A FREE RESOURCE PACK FROM EDUCATIONCITY

Ada Lovelace Day

Topical Teaching Resources

Age 5–11

Suitability

Ada Lovelace Day Topical Teaching Resources

What Does This Pack Include?

This pack has been created by teachers, for teachers. In it, you'll find high quality teaching resources, including ThinkIts and Lesson Plans, to help your students celebrate Ada Lovelace Day, an international celebration of the achievements of women in science, technology, engineering and maths.

To go directly to the content, simply click on the title in the index below:

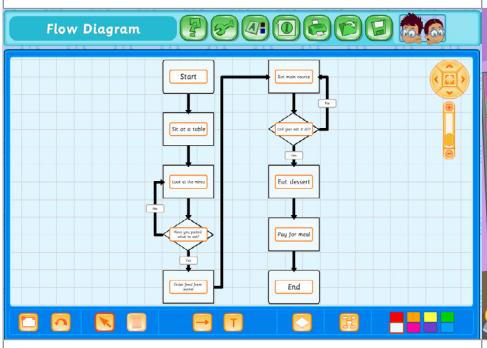
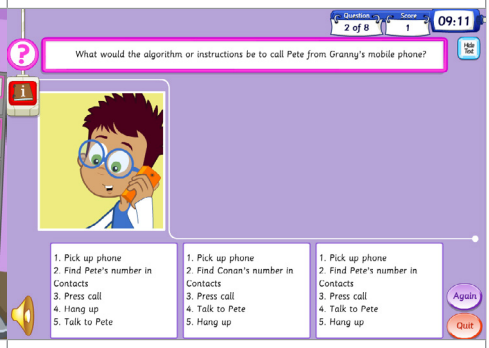
THINKITS:		
1. Famous Women	2. The Robot Highway Code	3. Algorithms

LESSON PLANS:					
1. Changing State	2. Program Your Friend	3. Fibonacci Plate	4. Sequences	5. Making a Kite	6. Famous Women from History
Learning Objective: Investigate the properties of ice and compare how water changes from a liquid to a solid.	**Learning Objective:** To understand what algorithms are and how they can be used to follow instructions.	**Learning Objective:** Introduce students to the Fibonacci sequence and its importance in nature.	**Learning Objective:** Investigate repeating patterns by taking part in a pattern hunt around the school.	**Learning Objective:** Design and make a kite and understand the forces involved in kite flying.	**Learning Objective:** Research and find facts about a famous woman and write a biography about them.
50 minute Lesson Plan	60 minute Lesson Plan	60 minute Lesson Plan	60 minute Lesson Plan	60 minute Lesson Plan	60 minute Lesson Plan

REFERENCE SHEETS:		
1. Program Your Friend	2. Fibonacci Plate	3. Sequences

Other Resources Linking to the Theme

Before deciding what to include in your lesson, check out our online content relating to Ada Lovelace Day too. It's simple to find, just enter the Content ID number in EducationCity's Search tool!

Topic Tools: Explore Concepts as a Class	Learn Screens: Introduce or Reinforce a New Concept	Activities: Educational Content
Flow Diagram *Content ID: 19734, 19737, 19738*	**Programming for Beginners** *Content ID: 13634*	**Everyday Algorithms** *Content ID: 19727*
		
Design your own algorithm using a flow diagram.	Understand the definitions of basic programming vocabulary.	Understanding algorithms to be precise and unambiguous instructions.

Enjoyed these resources?

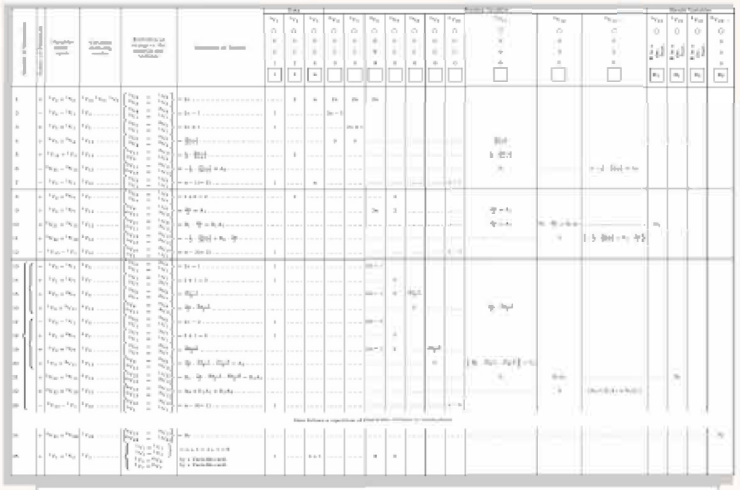
Why not start a free trial of the full EducationCity resource and see what else we can offer you!

Email us at trials@EducationCity.com
or call us on +44 (0)1572 725080!

EducationCity®

Ada Lovelace (1815 - 1852)

She was born Augusta Ada Byron in 1815. Her parents were Annabella Millbanke and the famous poet, Lord Byron. When Ada was growing up, her mother insisted that she was tutored specifically in science and maths, which were considered unusual subjects for women at this time.



The first written computer algorithm.

She married William King when she was 19 and became Lady Ada King, Countess of Lovelace. She had 3 children.

In 1833, Lovelace met Charles Babbage, a Professor of Mathematics and an inventor. Babbage was working on the Analytical Engine. The Analytical Engine is considered to be the first ever computer and was designed to perform complex calculations. Ada published an article which included an algorithm for the engine to calculate a sequence of Bernoulli numbers. This is why Ada is also known as the world's first computer programmer. She also recognised that the device had the potential to do more than just calculations, which is why she is referred to as the prophet of the computer age.

Can you think of any other famous women from history?

Here are some other famous women from history.

How many of these do you recognise?

