alone. This incident is filmed and put on a social media site. Some friends of the bullies make cruel comments about the video.

Scenario 2: A student creates a video and shares it on a website. He is wearing his school uniform in the video, and someone approaches him as he is leaving school one day, having found the location of the school from the name on his uniform.

a) What is the issue? What is the unacceptable or inappropriate behaviour in the scenario?

b) Who is affected by the video? Who is the victim, and why is that person being victimised?

c) Was permission given to film the video and post it online?

Yes ☐

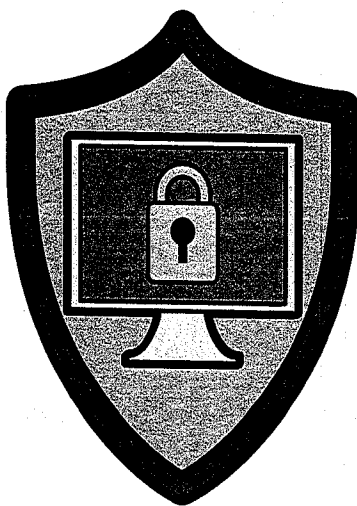
No ☐

I think this because

d) Does posting the video online help anyone? Why or why not?

e) How can victims of this unacceptable behaviour report and/or stop it?

f) What should people who see inappropriate content online do?



Unit 4

End-of-unit assessment

1 What is it called when you plan how each film shot will look?

A scripting

☐

B splicing

☐

C sketching

☐

D staging

☐

(1 mark)

2 Before you create and share a video that includes other people, what should you do?

(1 mark)

3 What does cropping a video clip mean?

(1 mark)

4 Adam is working on a video project based on a script.

a) Which of the following isn't normally included in the storyboard?

A camera shots

☐

B actors' lines

☐

C scene number

☐

D on-screen text

☐

b) What could Adam use to keep the device in a fixed position?

A a tripod

☐

B a wall

☐

C a wide-angle lens

☐

D a table

☐

(2 marks)

5 What do you call the text that plays at the end of a film, showing who has done each job?

A show reel

☐

B credits

☐

C film script

☐

D splicing

☐

(1 mark)

Unit 4 Checkpoints

I understand what safe and responsible behaviour is when using or broadcasting videos.	 <input data-bbox="1305 282 1375 358" type="checkbox"/>  <input data-bbox="1305 371 1375 448" type="checkbox"/>  <input data-bbox="1305 461 1375 537" type="checkbox"/>
I know how to use sound and text in videos.	 <input data-bbox="1305 577 1375 654" type="checkbox"/>  <input data-bbox="1305 667 1375 743" type="checkbox"/>  <input data-bbox="1305 757 1375 833" type="checkbox"/>
I can create a storyboard to help structure a video.	 <input data-bbox="1305 869 1375 945" type="checkbox"/>  <input data-bbox="1305 958 1375 1034" type="checkbox"/>  <input data-bbox="1305 1048 1375 1124" type="checkbox"/>
I can edit videos and add special effects.	 <input data-bbox="1305 1160 1375 1236" type="checkbox"/>  <input data-bbox="1305 1249 1375 1326" type="checkbox"/>  <input data-bbox="1305 1339 1375 1415" type="checkbox"/>
I can evaluate my project effectively. I can also give and receive constructive feedback.	 <input data-bbox="1305 1451 1375 1527" type="checkbox"/>  <input data-bbox="1305 1541 1375 1617" type="checkbox"/>  <input data-bbox="1305 1630 1375 1706" type="checkbox"/>

Unit 5

Health and safety

In this unit, you will learn about the positive and negative aspects of using computer technology. You will learn about staying safe when you are online, and about general health and safety practices. You will also research how electronic waste from our discarded technology can harm the environment and how we can reduce that harm. Finally, you will create informative material to highlight how we can be more environmentally friendly users of computer and other digital and electronic technology.

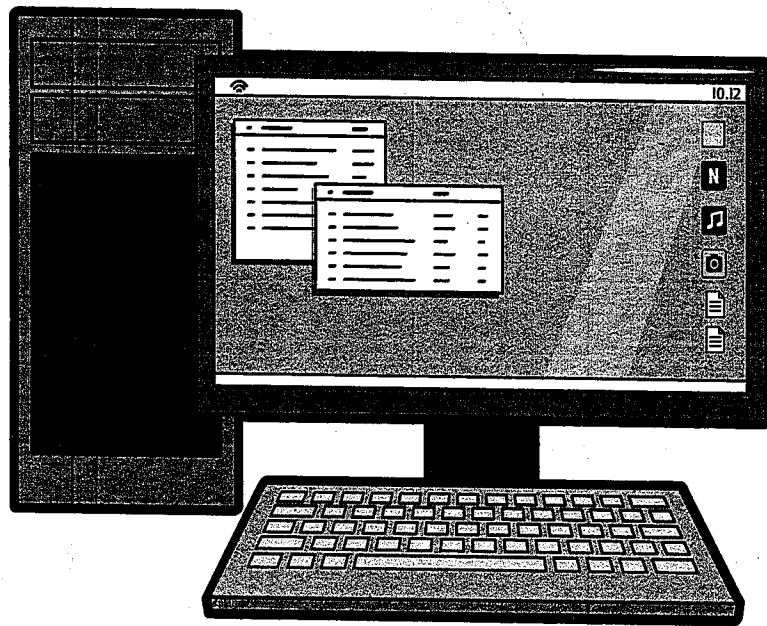


Lesson 1

Main features of computing devices

1.

When buying a new desktop computer for a home office, it is important to consider all the main features. Describe as many features as possible that you should consider when comparing models.



2.

For each of the following scenarios, suggest:

- an appropriate device for that person
- a useful feature of that device
- one advantage of using that device
- one disadvantage of using that device.

Scenario 1

Stephen works as a plumber and is always on the move. He needs a device to complete paperwork on site when a job is complete.

Choice of device: _____

Useful feature: _____

Advantage: _____

Disadvantage: _____

Scenario 2

Neena's grandparents are starting to explore the internet for the first time. They have asked her to choose a device they can share and carry around the house.

Choice of device: _____

Useful feature: _____

Advantage: _____

Disadvantage: _____

Scenario 3

Olivia is a video blogger who creates videos when visiting pop concerts. She needs a new device to use for an upcoming festival.

Choice of device: _____

Useful feature: _____

Advantage: _____

Disadvantage: _____



Lesson 2

Can you get an injury from using digital devices?

I.

