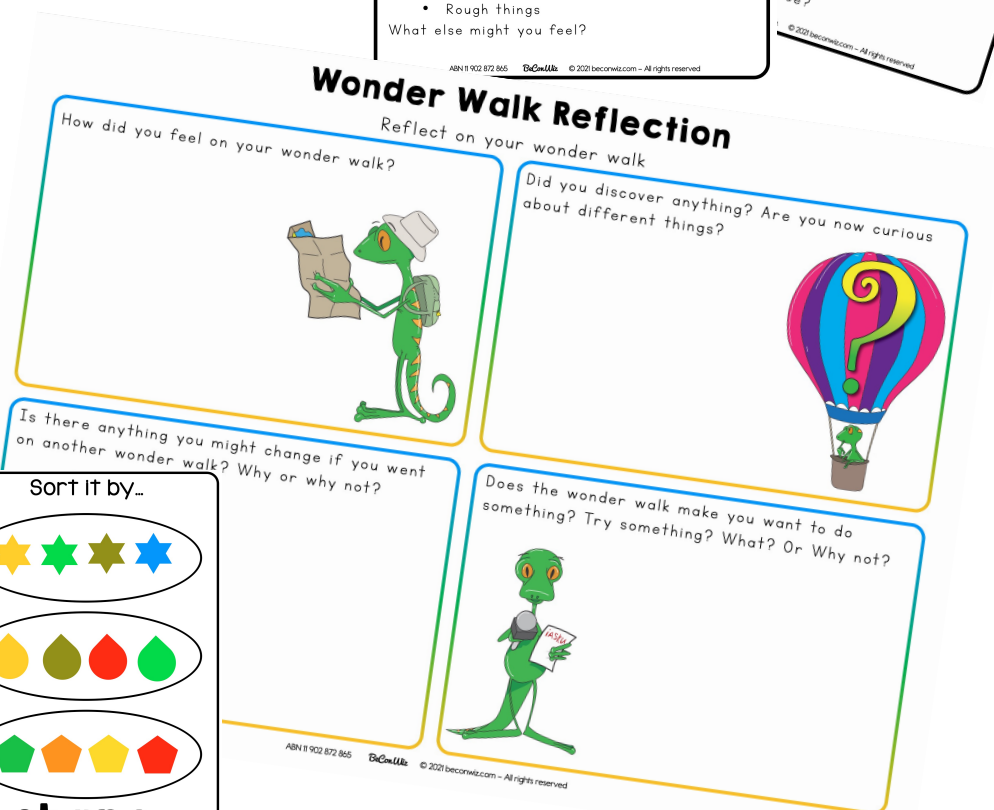
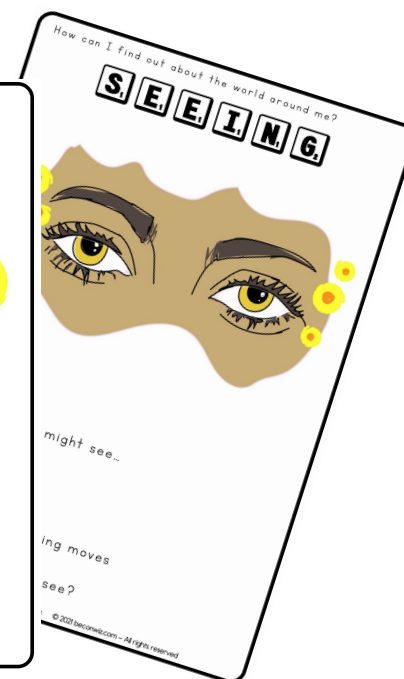
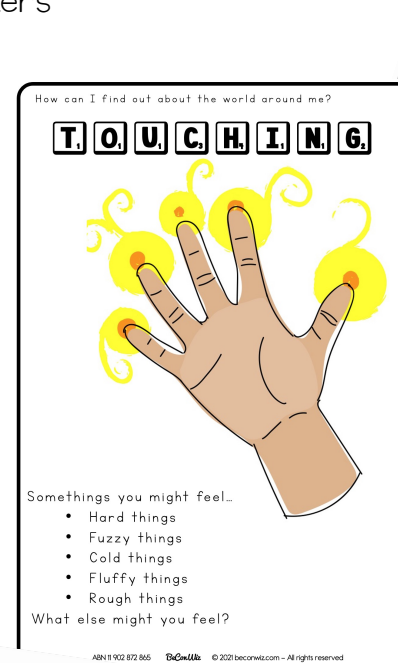
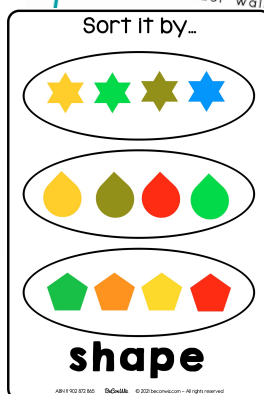