Elizabeth I of England
(1533-1603)

Marie Curie
(1867-1934)

Helen Keller
(1880-1968)

Amelia Earhart
(1897- disappeared 1937)

Mother Teresa
(1910-1997)

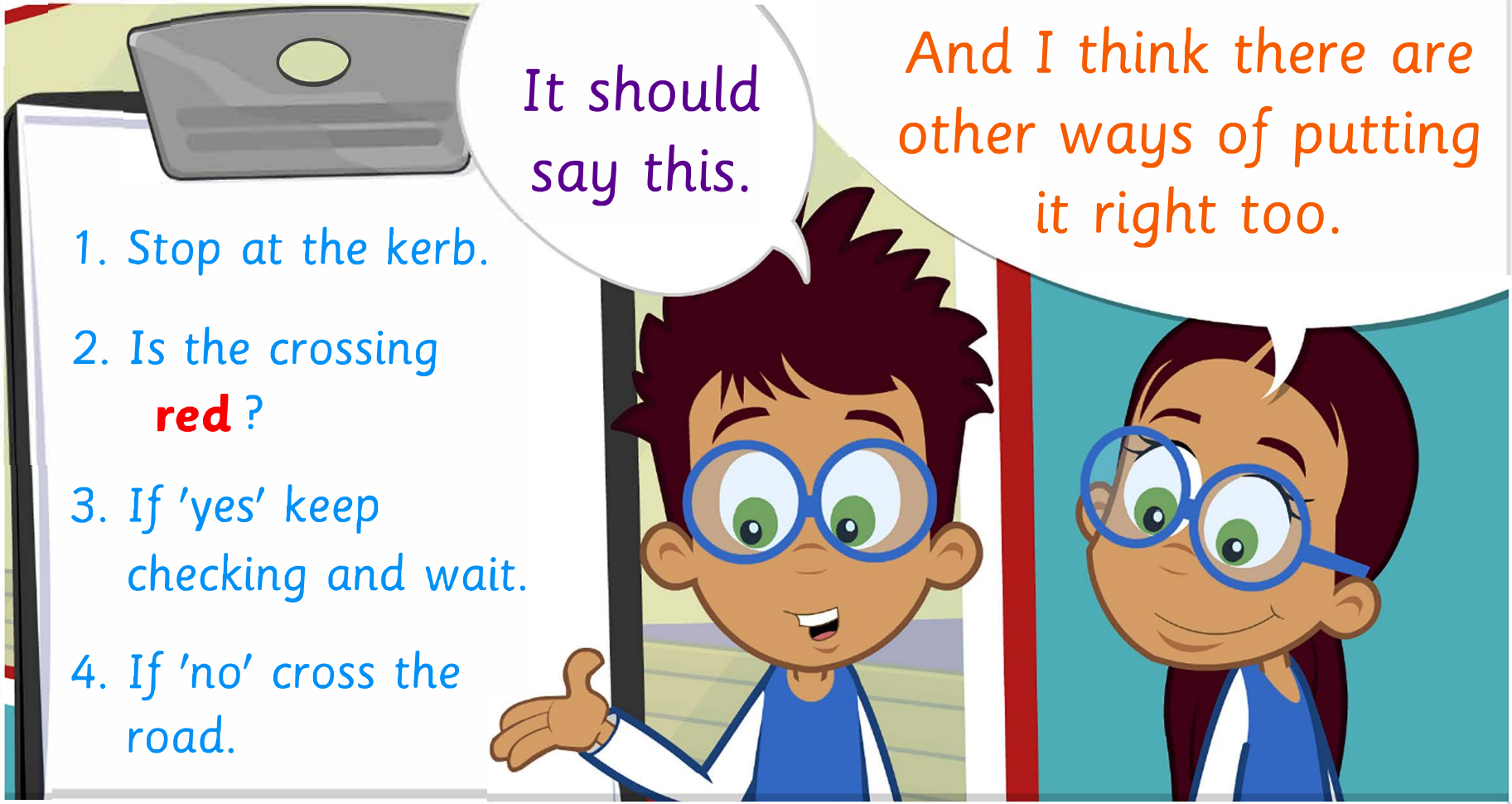
Rosa Parks
(1913-2005)

Do you know why any of these women are famous?

I've written an algorithm to help our robot cross the road but it doesn't work. It might cause an accident.

