Year 2

BIA Sience Term by Term Scheme of Work

الأكاديمية الإسلامية البريطانية
BRITISH ISLAMIC ACADEMY

year 2 Overview December to March (1)

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Spring	Everyday Material Squash, Bend, Twist, Stretch			Everyday Material Squash, Bend, Twist, Stretch			Everyday Material Materials Matter			Everyday Material Materials Matter		

(1) Subject to change. Please visit the website or call-in for regular updates.

Term by Term Objectives

year 2

week	1	Term	Spring 1

Science Year 2 Everyday Materails : Squash, Bend, Twist, Stretch

Which ball is the bounciest?

Objectives

Explore all sorts of bouncy balls and investigate which one is the bounciest. Does this mean the ball that bounces the highest or the one that bounces for the longest time? Plot the results on a chart.

Science Objectives

i) Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.
ii) Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.

Working Scientifically

- Ask simple questions and recognise that they can be answered in different ways.
- Observe closely, using simple equipment.
- Perform simple tests.
- Identify and classify.
- Use their observations and ideas to suggest answers to questions.
- Gather and record data to help answer questions.

Additional Resources

- A variety of balls, preferably of fairly similar size, e.g. tennis, sponge, rubber, ping pong (try to avoid large balls like footballs and basketballs).
- Tape measure
- Large sheets of paper and pens
- Squared paper and rulers

Watch this video

https://www.youtube.com/watch?v=3jI57WMOzbU

Term by Term Objectives

year 2

week	1	Term	Spring 1

Science Year 2 Everyday Materails : Squash, Bend, Twist, Stretch

Which ball is the bounciest?

Teaching and Activities

Teaching

- Explore the properties of a variety of balls.
- Generate questions and discuss the similarities and differences between the balls.
- Discuss and design an investigation to test which ball is the bounciest.
- Make predictions, test, and record results.
- Learn about what makes a material have bouncy properties.

Activities

- Explore the properties of a variety of balls and predict which is the bounciest.
- Consider that the materials from which the balls are made may have an effect on their bounciness.
- Consider: what does 'bounciest' mean? Is it the ball that bounces the highest or for the longest time?
- Discuss and design an investigation to test which ball is the bounciest.

Investigation - exploring, pattern seeking

-Explore the properties of a variety of balls in the playground.
- Discuss and design an investigation to test which ball is the bounciest.

Vocabulary

Shape, changed, twist/twisting, squash/squashing, bend/bending, stretch/stretching, material, properties

Term by Term Objectives

year 2

week	2	Term	Spring 1

Science year 2 Squash, Bend, Twist, Stretch

Which fabric is the stretchiest?

Objectives

Consider different fabrics and what they could be used for. Devise an investigation to test the elasticity of the fabric and record the results.

Science Objectives

i) Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.
ii) Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.

Working Scientifically

- Ask simple questions and recognise that they can be answered in different ways.
- Observe closely, using simple equipment.
- Perform simple tests.
- Identify and classify.
- Use their observations and ideas to suggest answers to questions.
- Gather and record data to help answer questions.

You Will Need

Additional Resources

- Testing stretchy materials resource
- A variety of materials (cloth) of different stretchiness (e.g. cotton, wool, nylon)
- Tape measure or ruler
- Small plastic bags
- Marbles
- Thin elastic bands

Term by Term Objectives

year 2

week	2	Term	Spring 1

Science year 2 Squash, Bend, Twist, Stretch

Which fabric is the stretchiest?

Teaching and Activities

Teaching

- Examine fabrics and discuss the requirements of some clothes.
- Talk about how to test fabric's elasticity properties and make predictions.
- Consider these questions: What length is the fabric at the start? To what length does it need to stretch? What length does it return to?

Activities

- Look at a selection of fabric and understand why stretchy fabric is sometimes used in clothing.
- Investigate and explore the elasticity of fabric and make predictions.
- Begin to understand how to make a test fair and to record results in a bar chart.

Investigation - exploring, pattern seeking, problem solving

- Talk about how to test fabric's elasticity properties, make predictions and devise an investigation based on attaching weights to the ends of strips of fabric.