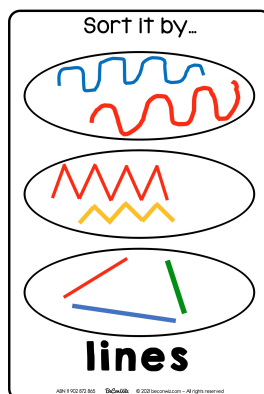
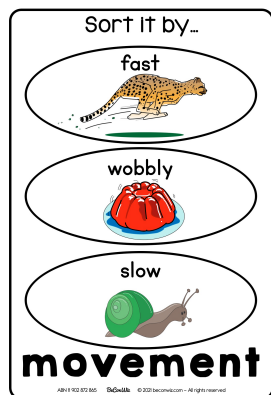
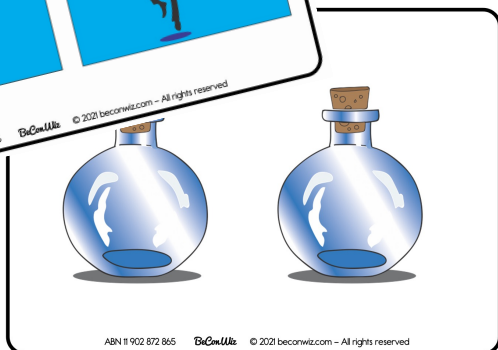
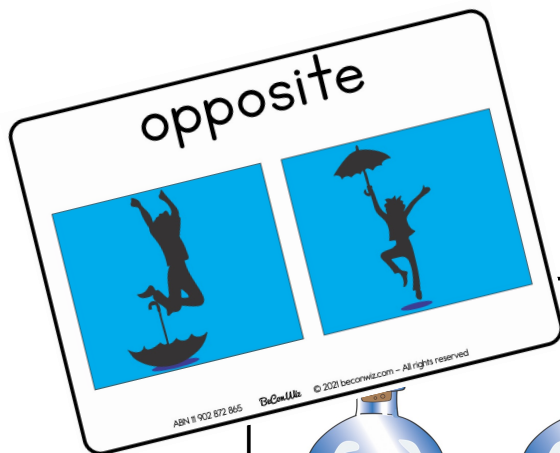