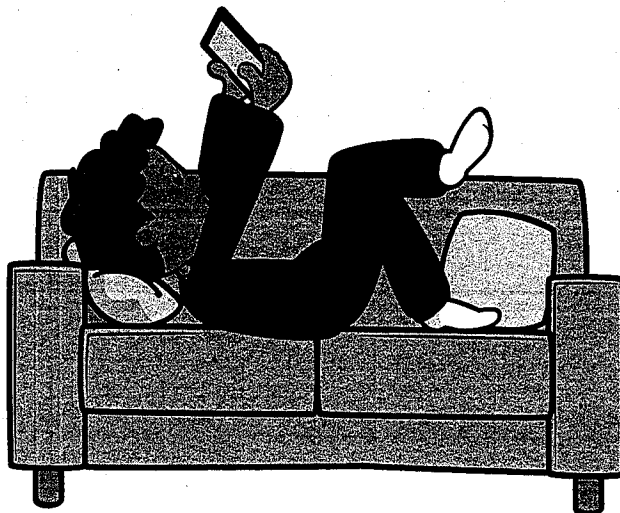
Describe a negative effect that using devices can have on the following parts of the body.

a) Eyes:

b) Back:

c) Neck:

d) Wrists:



2.

Complete the paragraph below about injuries that are possible when using a desktop computer. Use the words in the word bank to help you.

Word bank

exercise height mouse regular repetitive wrists

Sitting and using a keyboard or _____ for a long period of time, or having the desk at the wrong _____, can lead to _____ strain injury (RSI). This causes pain in the _____ and hands. It is important to _____ them and come away from the desk at _____ intervals.

3.

Describe what possible health problems someone might suffer from in the following scenarios.

a) Using a smartphone in bed before going to sleep:

b) Working on a laptop while sitting on a sofa:

c) Sitting in the same position for a long time while typing:



Lessons 3 and 4

Making a video about using digital devices safely

1.

You have been asked to create a video that provides advice on how to use devices safely. For each of the following, write a list of key points on health and safety.

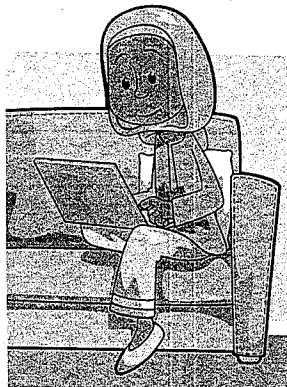
a) Using a desktop computer at a desk:

A large, empty rectangular box with a thin black border, intended for writing key points on health and safety for using a desktop computer at a desk.

b) Using a tablet computer around the home:

A large, empty rectangular box with a thin black border, intended for writing key points on health and safety for using a tablet computer around the home.

c) Using a laptop computer at home:

A large, empty rectangular box with a thin black border, intended for writing key points on health and safety for using a laptop computer at home.

2

Match the filmmaking terms to the correct descriptions.

close-up, wide, pan

splicing video

fade and wipe

storyboard

plan of shots, movement
and backgrounds

types of transition

types of camera shot

combining two or more
clips into one clip

3

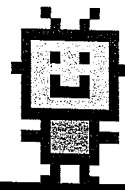
Describe three health and safety issues to consider when filming.

1 _____

2 _____

3 _____





Lesson 5

Digital devices and the environment

1.

Describe the difference between recycling and refurbishing an electronic device.

2.

List three materials that can be found inside a modern computer.

1.

2.

3.

3.

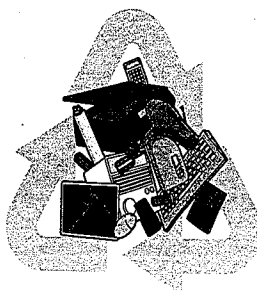
What is meant by the term 'e-waste'?

4.

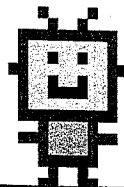
The increase in e-waste is also linked to the increased number of devices. Describe two reasons why people might change a device they own.

1.

2.



Lesson 6



The life cycle of a smartphone

Put the following stages of the life cycle of a smartphone into the correct order by numbering them from 1 to 5.

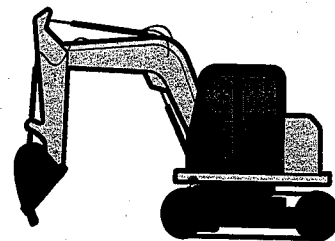
smartphone in use



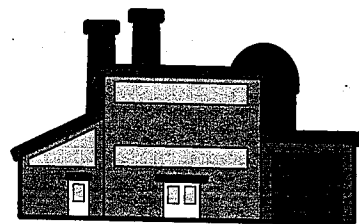
thrown away or recycled



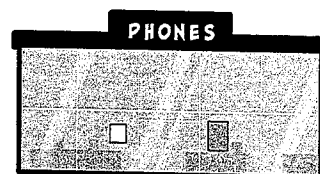
locate and mine materials



processing and manufacturing



packaging and selling



2.

There are examples of e-waste being sold to poor countries and people being poorly paid to search through landfill sites and collect raw materials. The vast majorities of countries around the world ban people from landfill sites due to the dangers.

Describe two dangers to the people being paid to search landfill sites.

1 _____

2 _____

3.

Even though many hazardous materials have now been removed from manufacturing electronics, why is this still a major concern?

4.

Which of the following are either rare or hazardous materials?
Tick **two** boxes.

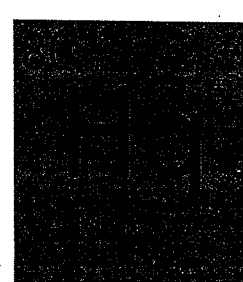
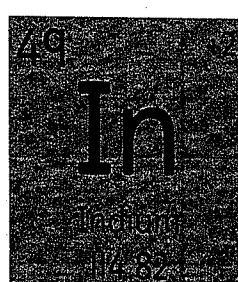
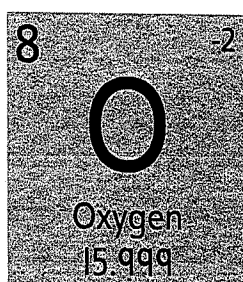
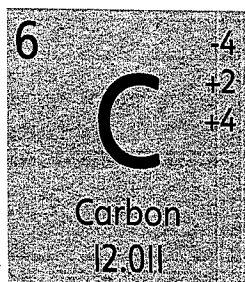
A mercury

B carbon

C indium

D oxygen

☐
☐
☐
☐





Lesson 7

Reducing e-waste

1.

Describe two environmental benefits of recycling either unwanted or broken electronic devices.

1 _____

2 _____

2.