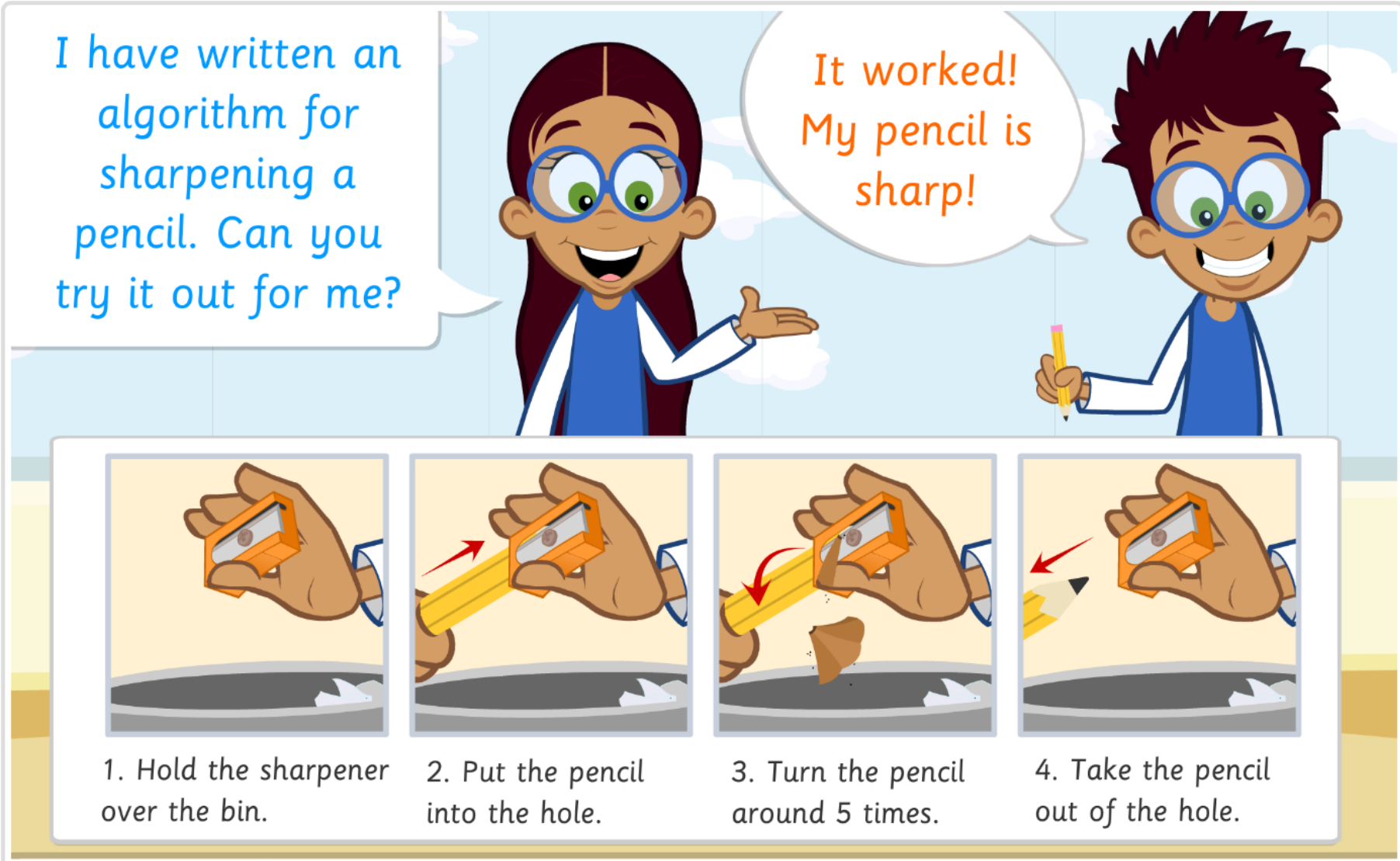
1. Stop at the kerb.
2. Is the crossing green?
3. If 'yes' keep checking and wait.
4. If 'no' cross the road.

I think I can see the problem. **Can you?**



Can you write a better set of instructions?

Test them out somewhere safe indoors with a friend pretending to be the robot.



Now, can you write an algorithm to 'program' your partner to kick a football?

Here's what I came up with! Did you miss any steps out? Algorithms are a sequence of instructions that need to be as precise as possible.

Can you write algorithms for these?

- How to brush your teeth.
- How to make a jam sandwich.
- How to write your name with a pen.

1. Put the ball in front of foot

2. Lift leg

3. Swing leg behind and bend knee

4. Swing leg forward

5. Push the ball with foot

Changing State Lesson Plan

Overview

Students will compare how water changes state from a liquid to a solid when it is frozen. Students will investigate the properties of ice, making observations.

Materials

Resources and organisation:

- balloon/latex gloves
- food colouring
- pipette
- water
- salt
- tools: hammer/nails
- cocktail sticks
- magnifying glass
- torch
- water tray
- aprons

Lesson Preparation *(At least 24 hours prior to lesson)*

Put a few drops of food colouring into the balloon/glove, and then fill the rest of it with water. Tie it up and place it in the freezer. Make several of these.

Lesson Structure

0-15 minutes

Put bowls of water out onto the tables, and allow students the opportunity to feel the water using their hands. Whilst students are investigating, ask key questions to promote discussions about water within each group:

- Can you describe what it looks like?
- When you put your hands in the water, how does it feel?
- What does the water do when you manipulate it?

Provide groups with different shaped containers, and ask them to observe what happens to the water when it is moved into these containers. Draw from the students that the water takes the shape of the container.

15-20 minutes

As a whole class, look at the balloon and fill it with water. Ask students to predict what will happen to the water in the balloon if it were put into the freezer. Draw out from the students that the water within the balloon would turn from a liquid into a solid. Ensure that students know that frozen water is called ice. With the students, place the balloon into the freezer. Bring out the frozen balloons which were prepared prior to the session.

20-40 minutes

Once back in the classroom, cut the balloon away, and put each block of ice into a water tray or basin. Explain to students they will be investigating the ice and making observations using the materials provided.

Direct students' investigations, for example, they could investigate ice in water, watching its movement, adding food colouring to the ice using a pipette, or see what happens when salt is applied to ice. The ice balloons could also be investigated out of water using a magnifying glass, torch, cocktail stick or a hammer and nail.

Use key questioning to promote discussions within groups:

- Can you describe what it looks like?
- How does it feel?
- How are ice and water different? How are they the same?

Changing State Lesson Plan (continued)

40-50 minutes On the board, draw up a table and talk through what the students observed. Record any key words/phrases which were made from the students.

Material	**Observations**
food colouring	
salt	
magnifying glass	
torch	
cocktail stick	
hammer and nail	

Ask students if the ice stayed a solid. Encourage students to recognise that the change in state from a liquid to a solid is not a permanent change; it is defined as a reversible change.

Program Your Friend Lesson Plan

Overview

In this KS1 lesson, children will be introduced to the concept of an algorithm as a set of ordered instructions for performing a specific task; in this case, a PE activity. The activity teaches the children the importance of choosing the correct order for the sequence of the algorithm. They will understand that computer programmers write algorithms to plan and write computer programs. In this activity they will create an algorithm for a 'getting ready for school' dance.

National Curriculum KS1 Link

To understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions.

Learning Objective

To create algorithms to perform a 'getting ready for school' dance.

Key Words

- algorithm
- instruction
- order
- computer program
- programmer

Resources and Preparation

This lesson should take place in a hall or playground.
Reference Sheet 1

Lesson Structure

Starter
0-15 minutes

Warm Up:-
Ask the children to find a space, not touching anyone. They must pretend that they are in a space ship, floating in space and they must move around without their ships colliding. The children must move around the hall keeping a safe distance away from each other. If children become too close to each other, instruct them to sit down, as their ship has crashed. Keep changing direction.