Understanding how to sort or group different things





EMERGING UNDERSTANDINGS



Include in this resource are some inquiry task ideas that may be used to support students who are only just beginning to understand what attributes or properties are and how they are used in the real world.

Resources included

- Inquiry task ideas
- Single attribute prompt cards (colour, shape, size, lines, pattern, sounds, texture, movement and 'job/function' attributes are introduced)
- Two types of blank single attribute cards
- Five senses prompt cards
- Wonder walk prompts

Resources you will need

- Objects to sort
- Resources for recording ideas
- Spaces to go for wonder walks in



CONCEPT QUESTION CARDS



A set of six guiding concept questions that can be used to guide planning.

Teachers may also select one or two of the questions to share with the students and use to guide and reflect on inquiries.

The concepts used include the PYP key concepts of

- Form
- Causation
- Perspective

Related mathematical concepts used include

- Representation
- Context
- Computation

These concept questions are reflected in the assessment tools provided at the end of this resource.

MATCHING + SORTING

How are things the same, similar or different?

MATCHING + SORTING

What influences the way we can organise things?

MATCHING + SORTING

How might different people in different situations use organising ideas and strategies?

MATCHING + SORTING

How can we represent what we see and think?

MATCHING + SORTING

How do real world situations help us think about how we can organise things?

MATCHING + SORTING

What sort of thinking do we use when we are organising things?



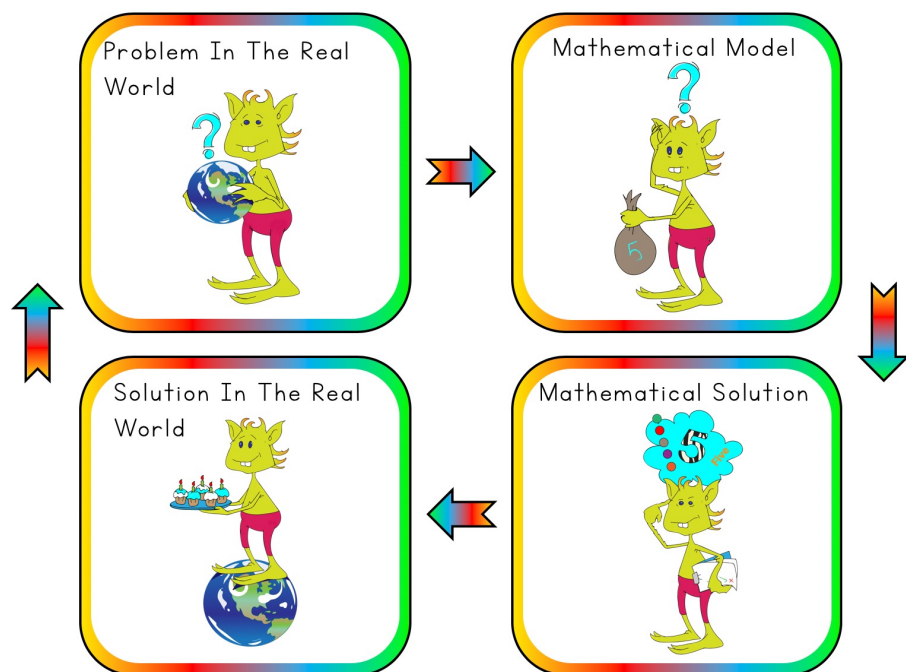
MATHEMATICAL MODELLING



An example of the mathematical modelling process is included in this resource. This modelling process is adapted from Derek Haylock's *Mathematical Modelling* in his text *Mathematics explained for primary teachers* (pp. 53-54). London: SAGE.

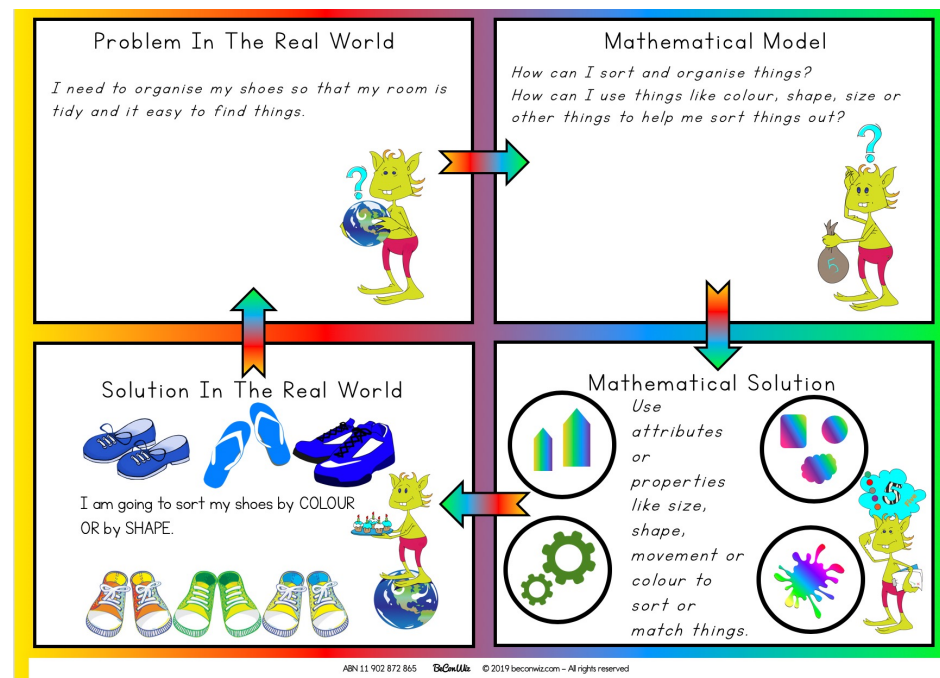
The modelling process is useful as it provides a scaffold for teachers and students to make real world and in class mathematical understandings.