For each of the following statements, describe how they might help reduce e-waste or have a positive environmental impact.

a) Donate or sell an old device:

b) Protect devices from damage:

c) Use cloud storage:

d) Be more energy efficient:

e) Repair broken devices:

f) Stream rather than own:

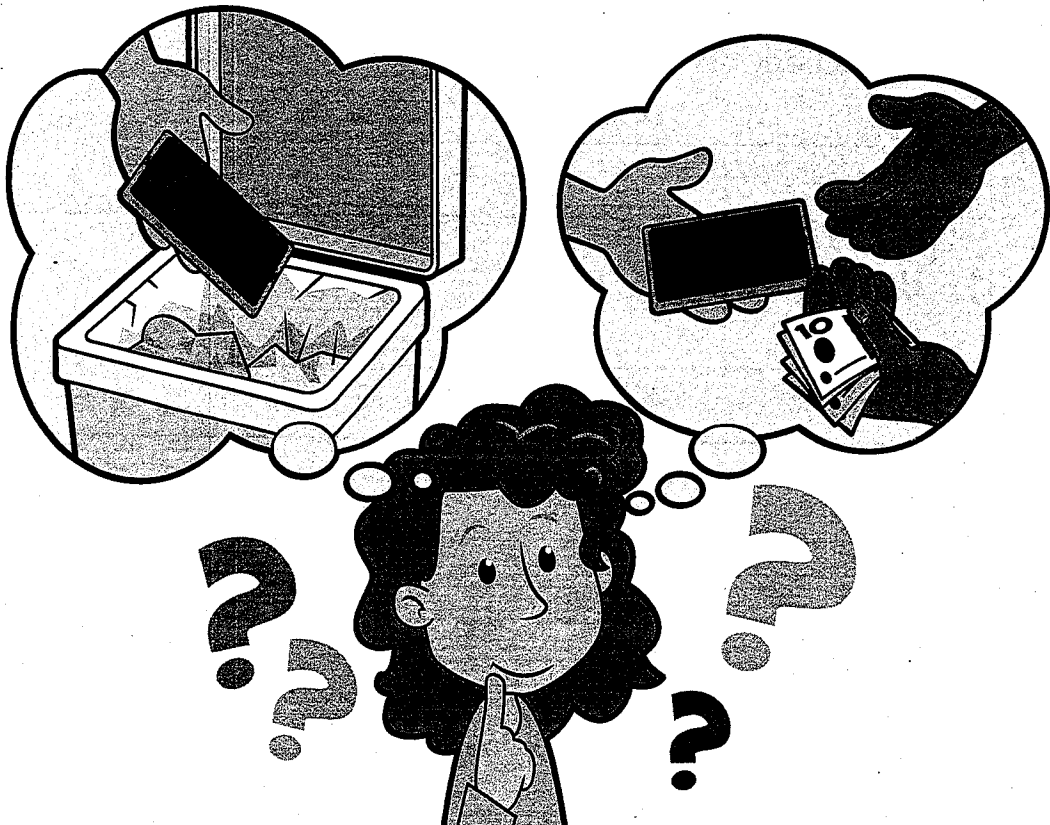
3.

Using what you have learned about e-waste, describe three ways you could persuade others in your school and at home to try to reduce electronic waste.

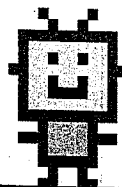
1.

2.

3.



Lessons 8, 9 and 10



Planning and designing a leaflet

1.

Describe the purpose of the text-wrap tool in word processing or desktop publishing software.

2.

You have been asked to design a leaflet on the dangers of e-waste and how to reduce it. Answer the following design and layout questions with this brief in mind.

- a) Write down 10 words that come to your mind when thinking about e-waste and the damage it can do.

1 _____	6 _____
2 _____	7 _____
3 _____	8 _____
4 _____	9 _____
5 _____	10 _____

- b) Think of three titles for your leaflet.

1 _____
2 _____
3 _____

- c) Decide on the most suitable title for your leaflet.

- d) Choose three fonts that you could use on your leaflet, and explain why are they suitable.

1 _____

2 _____

3 _____

- e) Describe three images to use in your leaflet that you think will have the most impact.

1 _____

2 _____

3 _____

3.

Complete the paragraph below with words of your own choice. Make sure to choose words that will make the text attention grabbing and interesting.

Every year _____ of people find they have no use for an electronic device. Rather than _____ or _____ the device, they throw it away and it ends up in landfill. This is _____ and the damage it is causing our planet is _____. We need to reduce e-waste and we can all help by _____ and _____.

Unit 5

End-of-unit assessment

1 Repetitive strain injury (RSI) can be caused by poor positioning of which device?

A web camera

☐

B keyboard

☐

C monitor

☐

D printer

☐

(1 mark)

2 A student is writing a letter about the dangers of using a desktop computer. Which software application would be most suitable to use?

A email

☐

B presentation

☐

C word processing

☐

D publishing

☐

(1 mark)

- 3 New technology has an impact on the environment when it is produced, while it is being used (its lifetime) and at the end of its life too. How can companies be more thoughtful about their approach to new technologies to protect the environment?

- A increase the number of new models produced
- B increase the size of new devices
- C reduce the number of new models produced
- D reduce the price of new devices

☐☐☐☐

(1 mark)

- 4 How can individuals help to protect the environment?

- A replace devices when a newer model comes out
- B replace devices frequently
- C replace devices only when they need to be replaced
- D replace devices when prices are lower

☐☐☐☐

(1 mark)

- 5 What should you do with old devices instead of throwing them in the bin? List three ideas.

1 _____

2 _____

3 _____

(3 marks)

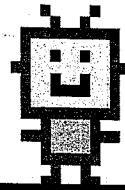
Unit 5 Checkpoints

I understand the positive and negative effects of using computer technology.	 <input data-bbox="1316 280 1385 353" type="checkbox"/>  <input data-bbox="1316 369 1385 443" type="checkbox"/>  <input data-bbox="1316 459 1385 533" type="checkbox"/>
I know how to stay safe and protect my health when using technology and going online.	 <input data-bbox="1316 577 1385 651" type="checkbox"/>  <input data-bbox="1316 667 1385 741" type="checkbox"/>  <input data-bbox="1316 757 1385 831" type="checkbox"/>
I understand how waste from technology can be an environmental risk.	 <input data-bbox="1316 875 1385 949" type="checkbox"/>  <input data-bbox="1316 965 1385 1039" type="checkbox"/>  <input data-bbox="1316 1055 1385 1128" type="checkbox"/>
I understand how we can reduce the impact of using technology on the environment.	 <input data-bbox="1316 1173 1385 1247" type="checkbox"/>  <input data-bbox="1316 1263 1385 1337" type="checkbox"/>  <input data-bbox="1316 1352 1385 1426" type="checkbox"/>
I can create informational material about how people can become more environmentally friendly when using technology.	 <input data-bbox="1316 1471 1385 1545" type="checkbox"/>  <input data-bbox="1316 1561 1385 1635" type="checkbox"/>  <input data-bbox="1316 1650 1385 1724" type="checkbox"/>

Unit 6

Programming (part 2)

In this unit, you will develop your understanding of algorithms and programming. You will write algorithms to solve problems, then program them in Scratch. You will also use variables, plus repeats and loops to count, draw shapes and use coordinates. During all of this, you will continue to debug and repurpose your algorithms.