Vocabulary

Shape, changed, twist/twisting, squash/squashing, bend/bending, stretch/stretching, material, properties

Term by Term Objectives

year 2

week	3	Term	Spring 1

Science year 2 Squash, Bend, Twist, Stretch

Testing rigidity

Objectives

Examine a selection of different materials and explore their rigidity by devising an investigation to test them. Why is it important that some materials bend and flex?

Science Objectives

i) Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.
ii) Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.

Working Scientifically

- Ask simple questions and recognise that they can be answered in different ways.
- Observe closely, using simple equipment.
- Perform simple tests.
- Identify and classify.
- Use their observations and ideas to suggest answers to questions.
- Gather and record data to help answer questions.

You Will Need

Provided Resources

- Images of bridges and vocabulary cards from resource

Additional Resources

- A selection of materials for each group, including lengths of wood, metal, plastic, card (Make them similar lengths: you could use plastic, metal and wooden rulers)
- Small weights (100g)
- Tape
- String

Term by Term Objectives

year 2

week	3	Term	Spring 1

Science year 2 Squash, Bend, Twist, Stretch

Teaching and Activities

Testing rigidity

Teaching

- Understand that some materials need to be able to 'give' a little and not break (for bridges carrying heavy traffic, for example).
- Look at a selection of materials and discuss how they might be tested for their rigidity.
- Devise an investigation to test the flexibility of materials (by hanging weights from string onto the end of each strip of material).
- Make predictions and carry out the investigation, recording the results.

Activities

- Understand that some materials need to be able to 'give' a little and not break (for bridges carrying heavy traffic, for example).
- Explore a selection of materials and discuss how they might be tested for their rigidity (identical lengths of wood, plastic, metal, card).
- Devise and carry out an investigation to test how much they will bend and discuss the results.

Investigation - exploring over time, pattern seeking, problem solving

- Devise an investigation to test how much they will bend by hanging weights from string onto the end of each strip of material.

Vocabulary

Squash/squashing, bend/bending, stretch/stretching, material, properties, strong, weak, rigid, flexible

Term by Term Objectives

Year 2

week	4	Term	Spring 1

Science year 2 Squash, Bend, Twist, Stretch

Tough and flexible

Objectives

Consider and sort different materials according to their material properties. Wonder what the world would be like without rigidity and test materials for their durability and toughness.

Science Objectives

i) Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.
ii) Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.

Working Scientifically

- Ask simple questions and recognise that they can be answered in different ways.
- Observe closely, using simple equipment.
- Perform simple tests.
- Identify and classify.
- Use their observations and ideas to suggest answers to questions.
- Gather and record data to help answer questions.

You Will Need

Provided Resources

- Flexible objects resource

Additional Resources

- A variety of objects with different material properties
- A range of objects with the same material properties
- Hoops
- Labels on card
- A selection of old clothes (sock, jeans, thin vest, overalls, sweatshirt)
- Coarse grain sand paper
- Wood block

Term by Term Objectives

Year 2

week	4	Term	Spring 1

Science year 2 Squash, Bend, Twist, Stretch

Magnets and metal

Teaching and Activities

Teaching

- dentify and discuss the materials/properties of objects and sort them according to criteria.
- Test materials for their durability and toughness and consider the usefulness of materials for our everyday lives.
- Consider the question: if everything I touched became flexible, how would my life be different? Tell stories to each other about an average day in a world where nothing was rigid.

Activities

- Identify and sort objects with different material properties.
- Test fabrics for their durability and toughness and consider the everyday usefulness of materials.
- Consider the importance of material properties by wondering what life would be like without it.

Investigation - sorting, classifying and identifying

Sort objects in the classroom according to these criteria: flexible, rigid, hard, soft, stretchy, stiff.

Vocabulary

Flexible, rigid, hard, soft, stretchy, stiff, strong, weak, rigid, flexible, material, properties

Term by Term Objectives

year 2

week	5	Term	Spring 1

Science year 2 Squash, Bend, Twist, Stretch

Which is the strongest paper?

Objectives

Explore a selection of paper and predict the strongest one. Test the papers using weights and record the results.

Science Objectives

i) Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.
ii) Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.