This resource includes a blank model for reuse in the classroom.



Adapted from Derek Haylock's 'Mathematical Modelling'

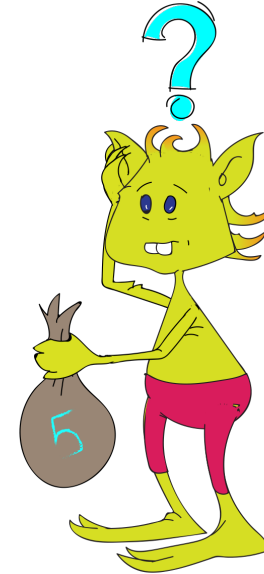
Haylock, D. (2010). *Mathematics explained for primary teachers* (pp. 53-54). London: SAGE.



Problem In The Real World



Mathematical Model



Solution In The Real World



Mathematical Solution



Problem In The Real World

I need to organise my shoes so that my room is tidy and it easy to find things.



Mathematical Model

*How can I sort and organise things?
How can I use things like colour, shape, size or other things to help me sort things out?*



Solution In The Real World

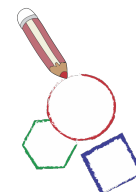


I am going to sort my shoes by COLOUR
OR by SHAPE.

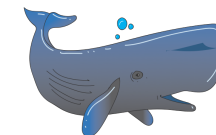


Mathematical Solution

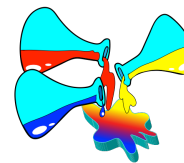
Use attributes or properties like ...



Shape



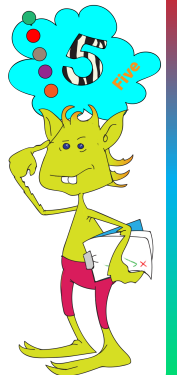
Size



Colour



Movement



Problem In The Real World



Mathematical Model



Solution In The Real World



Mathematical Solution



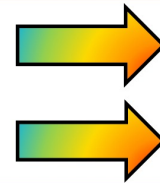


MATHEMATICAL VOCABULARY

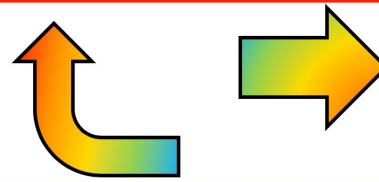


Include in this resource is some of the basic mathematical vocabulary that can be introduced and used with learners in the emerging stage of understanding. The vocabulary has connecting symbols to help learners develop an understanding of how we can use visuals to share ideas, even if you can't spell or write the word yourself.