Lesson 1

Designing, testing and repurposing an algorithm

1.

Describe what is meant by repurposing an algorithm.

2.

Repurpose the algorithm to meet the new conditions described on pages 89 and 90 by stating the line numbers that need to be changed, followed by the new lines.

```
1  IF the whistle blows 1 time THEN
2      Clap 2 times
3  IF the bell rings 2 times THEN
4      Jump in the air
5  IF the drum bangs 3 times THEN
6      Shout "Ready to go!"
```

Tip

After each new condition, assume the algorithm returns to the original version.

a) New condition: The whistle now blows twice and when the drum bangs, the person shouts "Let's go!"

- b) New condition: The bell is now a trumpet and the drum bangs 5 times.

- c) New condition: Clap 3 times when the whistle blows and do 3 push-ups when the bell rings.

3.

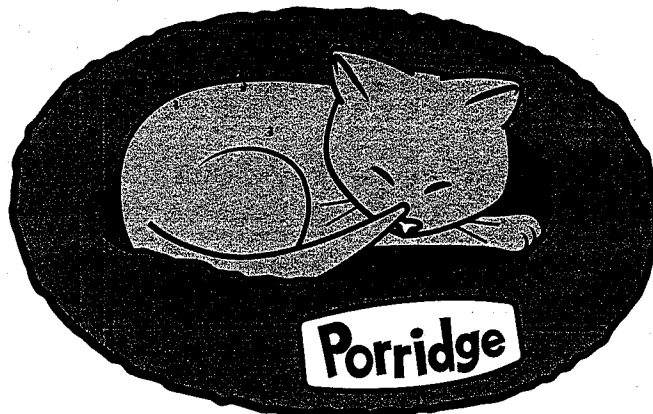
Describe the purpose of a variable in an algorithm.

4.

Identify the variables in each of the statements below.

- a) My cat is called Porridge and she is light brown.

- b) In Yorkshire, the weather is great and the temperature is 20 degrees.





Lesson 2

Creating an algorithm using loops

1

You have been asked to redesign an algorithm with multiple repeated actions so that it uses loops. Describe two benefits of using loops in an algorithm.

1 _____

2 _____

2

Using the REPEAT command, add a loop to the algorithm below for painting a fence with four panels.

Write your new version of the algorithm alongside it.

Dip brush in paint

Remove excess paint

Paint panel 1

Dip brush in paint

Remove excess paint

Paint panel 2

Dip brush in paint

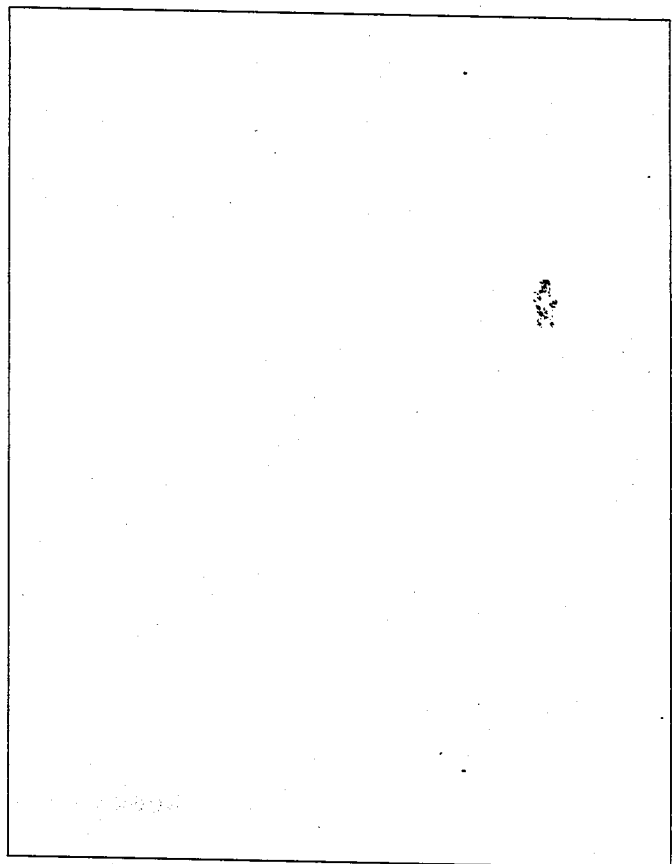
Remove excess paint

Paint panel 3

Dip brush in paint

Remove excess paint

Paint panel 4

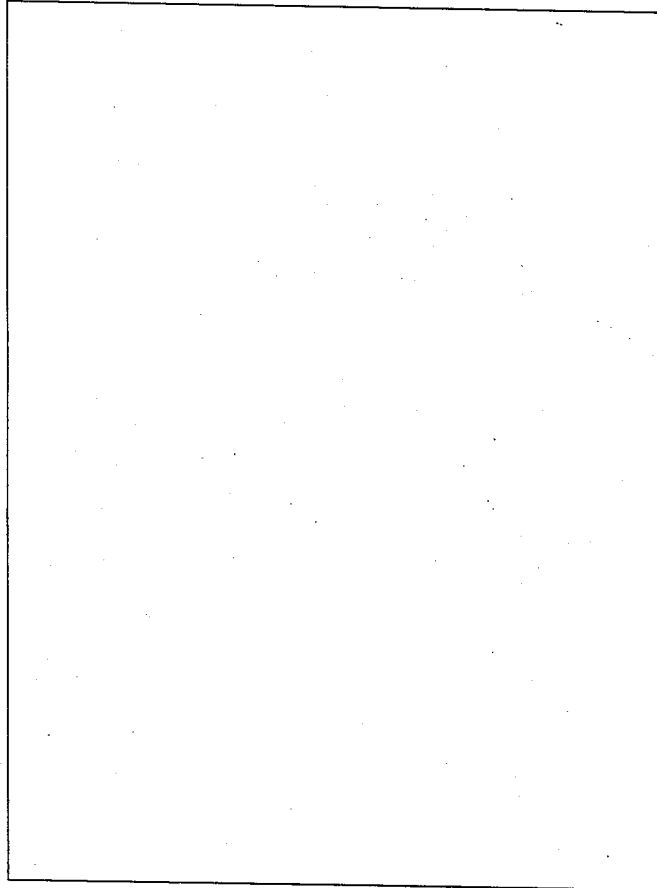


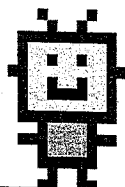
3.

Describe the purpose of the REPEAT UNTIL... command.

4.

Using the same algorithm as in question 2, recreate the algorithm using the REPEAT UNTIL... command.