Working Scientifically

- Ask simple questions and recognise that they can be answered in different ways.
- Observe closely, using simple equipment.
- Perform simple tests.
- Identify and classify.
- Use their observations and ideas to suggest answers to questions.
- Gather and record data to help answer questions.

You Will Need

Provided Resources

- What's my Material? cards

- 'The paper I have chosen' sheet

Additional Resources

- A selection of different sorts of paper (sugar paper, backing paper, wrapping paper, printer paper, tracing paper, tissue paper)
- Scissors
- Hole punch
- Paper clip
- 100g weights
- Freezer bags

Term by Term Objectives

year 2

week	5	Term	Spring 1

Science year 2 Squash, Bend, Twist, Stretch

Which is the strongest paper?

Teaching and Activities

- Be challenged to find the strongest paper to wrap a present.
- Understand that paper varies in strength and think of a way to test the strength of different papers.
- Plan, make predictions, and carry out an investigation.

Activities

- Investigate paper strength, working in groups and recording their findings.
- Predict the outcome of the investigation and produce a simple bar chart or annotated drawings of the results.

Investigation - sorting, classifying and identifying

- Be challenged to find the strongest paper to wrap a present. Collect sheets of different types of paper and make them the same size.
- Make a hole in each sheet and hang a weight from it, adding weights until the paper tears. Record the results.

Vocabulary

Strong, tear, rip, weight, grams, bar chart, results, material, properties

Term by Term Objectives

year 2

week	6	Term	Spring 1

Science year 2 Squash, Bend, Twist, Stretch

Paper bridges

Objectives

Using your knowledge of paper strength and rigidity, build a paper bridge strong enough to hold a toy car.

Science Objectives

i) Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.
ii) Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.

Working Scientifically

- Ask simple questions and recognise that they can be answered in different ways.
- Observe closely, using simple equipment.
- Perform simple tests.
- Identify and classify.
- Use their observations and ideas to suggest answers to questions.
- Gather and record data to help answer questions.

You Will Need

Provided Resources '

- Paper Bridge Designs resource

Additional Resources

- A selection of different sorts of paper
- Scissors
- Tape
- Toy car

Term by Term Objectives

year 2

week	6	Term	Spring 1

Science year 2 Squash, Bend, Twist, Stretch

Paper bridges

Teaching and Activities

Teaching

- Revise learning about materials and their properties.
- Work in small groups to design and make a paper bridge to hold a toy car.
- Explain selections and predictions for the success of their bridge.
- Consider the question: what happens if the paper is folded into a concertina shape?

Activities

- Articulate their learning about materials and their properties.
- Work in small groups to design and make a paper bridge to hold a toy car, selecting the paper they think will work best.
- Explain their selections and predictions for the success of their bridge.

Investigation - problem solving

- Work in small groups to design and make a paper bridge to hold a toy car, selecting the paper they think will work best.

Vocabulary

Strong, tear, rip, weight, rigidity, flexibility, concertina, material, properties

Term by Term Objectives

year 2

week	7	Term	Spring 2

Science year 2 Materials Matter

Mopping up

Objectives

Explore the properties of different kitchen papers and disposable cloths. Rise to the challenge of mopping water from the floor. Which paper is the most absorbent? Which will be the best for mopping up the spillage?

Science Objectives

i) Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.
ii) Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.

Working Scientifically

- Ask simple questions and recognise that they can be answered in different ways.
- Observe closely, using simple equipment.
- Perform simple tests.
- Identify and classify.
- Use observations and ideas to suggest answers to questions.
- Gather and record data to help in answering questions.

You Will Need

Provided Resources

- 'Some Ways of Testing Absorbency' sheet
- Investigation recording sheets

Additional Resources

- Different sorts of paper towels and disposable cloths (kitchen paper, different brands of paper towels, school paper towels, squares of paper, etc)
- Pipettes or syringes
- Beakers of water
- Tape
- Timers

Term by Term Objectives

year 2

week	7	Term	Spring 2

Science year 2 Materials Matter

Mopping up

Teaching and Activities

Teaching

- Explore the properties of different kitchen paper and disposable cloths.
- Make predictions about which would be best at mopping up a spillage of water.
- Investigate which papers are the most absorbent by choosing a method and working in a group.
- Understand the different reasons why people may need to use absorbent materials.