same



similar

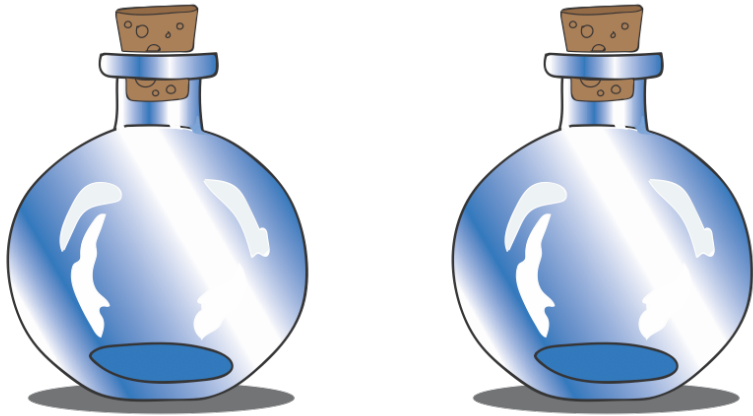


VENN DIAGRAM



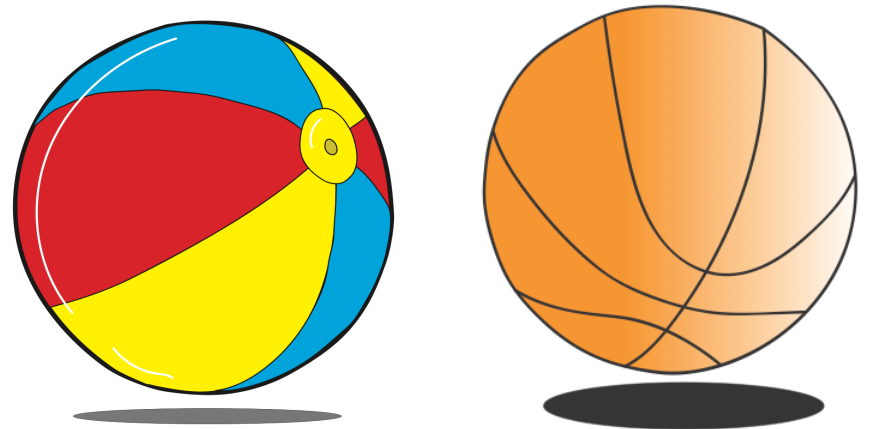
A basic Venn Diagram is included in this resource. This can be printed out on A4 or A3 size for students to record ideas or sort materials they have in the classroom.

same



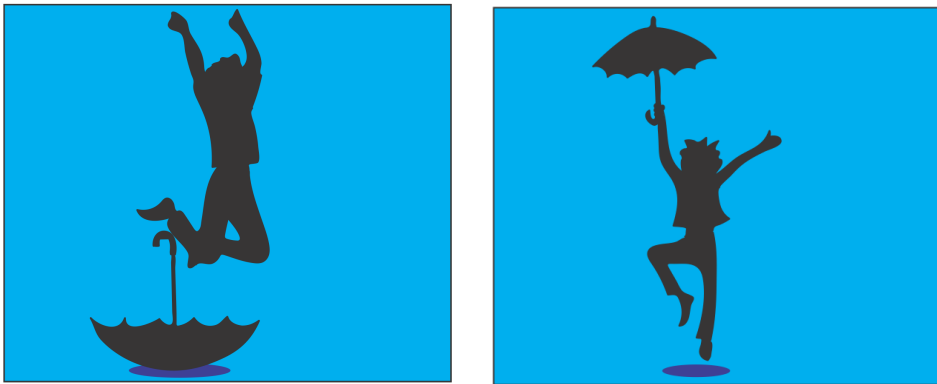
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similar



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opposite



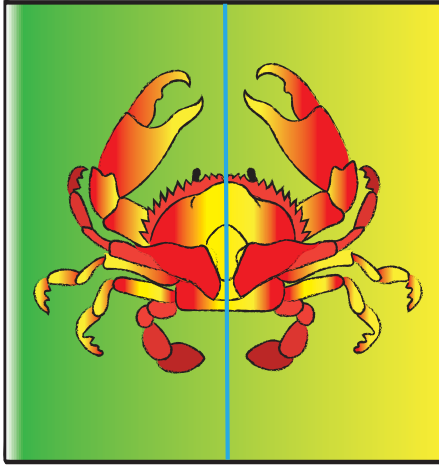
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different



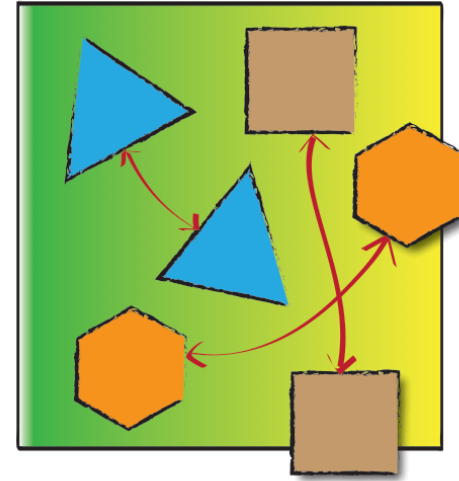
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match