Lesson 3

Programming an algorithm that contains variables

1

When using the following blocks in Scratch, in which section from the Code menu can they be found?

- a) REPEAT
- b) glide
- c) IF... THEN...
- d) divide
- e) set variable to 0
- f) set x to 0

2

The purpose of this algorithm is to calculate the journey time of a train. The user inputs the average speed and the distance. The resulting time is then displayed on screen.

Complete the three missing sections in the algorithm below.

set speed to zero
set distance to zero
INPUT speed
set speed to INPUT

time = distance / speed

3.

Using the completed algorithm from question 2, what journey time in hours would be displayed if the following variables are entered?

Tip

Assume the speed is in kilometres per hour and the distance in kilometres.

a) speed = 100, distance = 500 _____

b) speed = 50, distance = 200 _____

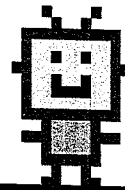
c) speed = 80, distance = 800 _____



4.

Describe the purpose of the 'ask' block in Scratch.

Lesson 4

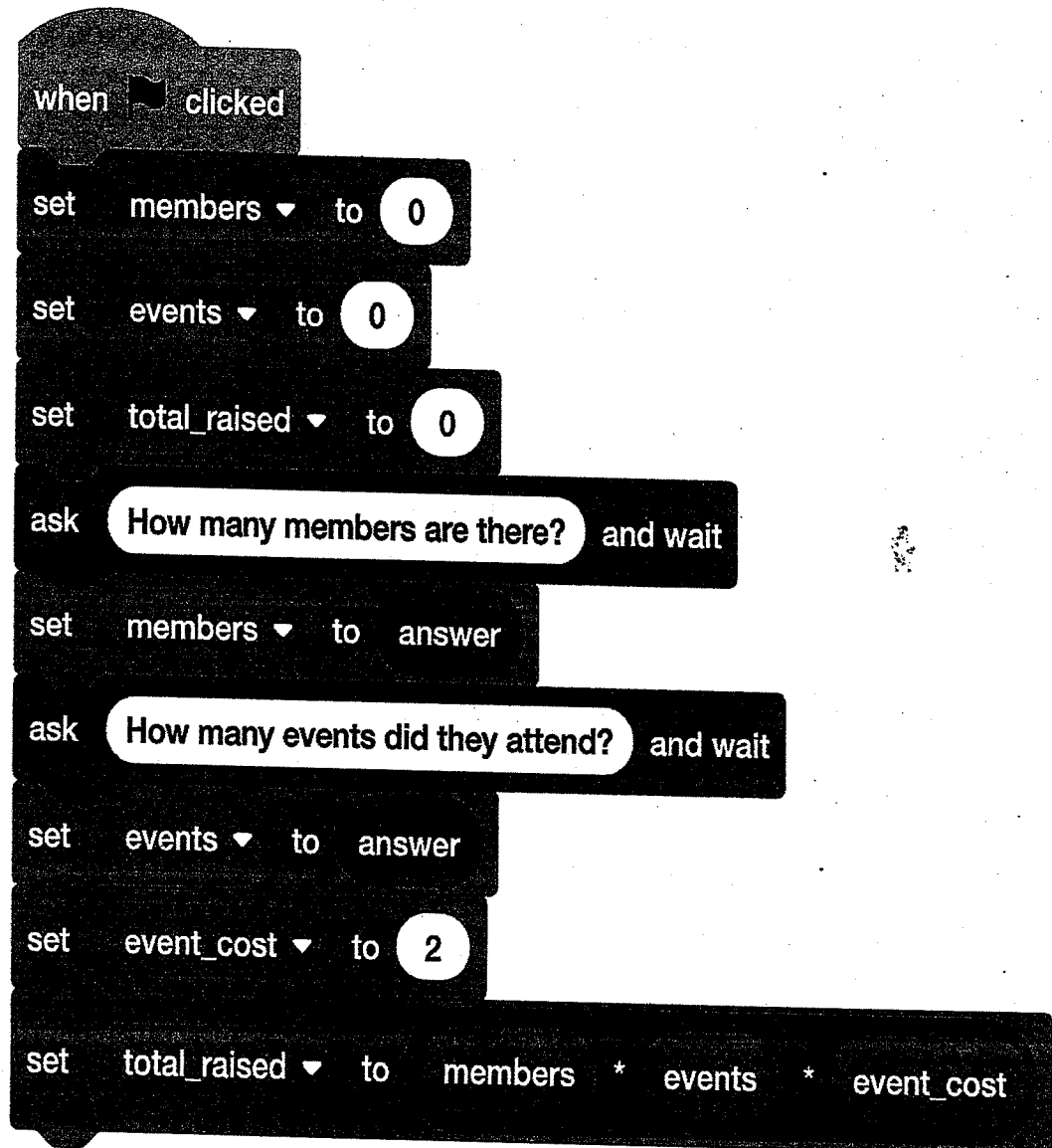


Repurposing an algorithm



The Scratch program below has been designed for a sports club. It is designed to do the following:

- ask how many members there are
- ask how many events they attended
- use a variable called 'event_cost' to work out how much money has been raised in total.



Unit 6: Programming (part 2) Lesson 4

You have been asked to repurpose this program for use at the nearby swimming pool. It should do the following:

- ask how many people visit the pool during one week
 - ask how many lessons have run that week
 - display an average number of people per lesson.
- a) What is the purpose of setting the three variables to zero at the start of the program?

- b) Rename the three variables for use in the repurposed program.

- i) members becomes

- ii) events becomes

- iii) total_raised becomes

- c) When repurposing the Scratch program, one block is no longer required in the new version.

Which block is no longer needed?

- d) Rewrite the final block of code to calculate the average number of people per lesson.

Lessons 5 and 6

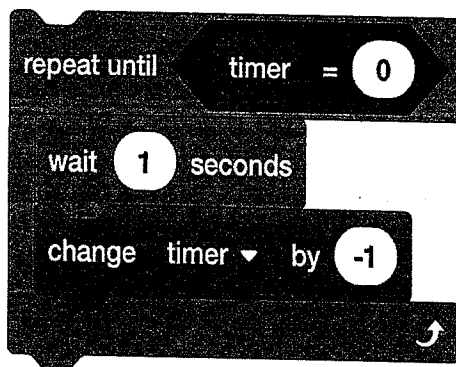
Programming a timer



1. A programmer is decomposing a problem.
What does 'decomposing' mean?

2. The blocks shown are part of a countdown timer.

- a) What is the purpose of the 'wait' block?