Activities

- Create hypotheses and make predictions about the absorbency of different kitchen paper and disposable cloths.
Investigate which papers are the most absorbent by choosing a method and working in a group.

Investigation

Consider the questions: are all makes of paper as good as each other? Or are some better than others?

Investigate which papers are the most absorbent by laying thin strips of equal length of different materials (including a waterproof strip) in a shallow tray and pouring coloured water onto the edge of the strips.

Vocabulary

Material, properties, absorbency, waterproof, strong, weak, hypothesis

Term by Term Objectives

year 2

week	8	Term	Spring 2

Science year 2 Materials Matter

Are bricks absorbant?

Objectives

Think about hard materials and their absorbent properties. Which building materials are absorbent? Why must they have this property? Test different hard materials and record the results.

Science Objectives

i) Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.
ii) Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.

Working Scientifically

- Ask simple questions and recognise that they can be answered in different ways.
- Observe closely, using simple equipment.
- Perform simple tests.
- Identify and classify.
- Use observations and ideas to suggest answers to questions.
- Gather and record data to help in answering questions.

You Will Need

Provided Resources

Hypothesis Thinking Sheet

Additional Resources

- A variety of hard materials (different type of wood, including balsa wood, brick, plastics, plaster, clay, metals)
- Shallow bowls of water
- Timer

Term by Term Objectives

year 2

week	8	Term	Spring 2

Science year 2 Materials Matter

Are bricks absorbant?

Teaching and Activities

Teaching

- Consider what buildings are made of and why. Generate questions about the absorbency of building materials.
Devise an investigation to test a variety of materials for their absorbent property.
Make predictions and to observe and record results.

Activities

Explore what buildings are made of and generate questions about the absorbency of building materials.
Consider and investigate the hypothesis "Hard materials cannot absorb water" and make predictions about different materials before testing them.
Make decisions about how to record the results of the investigation in a clear way for others to follow.

Investigation - observing over time, problem solving

- Devise an investigation to test a variety of materials (plastics, metals, different types of wood and bricks) for their absorbent property.

Vocabulary

Material, properties, absorbency, waterproof, strong

Term by Term Objectives

year 2

week	9	Term	Spring 2

Science year 2 Materials Matter

Waterproofing materials

Objectives

Explore different fabrics and investigate how waterproof they are using a dropper of water. How can we make the fabrics waterproof? Colour them in with wax crayon and repeat the investigation!

Science Objectives

i) Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.
ii) Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.

Working Scientifically

- Ask simple questions and recognise that they can be answered in different ways.
- Observe closely, using simple equipment.
- Perform simple tests.
- Identify and classify.
- Use observations and ideas to suggest answers to questions.
- Gather and record data to help in answering questions.

You Will Need

Provided Resources

- Investigating fabrics resource

Additional Resources

- Sticky notes
- A selection of fabrics
- Pipettes
- Beakers of water
- Wax crayons

Term by Term Objectives

year 2

week	9	Term	Spring 2

Science year 2 Materials Matter

Waterproofing materials

Teaching and Activities

Teaching

- Discuss waterproof materials and their uses.
- Investigate the absorbency of fabrics.
- Consider the question: How can we make the fabric waterproof?
- Discuss findings and suggest explanations.

Activities

- Understand that, if a material does not absorb water, it is said to be waterproof.
- Investigate the absorbency of fabrics and the effect of adding a layer of wax crayon.
- Discuss the findings and consider the reasons for fabrics being waterproof.

Investigation - pattern seeking, problem solving

- Investigate the absorbency of fabrics by stretching them over a jar to make them taut and using a dropper to drop water onto the cloth. Observe and measure the number of drops and the time they stay on the cloth before being absorbed.

Vocabulary

Material, properties, absorbency, waterproof, strong

Term by Term Objectives

year 2

week	10	Term	Spring 2

Science year 2 Materials Matter

Printing

Objectives

Explore the textures and properties of different materials by printing with a selection of items. Make a large collective piece of art showing the variety of materials used by the class.

Science Objectives

i) Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.
ii) Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.

Working Scientifically

- Ask simple questions and recognise that they can be answered in different ways.
- Observe closely, using simple equipment.
- Perform simple tests.
- Identify and classify.
- Use observations and ideas to suggest answers to questions.
- Gather and record data to help in answering questions.