After playing the game discuss with the children:

- How does their body feel?
- Is their heart pumping more quickly?
- Are they breathing faster?

Main
15-45 minutes

In pairs, give the children the picture cards in Reference Sheet 1, cut up and mix up the order of the cards. Ask the children to read the instructions to each other, for their partner to perform. What do they notice about the order of the instructions? Did they have to order the instructions before reading them out?

Explain to the children that another word for a set of ordered instructions is an 'algorithm'. An algorithm is a set of precise step-by-step rules or instructions used to perform a task or to solve a problem. As they will have just seen, algorithms must be performed in the correct order or they won't work properly.

Explain to the children that computer programs are the instructions which a programmer uses to tell a computer what to do. To write a computer program, first the programmer writes an algorithm, the step-by-step set of instructions that the computer must follow. Because the computer cannot understand these instructions as an algorithm, they are written in a special computing language, as a program. As with any algorithm, the order of the algorithm and program must be correct, or the computer will not perform the correct task.

Split the children into small groups. Explain that today the children will create an algorithm for a 'getting ready for school' dance. The dance can include any morning routines and the instructions must be clear as to which person should perform them and when. The children should create their algorithms in words and pictures and can include activities such as: getting ready for school; getting out of bed; brushing teeth; washing face; brushing hair; getting dressed; going downstairs; getting breakfast; forgetting their book bag; running to school.

Extension:-
- Allow children to direct other groups with their algorithms. Were their instructions clear?
- Introduce the concepts of loops to make repetitive commands more efficient.

Plenary
45-60 minutes

From your observations, select pairs of children to demonstrate their algorithm and dance. As a class, discuss the different algorithms and any techniques they discovered.

Cool down:-
Children find a space and pretend that they are going to bed, stretching on tip toes and yawning. They should then lie on the floor and again stretch and then pretend to fall asleep, noticing how their breathing starts to slow down. Finally they should stretch slowly and sit up as if they are waking up again.

Fibonacci Plate Lesson Plan

Overview

In this UKS2, 60 minute lesson, children are introduced to the Fibonacci sequence and its importance in nature. Children recreate the Golden Spiral and produce a day plate containing its image. Finally children solve a puzzle based upon the Fibonacci sequence.

National Curriculum KS1 Link

Generate and describe linear number sequences.

UKS2 Learning Objective

To recreate the Golden Spiral and to apply the Fibonacci sequence to real life problems.

Key Words

- Fibonacci
- sequence
- spiral

Resources

- quick drying day
- paint and glaze
- day utensils
- Reference Sheet 1
- cm square paper
- rulers
- compasses (optional)

Lesson Structure

Starter
0-15 minutes

1, 1, 2, 3, 5, 8, 13, _, _, _
Display this sequence of numbers.

- Do any of the children recognise this sequence?
- Can they continue the sequence?
- Can they identify a rule for this sequence?

Main
15-45 minutes

Explain to the children that this sequence is called the Fibonacci sequence. Explain the history of its discovery and how it can be seen throughout nature. (See Teacher's Notes). The terms of the sequence are produced by adding together the previous two terms. The next 3 terms of the sequence are 21, 34 and 55.

Explain to the children that today they will be creating a Fibonacci day plate, based on the Golden Spiral.

Issue the children with the Reference Sheet and squared paper. Children should recreate the Golden Spiral on the paper, drawing the curve using a pair of compasses (optional). Children should then cut around the outside square of the spiral, to create a template.

Distribute a portion of day to each child and direct them to roll it out until it is at least 26cm x 16cm x 1cm. This size of day plate should be able to accommodate 4 Golden Spirals.

Place the Golden Spiral template on the day and gently trace around the spiral and the squares. Repeat this 4 times until the plate has four images of the Golden Spiral. Each section of the spiral can be decorated with an individual pattern and once dry the plate can be painted and glazed.

Extension:-
Research other repeating patterns in nature, such as tessellating patterns and use these as inspiration when decorating the plate.

Plenary
45-60 minutes

Klara, Sten, Stig, Manu, Chip and Meg are having a tea party and Meg and Chip don't want to sit next to each other. How many ways could the EducationCity characters sit? If we have 1 chair, 2 chairs, 3 chairs, 4 chairs. Hint: use a different colour or symbol to distinguish Meg and Chip from the other EducationCity characters.

Klara, **S**ten, **S**tig, **M**anu,
Meg and **C**hip

1 chair	striped or solid **2 ways**
2 chairs	striped solid or solid striped or solid solid **3 ways**
3 chairs	striped solid striped, solid solid striped, solid striped solid, solid striped striped, solid solid solid **5 ways**
4 chairs	striped solid striped solid, solid solid solid striped, striped solid solid solid, solid striped solid striped, solid solid striped solid, solid striped solid solid, solid solid solid solid, striped solid solid striped **8 ways**

Fibonacci Plate Lesson Plan (continued)

Main
15-45 minutes
(continued)

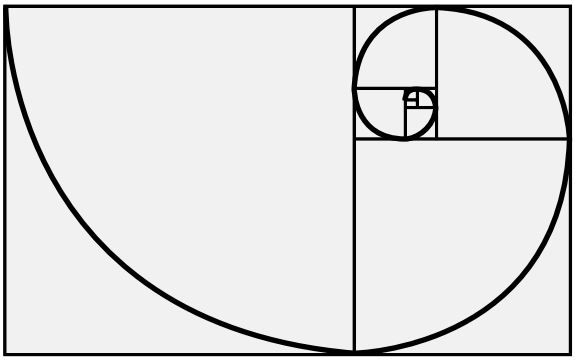
Teacher's Notes:
Fibonacci (otherwise known as Leonardo of Pisa) was born in the Italian town of Pisa around 1175AD. He was a great mathematician who spent much of his formative years travelling around the Mediterranean coast, mixing with merchants and learning about arithmetic. He was considered by many to be the most talented mathematician in the middle ages. In 1202 Fibonacci published a book called "Uber abaci". The book was based around the algebra and arithmetic that he had come across during his travels and contained a selection of mathematical problems aimed at merchants. One of the problems in the book was about a pair of rabbits. It asked the question:-

When a pair of rabbits is two months old, it produces another pair and from then on produces one pair every month. Starting with the one pair at the beginning of a year, how many pairs of rabbits will there be at the end of the year?