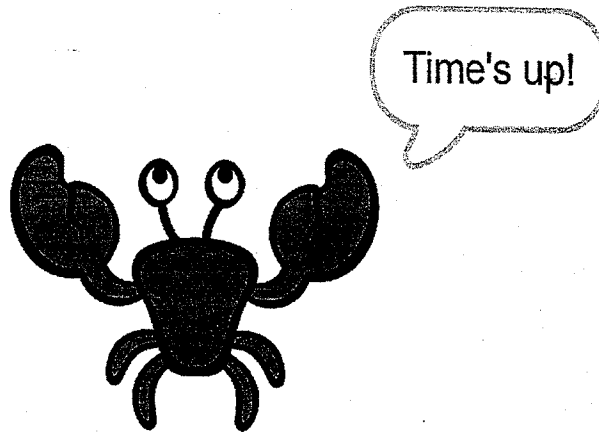


- b) You have been asked to repurpose the three blocks above so that the timer counts up to 10, rather than down to zero.

What do the values need to be changed to?

3.

What is the name of the block used to display a message from a sprite in Scratch?



4.

What is the purpose of the tick box next to variables in the Scratch menu?

- A to include them in calculations
- B to display them on the stage
- C to reset the variable
- D to prevent a variable being changed

☐
☐
☐
☐

Variables

Make a Variable

☐

my variable

☒

my variable 2

set my variable ▼ to 0

change my variable ▼ by 1

Lesson 7



Writing an algorithm to draw 2D shapes

1.

You have been asked to create 2D shapes in Scratch. For each of the shapes below, state the angle and number of repeated sides to create them.

Square

Sides: _____

Angle: _____

Triangle

Sides: _____

Angle: _____

Rectangle

Sides: _____

Angle: _____

Hexagon

Sides: _____

Angle: _____

2.

Complete the paragraph below. Use the words in the word bank to help you.

Word bank

60

360

angle

hexagon

pen

sides

When creating any shape in Scratch using the _____ extension, the repeated turns of a shape should have a total of _____ degrees. To calculate the _____ required for a shape, divide 360 by the number of _____ the shape has. For example, a _____ has six sides and 360 divided by six creates an angle of _____ degrees.

3.

Describe the difference between the 'glide' and the 'go to' blocks when creating a drawing.

4.

Match the Scratch stage coordinates to the positions on screen.

$x = 240, y = 180$

top left

$x = -240, y = -180$

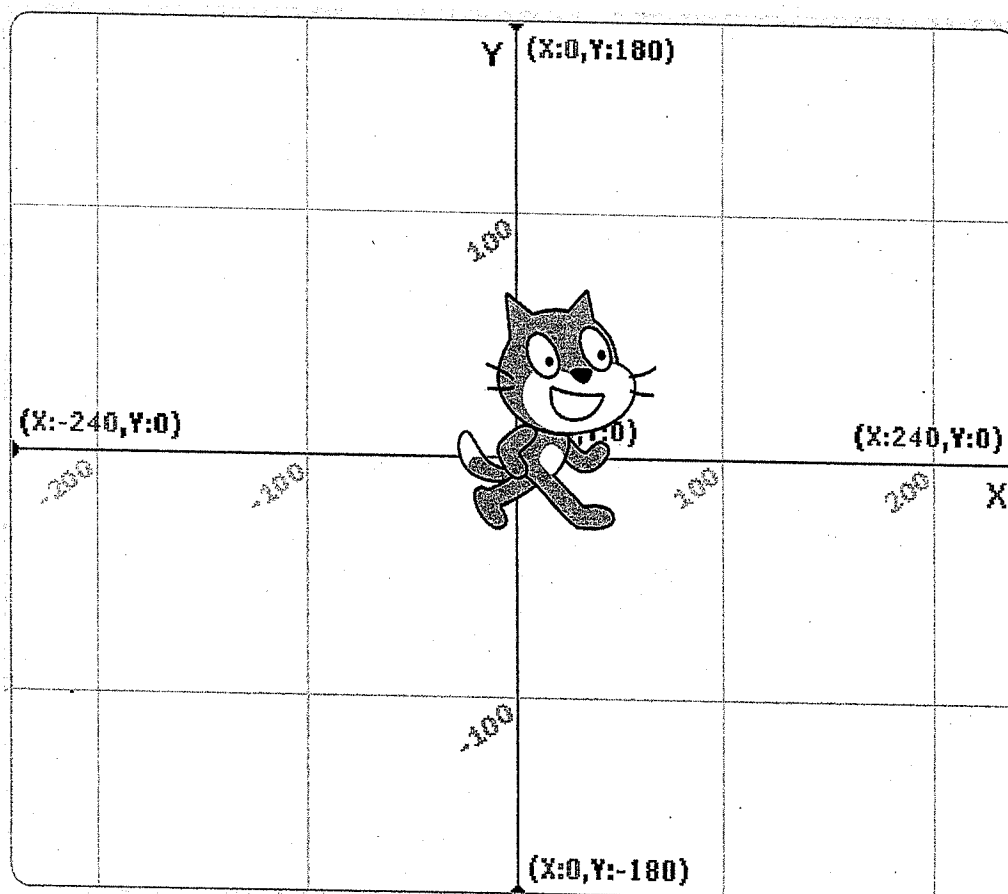
bottom right

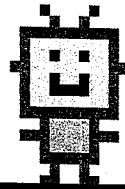
$x = -240, y = 180$

top right

$x = 240, y = -180$

bottom left





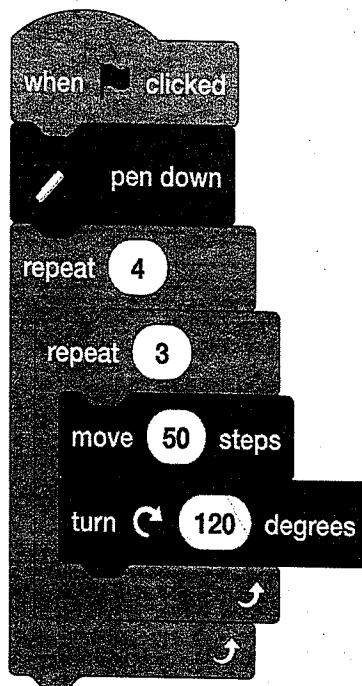
Lesson 8

Modifying a program to create multiple shapes on screen

1.

Zed wants to create a pattern showing four triangles.

- a) After running the program shown below, why can he see only one triangle?



- b) Describe what normally needs to be done to see multiple shapes.

2.

What is the name of the block used to remove all drawings on the stage created using the Pen extension?

3

When selecting a line colour from the 'set pen colour to' block, what is the purpose of the eye dropper tool?