You Will Need

Provided Resources

- Vocabulary Bingo resource

Additional Resources

- Collection of manmade and natural objects
- Sticky notes
- Poster paint
- Large sheets of paper

Term by Term Objectives

week	10	Term	Spring 2

year 2

Science year 2 Materials Matter

Printing

Teaching and Activities

Teaching

-Discuss the difference between natural and manmade objects.

Explore the properties of a range of natural and manmade objects including observing any similarities and differences between the two groups.

Describe the textures and appearance of the different items.

Explore the texture and various properties by using them to print with paint.

Display the artwork represent materials and their properties.

Activities

- Understand the difference between natural and manmade objects and sort into groups.
- Describe the textures and appearance of the different items.
- Explore the texture and various properties (absorbency, flexibility) by using them to print with paint.

Investigation - exploring

-Explore the texture and various properties (absorbency, flexibility) by using them to print with paint onto squares of cloth or card.

Vocabulary

Material, properties, absorbency, waterproof, strong

Term by Term Objectives

year 2

week	11	Term	Spring 2

Science year 2 Materials Matter

Resist the wax!

Objectives

Learn more about the waterproof properties of wax by having a go at a wax resist picture!

Science Objectives

i) Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.
ii) Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.

Working Scientifically

- Ask simple questions and recognise that they can be answered in different ways.
- Observe closely, using simple equipment.
- Perform simple tests.
- Identify and classify.
- Use observations and ideas to suggest answers to questions.
- Gather and record data to help in answering questions.

You Will Need

Provided Resources

- Examples of wax resist art

Additional Resources

- Watercolour paint or thinned poster paint
- Paint brushes
- Pieces of card
- Wax crayons
- Oil pastels, or a stick of fabric wax
- Squares of fabric
- Vaseline
- Tin foil

Term by Term Objectives

year 2

week	11	Term	Spring 2

Science year 2 Materials Matter

Resist the wax!

Teaching and Activities

Teaching

- Use wax drawing and colour washing as a reminder of the waterproof properties of wax.
- Make a wax resist picture using wax crayons, oil pastels and paint.
- Consider the questions: why is waterproof material sometimes used for making clothes? Can you think of other reasons why a material needs to be made waterproof?

Activities

- Explore wax resist painting using oil pastels, wax crayons and paint.
- Understand the role of wax and its waterproof properties in wax resist art.

Investigation - exploring, observing over time

- Make a batik wax resist piece of art by applying molten wax to a piece of cotton and dying it.
- Chop up old wax crayons and heat in moulds in the microwave/oven. Make new wax crayons in a different shape.

Vocabulary

Material, properties, absorbency, waterproof, strong, resist

Term by Term Objectives

year 2

week	12	Term	Spring 2

Science year 2 Materials Matter

Melting and moulding

Objectives

Talk about how some materials change shape when they are heated up. Chop up old wax crayons, heat them up and turn them into different shapes!

Science Objectives

i) Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.
ii) Think about unusual and creative uses for everyday materials.
iii) Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.

Working Scientifically

- Ask simple questions and recognise that they can be answered in different ways.
- Observe closely, using simple equipment.
- Perform simple tests.
- Identify and classify.
- Use observations and ideas to suggest answers to questions.
- Gather and record data to help in answering questions.

You Will Need

Provided Resources

- icles Role Play and Melting and Remoulding Wax Crayons resource

Additional Resources

- Old wax crayons
- Plain paper and paper for writing on
- Silicone moulds
- Old mugs or jugs
- Scissors
- Knife
- Microwave

Term by Term Objectives

year 2

week	12	Term	Spring 2

Science year 2 Materials Matter

Melting and moulding

Teaching and Activities

Teaching

- Learn about what happens when a material is heated up and why it changes shape.
- Role-play what happens to the particles in a material when it is heated.
- Investigate the changes to wax crayons caused by heat.

Activities

- Understand what happens when a material is heated up and why it changes shape.
- Discuss the importance of recycling materials.
- Understand and experience recycling by remoulding wax crayons in new and different shapes.

Vocabulary

Material, properties, melting, particles, changing shape