The answer can be seen in the following table. The totals form the Fibonacci sequence.

Month	Pair of Infant Rabbits	Pair of Mature Rabbits	Month
1	1	0	1
2	0	1	1
3	1	1	2
4	1	2	3
5	2	3	5
6	3	5	8
7	5	8	13
8	8	12	21

The sequence that Fibonacci discovered can be seen throughout nature. For example, tree branches rotate around the trunk in a pattern based on the Fibonacci numbers. The Fibonacci sequence also appears in the number of leaves found on plants, the patterns in the petals of flowers, in the scales of a pineapple and in pine cones and fir cones. The Fibonacci numbers apply to the growth of every living thing, even mankind. This spiral effect that the Fibonacci sequence creates, is known as the Golden Spiral.



Sequences Lesson Plan

Overview

In this KS 1 lesson, children will investigate repeating patterns by taking part in a pattern hunt around the school. Finally, they will be introduced to number patterns and will investigate the continuation of a sequence of numbers.

National Curriculum KS1 Link

To recognise and create repeating patterns with objects and with shapes.

UKS2 Learning Objective

To investigate patterns with shapes, objects and numbers.

Keywords

- pattern
- sequence
- infinite
- rule

Resources

- shape cards (Reference Sheet 1)
- miscellaneous objects for creating patterns
- clipboards

Lesson Structure

Starter
0-10 minutes

Give the children four containers and the shape cards from Reference Sheet 1. Ask the children to sort the shapes into the three pots.

Discuss as a class:

- How have they decided to sort the shapes?
- What four types of shapes are there? Circle, triangle, square and rectangle.
- What are the properties of each of the shapes? Triangle has three sides, three corners, etc.

Main

Part 1:
10-30 minutes

Stick some of the shapes onto the whiteboard, in a repeating pattern, for the children to see. Discuss with the children:

- What is special about these shapes now?
- What will be the next shape?
- Explain to the children that this is called a pattern.

Demonstrate to children other patterns with objects in the class such as counters, toy cars, etc. Tell the children that they are now going to go on a pattern hunt around the school, looking for repeating patterns. Instruct the children to draw what they see.

Sequences Lesson Plan (continued)

Part 2:
30-50 minutes

Write the number sequence on the board 1, 2, 1, 2, 1, 2, 1, 2, 1, 2, 1, 2, 1, 2...

Patterns don't just have to be shapes. This pattern is also called a sequence. Discuss with the children:

- Can they see a pattern with these numbers?
- What number do they think will come next?

Can they see a pattern with these numbers? The numbers go up in ones. This is called the rule of the sequence.
What number should come next?
Explain to the children that this number pattern can also be called a sequence and that the dots after the numbers mean that it will go on for infinity/forever. It is an infinite sequence.

Display the sequence 5, 6, 7, 8, 9... Discuss this sequence with the children. Explain that this is also a number sequence. The sequence does not have to start at 0 or 1, it can start at any number and in this case it has started at 5.

Display 0, 2, 4, 6, 8, 10... counting in twos. Discuss this sequence with the children.
Can they see a pattern with these numbers?
What number should come next?

Split the children into pairs. Ask the children to think of some other sequences. Swap the sequences with their partner and see if they can work out the rule of the sequence.

Plenary:
45-60 minutes

Ask the children to stand up. Call out a sequence, e.g., 2, 4, 6, 8, -. Miss out one of the numbers on purpose. When the children think that a number has been missed out they should sit down as quickly as possible. The last person standing is out.

Making a Kite Lesson Plan

Overview

In this lesson, students will design and make a kite. Students will understand the different forces which are involved in kite flying.

Materials

Resources and organisation:
- 2 wooden dowels (one about 1/4 smaller)
- different materials for making the kite (card, newspaper, fabric, etc.)
- tape
- thread
- lightweight string, twine, or fishing line
- craft knife
- ruler
- pencil, pen, or marker
- scissors
- ribbon
- stop docks

Lesson Preparation *(5 minutes)*

- Using a saw, make half of the wooden dowels 1/4 shorter in length.
- Cut notches into each end of the wooden dowel.
- Have the materials ready for students to make their kite.

Lesson Structure

0-10 minutes

Ask students if they have heard of Ada Lovelace. Show students a portrait of Ada and discuss that she was born almost 200 years ago in 1815. She was both a writer (her father was the famous poet, Lord Byron) and a mathematician. However, she is considered the world's first computer programmer, and wrote the first algorithm for Charles Babbage's Analytical Engine.

Explain that Ada Lovelace Day is celebrated, to promote women's involvement in Science, Technology, Engineering and Maths.

When Ada Lovelace was 12, she decided she wanted to fly and decided to create a 'flying machine', a pair of wings. She studied the anatomy of birds, investigating the proportion of wing span to body length. She also considered carefully the most appropriate size and material for her wings.

Explain to students, that in today's session, they will also be making a 'flying machine'. Ask students to briefly discuss different things which fly. Explain to the students that they will be making a kite and looking at which material is best for making kites.

Making a Kite Lesson Plan (continued)

10-40 minutes Throw a ball in the air and, with the students, watch it fall back to the ground. Ask students to discuss why it falls back to the ground. Explain that there is an 'invisible' force acting on the ball. This invisible force is called gravity, and it pulls the ball back to the ground. Ask students what happens to a kite, when it is in the air - why does it not fall back to the ground? What other force is acting on the kite? Draw out that moving air, or wind, is acting on the kite. Explain that this force is pushing the kite up and it is stronger than the force of gravity which is pulling the kite down.