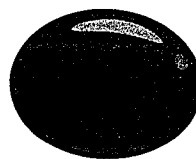
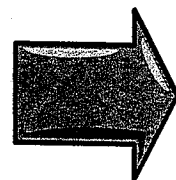
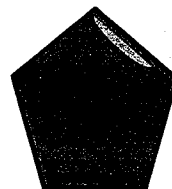
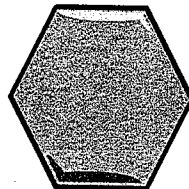
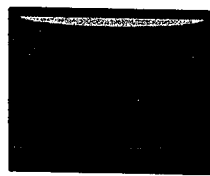
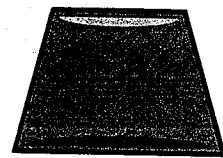
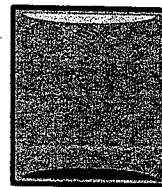
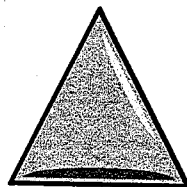
4

What angle of rotation needs to be added to create a pattern containing the number of identical shapes below?

a) 8 shapes: _____

b) 6 shapes: _____

c) 12 shapes: _____



Lesson 9



Drawing shapes using coordinates and repurposing your program

Pam wants to draw a diamond that reaches to the four sides of the stage, as shown below. Write the missing values for the program.

Tips

- The size of a Scratch stage is 480 x 360.
- The four corners of the diamond are the midpoints of the sides of the stage.

when clicked

pen up

go to x: -240 y: 0

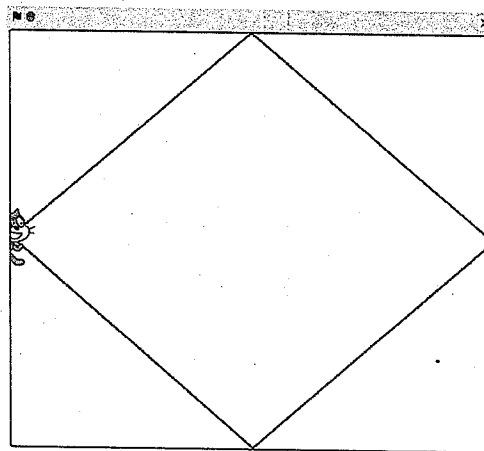
pen down

glide 1 secs to x: 0 y: 180

glide 1 secs to x: 0 y: 0

glide 1 secs to x: 0 y: -180

glide 1 secs to x: 0 y: 0



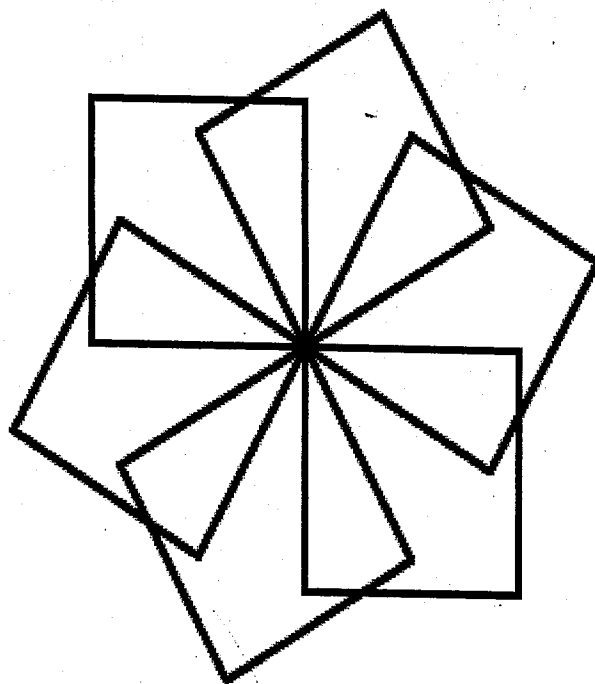
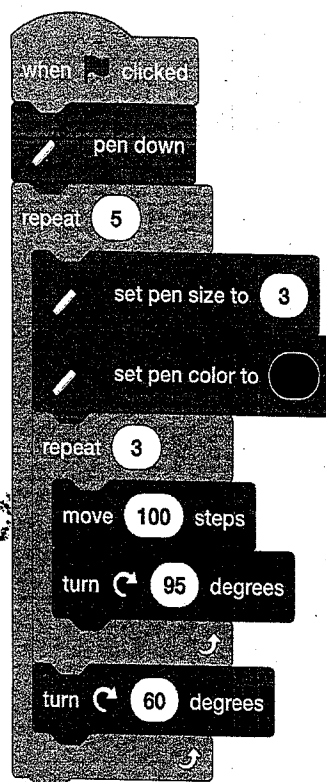
x = _____, y = _____

x = _____, y = _____

x = _____, y = _____

2.

The Scratch program below is designed to create the pattern shown. However, there are three errors preventing this. Debug the program, describing the errors and how to fix them.



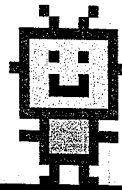
Tip

Look at the shapes, angles and repeated patterns.

- 1 Error: _____
Solution: _____
- 2 Error: _____
Solution: _____
- 3 Error: _____
Solution: _____

3.

At what coordinates do new Scratch drawings normally start from, if a position is not set?



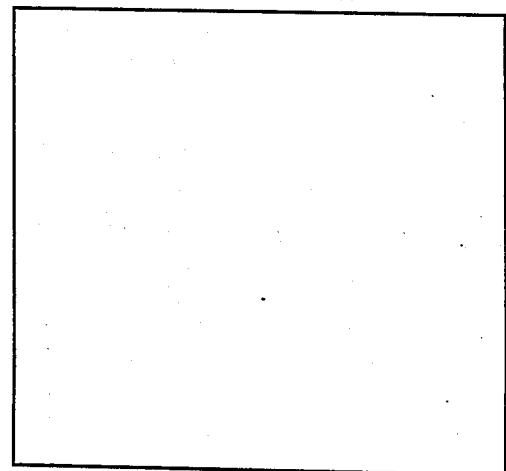
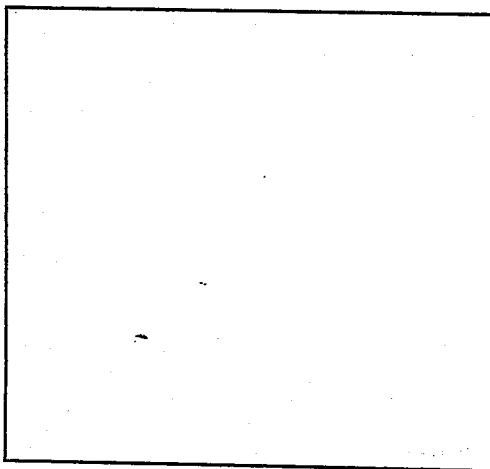
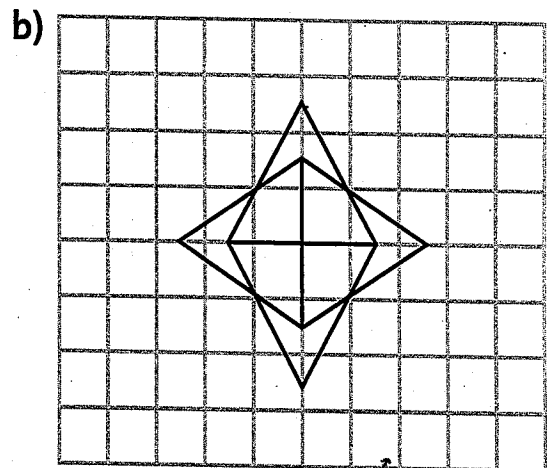
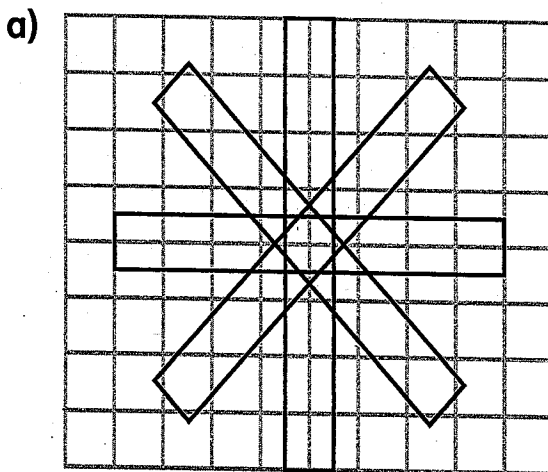
Lesson 10

Using shapes to represent an object

Isabella has been asked to create the following designs using multiple shapes. Decompose each graphic and describe the following:

- the types and quantities of shapes
- the size of each shape
- details of angles.

The grid is 1000 units across and 800 units high.



Extension challenge:

Learn how to draw a circle using Scratch.

Unit 6

End-of-unit assessment

1 What is a variable?

(1 mark)

2 Which of these is a variable?

- A an algorithm
- B the movement of a sprite
- C the score in a game
- D the backdrop

☐☐☐☐

(1 mark)

3 Which of these is **not** an example of repurposing an algorithm?

- A editing variables
- B rearranging commands
- C deleting and starting again
- D changing input questions

☐☐☐☐

(1 mark)

4 Which of the following is true about coordinates in the bottom left quadrant of the Scratch stage?

A x is negative, y is negative

B x is positive, y is negative

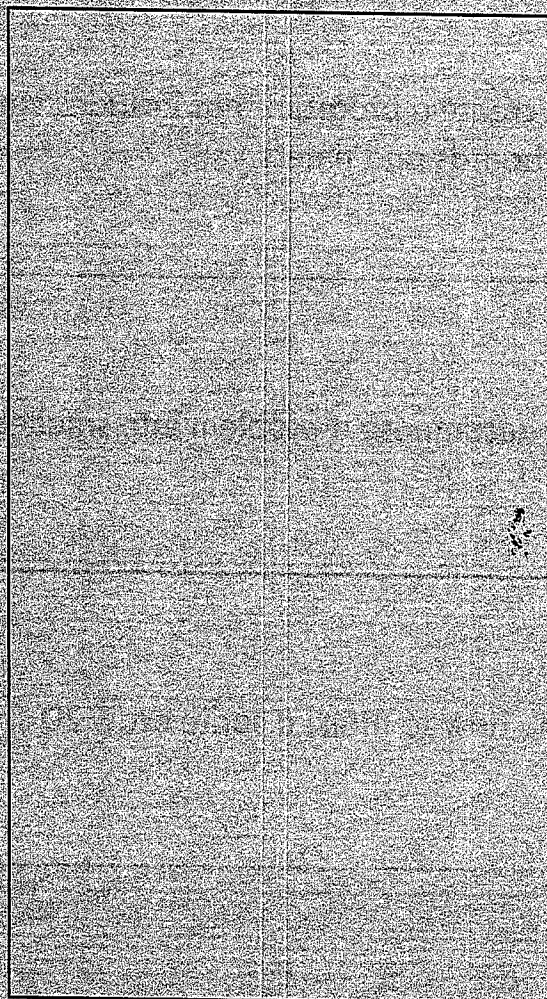
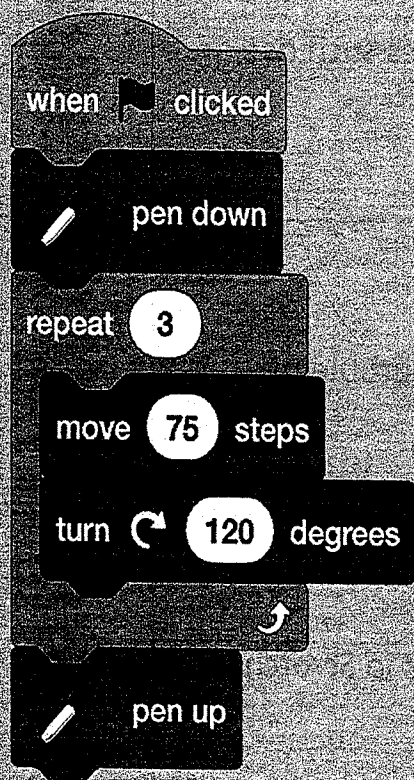
C x is positive, y is positive

D x is negative, y is positive

☐☐☐☐

(1 mark)

5 Remove the repeat block from this program and rewrite it as a step-by-step sequence.



(3 marks)

Unit 6 Checkpoints

I understand the purpose of a given algorithm and can use logical reasoning to explain how it works.	 <input data-bbox="1334 293 1402 371" type="checkbox"/>  <input data-bbox="1334 383 1402 461" type="checkbox"/>  <input data-bbox="1334 472 1402 551" type="checkbox"/>
I can repurpose an algorithm to solve new problems.	 <input data-bbox="1334 591 1402 669" type="checkbox"/>  <input data-bbox="1334 680 1402 759" type="checkbox"/>  <input data-bbox="1334 770 1402 848" type="checkbox"/>
I can create a program that includes variables such as scoreboards and timers.	 <input data-bbox="1334 889 1402 967" type="checkbox"/>  <input data-bbox="1334 978 1402 1057" type="checkbox"/>  <input data-bbox="1334 1068 1402 1146" type="checkbox"/>
I can decompose a problem into smaller subproblems.	 <input data-bbox="1334 1187 1402 1265" type="checkbox"/>  <input data-bbox="1334 1276 1402 1355" type="checkbox"/>  <input data-bbox="1334 1366 1402 1444" type="checkbox"/>
I know how to make a sprite draw 2D shapes in Scratch.	 <input data-bbox="1334 1485 1402 1563" type="checkbox"/>  <input data-bbox="1334 1574 1402 1653" type="checkbox"/>  <input data-bbox="1334 1664 1402 1742" type="checkbox"/>