Model to students how to make the kite. Ask students to work in small groups and give each group a different material to make their kite with. Ensure that adult support is provided to groups.

40-60 minutes Once the kites have been completed, look at each one in turn and list the different materials which have been used. Discuss how students will evaluate which material is best for kite making. Draw out that the time spent in the air will show how effective the material is. Make a table, record the different materials which are being tested, and predict which kite will fly the longest, encouraging students to give reasons for their choice. Give each group a stop clock to use to time how long the kite stays in flight.

Take the students outside with their kites and discuss what is going to determine if this kite will fly. Draw out the importance of having wind when flying a kite. Let students fly their kites and time how long their kites are in flight for. When back in the classroom, record these times in the table, and discuss which material is the best for kite making.

How to Build a Kite

1. Take 1 wooden dowel and saw about 1/4 off the length.
2. Carefully cut a notch into the end of each wooden dowel using a knife.
3. Make a cross shape with the dowel, placing the shorter dowel over the longer dowel. The notches need to face straight ahead.
4. Secure the sticks by wrapping the centre together with string.
5. Take the string and thread it through all the notches, making the frame of the kite.
6. Continue to thread the string around the kite a couple more times. Then secure the end of the string by tying a knot in the centre of the kite.
7. Lay the material on a flat surface and place the frame on top. Draw around the shape of the frame, but make sure that the shape on the material is larger than the frame.
8. Cut the shape out of the material.
9. Fold the material over the frame and tape this down. Secure the top and bottom of the kite using tape.
10. Punch a hole at the top and bottom of the kite, then knot a piece of string at the top and bottom end of the kite. Knot your flying string to this piece of string.
11. Then add a tail to your kite, using string and ribbon.

Famous Women from History Lesson Plan

Overview

In this two-part lesson, students will firstly work in small groups to research and find facts about a famous woman in history. They will then use multimedia software to write a biography which they will then present to the class.

Materials

- computers
- books
- large sheets of paper for noting facts

Lesson Structure

Part 1:
0-15 minutes

Ask students if they have heard of 'Ada Lovelace'. Show students the ThinkIt, 'Famous Women', and read through it together. Explain that Ada Lovelace was born nearly 200 years ago, however, she was very forward-thinking and was able to recognise the potential of computers and their role in the modern world. Ada Lovelace Day is celebrated in mid-October. This day is designed to celebrate and promote the role of women in Science, Technology, Engineering and Maths.

Ask students to list other famous women from history. Show students the answer slide with some examples of famous women from history. Are students able to recognise any of these women? Can they give reasons as to why these women are famous?

15-25 minutes

Explain to students that they will be researching different famous women in history. They will then use this research to write a biography.

Draw out from students that a biography is usually organised chronologically. Discuss the different subheadings which students could use to organise their notes, for example:

- early life
- growing up
- why they are famous

Use Ada Lovelace as an example to model to students how to research (using computers and books) and then develop a planning template to record relevant information.

25-50 minutes

Ask students to work in small groups to research a famous woman from history using the planning template which was modelled to them. Monitor students to ensure that they are finding enough facts for each of the different subheadings.

50-60 minutes

Within their groups, ask students to discuss the different facts which they have found out during the session.

Famous Women from History Lesson Plan (continued)

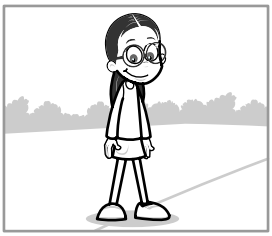
Part 2: 0-10 minutes	Recap what the students were doing in the previous session and remind them that they were finding facts about a famous woman in history. Ask students to recall these facts in their groups. Explain to students that in this session, they will be using these facts to create a presentation. This biographical presentation will be organised chronologically and then presented to the class, so that other students will also learn about these different women and the reasons as to why they are famous.
10-20 minutes	Introduce students to the presentational software that they will be using to write their biography. Revise some of the key features with students, including how to add text and headings, how to insert images and how to add graphics to the presentation.
20-45 minutes	Ask students to work together in their groups to write a presentation on the famous woman which they are researching. When students have finished their presentation, ask them to rehearse presenting this to the class, allocating parts to each student.
45-60 minutes	In this time, allow each group to present their biographies to the class. After each presentation, provide a few moments for reflection, encouraging the class to discuss what they have learnt, and importantly, why this individual is considered a key figure in history.

Program Your Friend - Reference Sheet 1

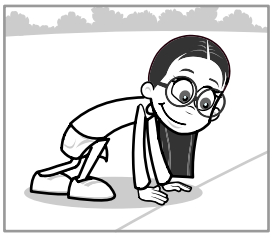
Reference Sheet

EducationCity

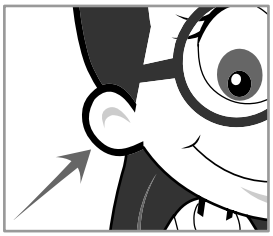
Running a race



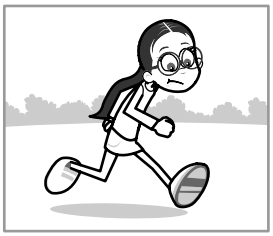
Stand on the start line



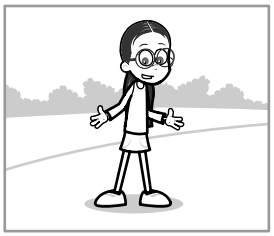
Get into the start position



Listen for the whistle

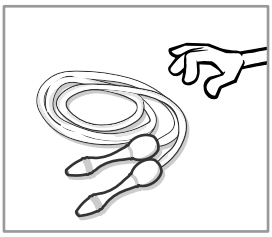


Run to the finish line

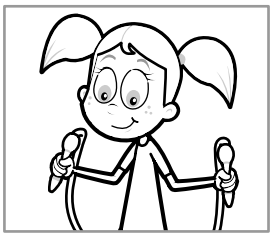


Stop running

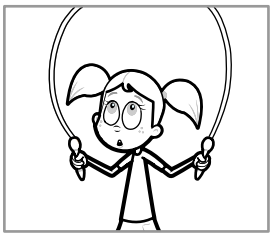
Skipping



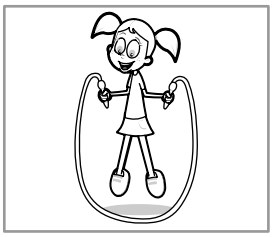
Pick up the skipping rope



Hold a skipping rope handle in each hand

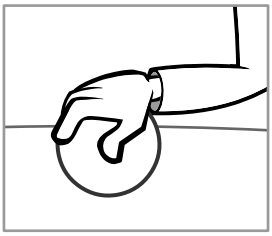


Swing the rope around

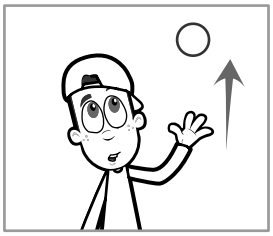


Jump

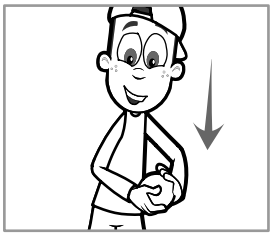
Juggling with a ball



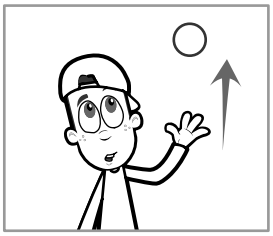
Pick up a ball



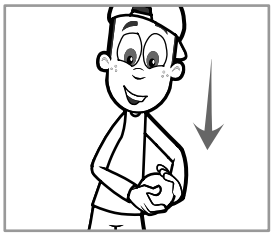
Throw the ball into the air



Catch the ball

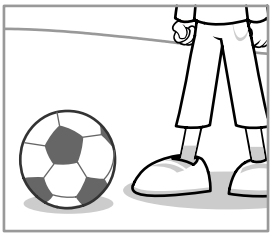


Throw the ball into the air again

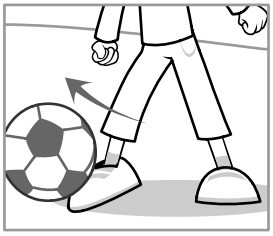


Catch the ball again

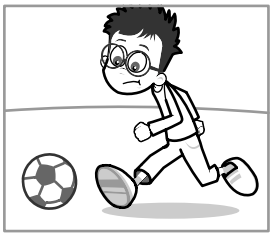
Shooting at a goal



Place the ball next to your foot

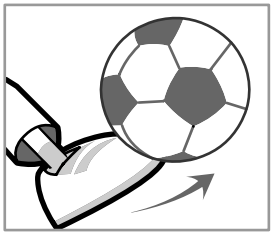


Push your foot against the ball gently



Run down the field

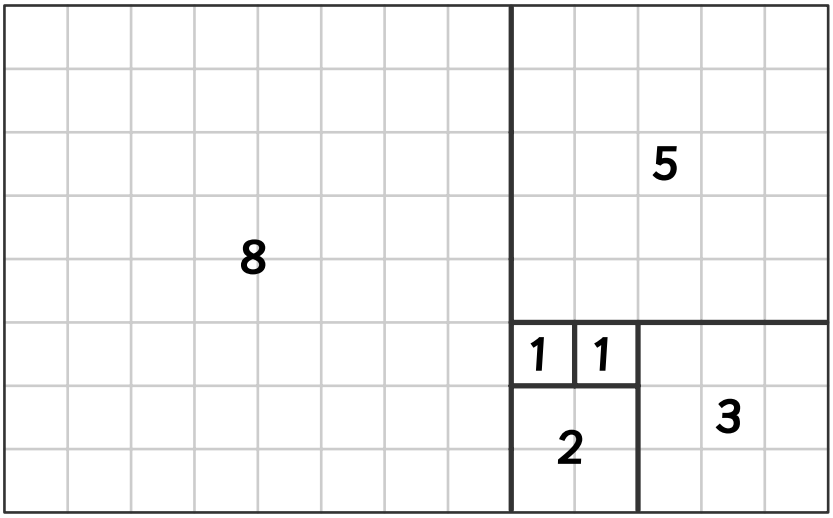
Stop near the goal



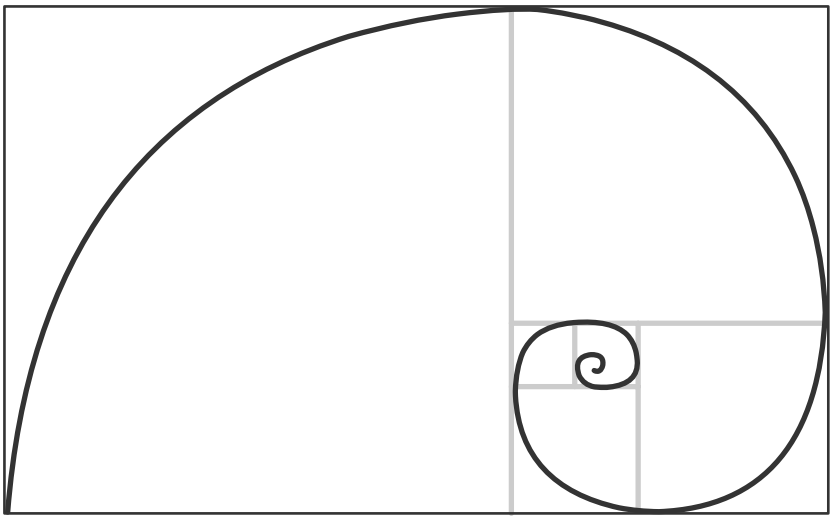
Kick the ball hard

How to draw a Fibonacci Spiral

1. On cm squared paper, draw the pattern below. Notice how the number of squares in the pattern follow the Fibonacci sequence.



2. Use a pencil to draw curves through the squares.

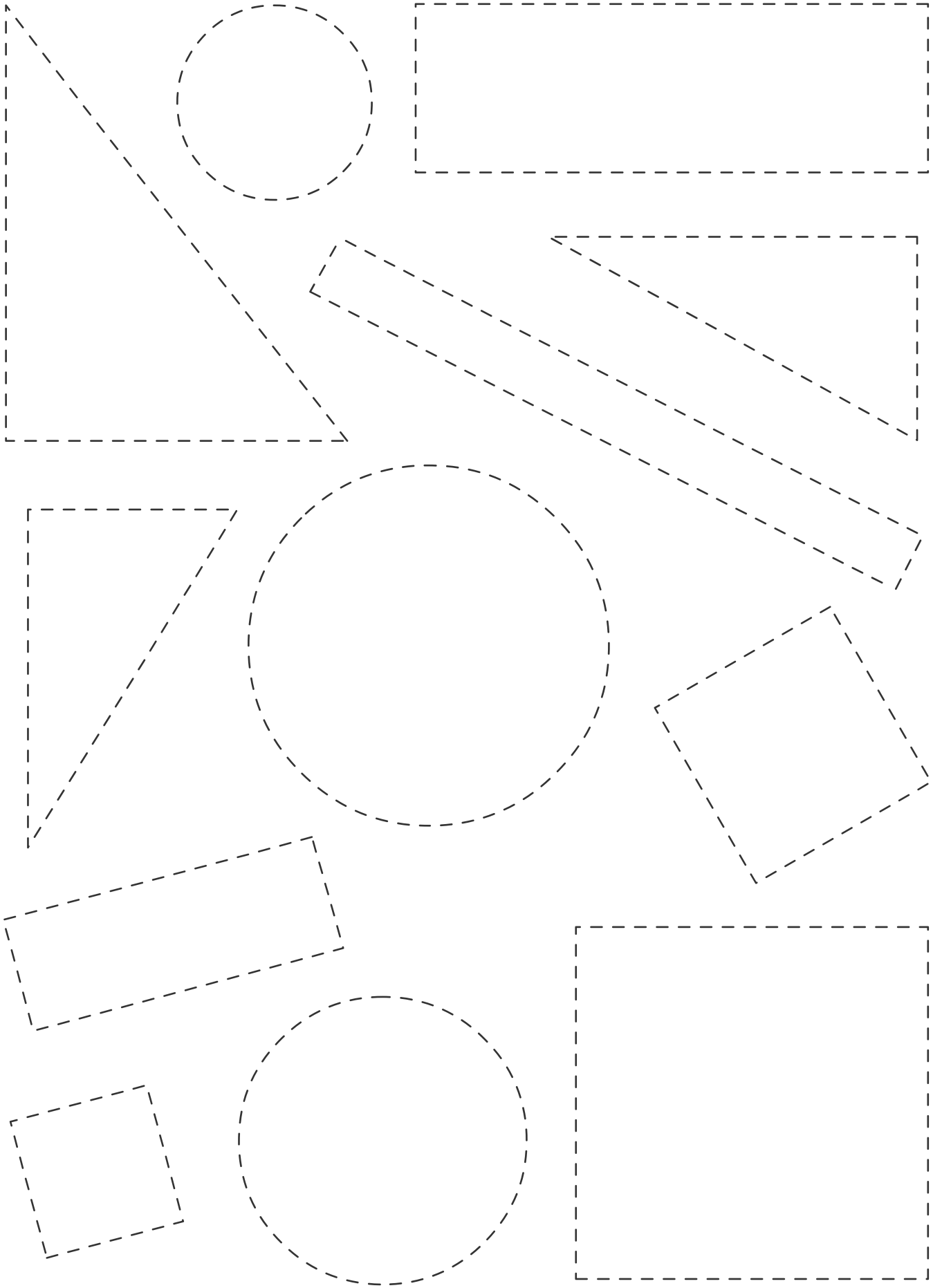


The Fibonacci Spiral in nature:

Sequences - Reference Sheet 1

Reference Sheet

EducationCity



About EducationCity

EducationCity produces fun, educational materials to engage students in learning and empower teachers to tailor their teaching. **Take a look at how EducationCity can support you in the classroom:**

Target Lesson Objectives Easily

Find relevant content that links to your curriculum by using our Curriculum Map or Search tool.

Comprehensive and clearly organised by strand, content is so easy to access!

Plan in Advance

When planning your lessons, choose your Activities in advance and put them into a MyCity so they're easy for students to access. Choose a meaningful name for each MyCity and you'll be able to update and retrieve them year after year!

Differentiated Teaching

Monitor progress with SuccessTracker and you'll be able to identify the strengths and areas of development for each of your students and so choose relevant activities to help them progress.

Flexible Learning

EducationCity is accessible via desktops, laptops, tablets and whiteboards, so can support you whatever equipment is available in your classroom.

Lesson Plans

Access our ready-made Lesson Plans, topical content and Teacher Resource Pack to support teaching and learning in the classroom.

There's more to EducationCity than Activities alone!

Blog

Keep abreast of events in the teaching arena, changes to the resource, and see how EducationCity is supporting the education community.

"Teachers have been delighted with the content of this package and most impressed with how easy it is to find appropriate learning and teaching resources and then to use them in a variety of ways."

Mark Sanderson,
Senior ICT Consultant, Herefordshire Learning and Achievement Service

Want to find out more about EducationCity?

Start a free trial for your school today and see it for yourself. Simply call us on +44 (0)1572 725080 or email trials@EducationCity.com to arrange.

Website: **www.EducationCity.com**
Email: **trials@EducationCity.com**

EducationCity®