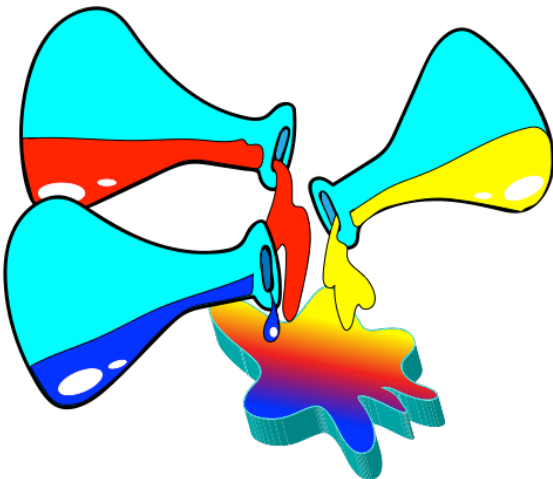
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sort



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combine



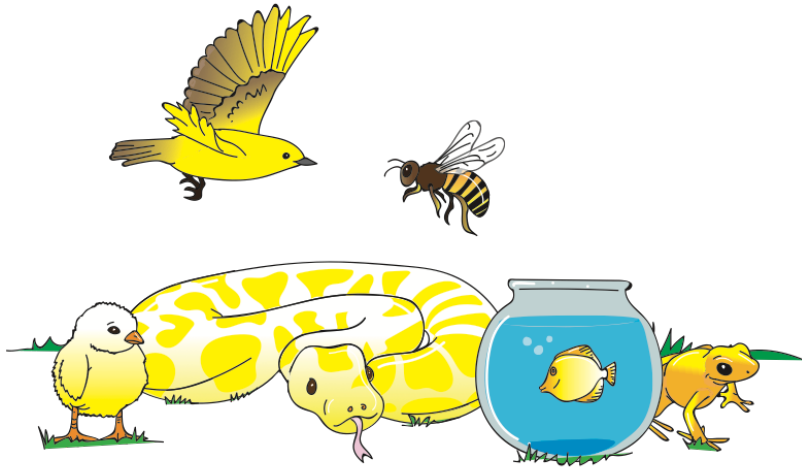
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equal



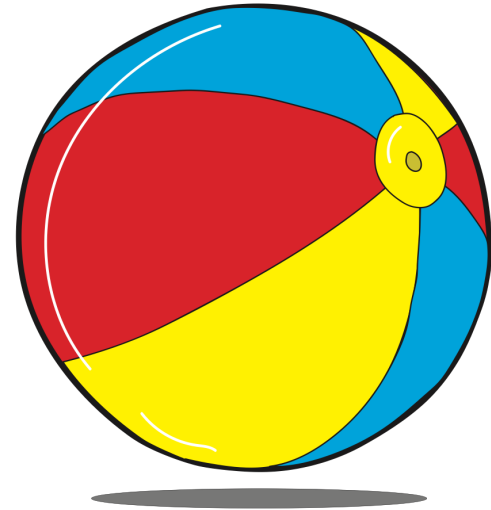
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group



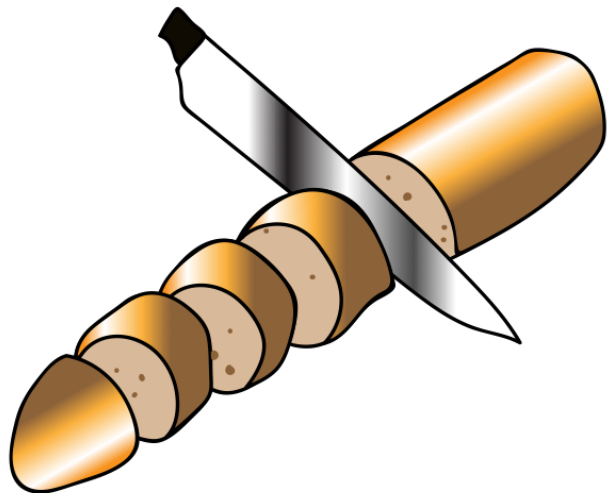
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pattern



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separate



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together



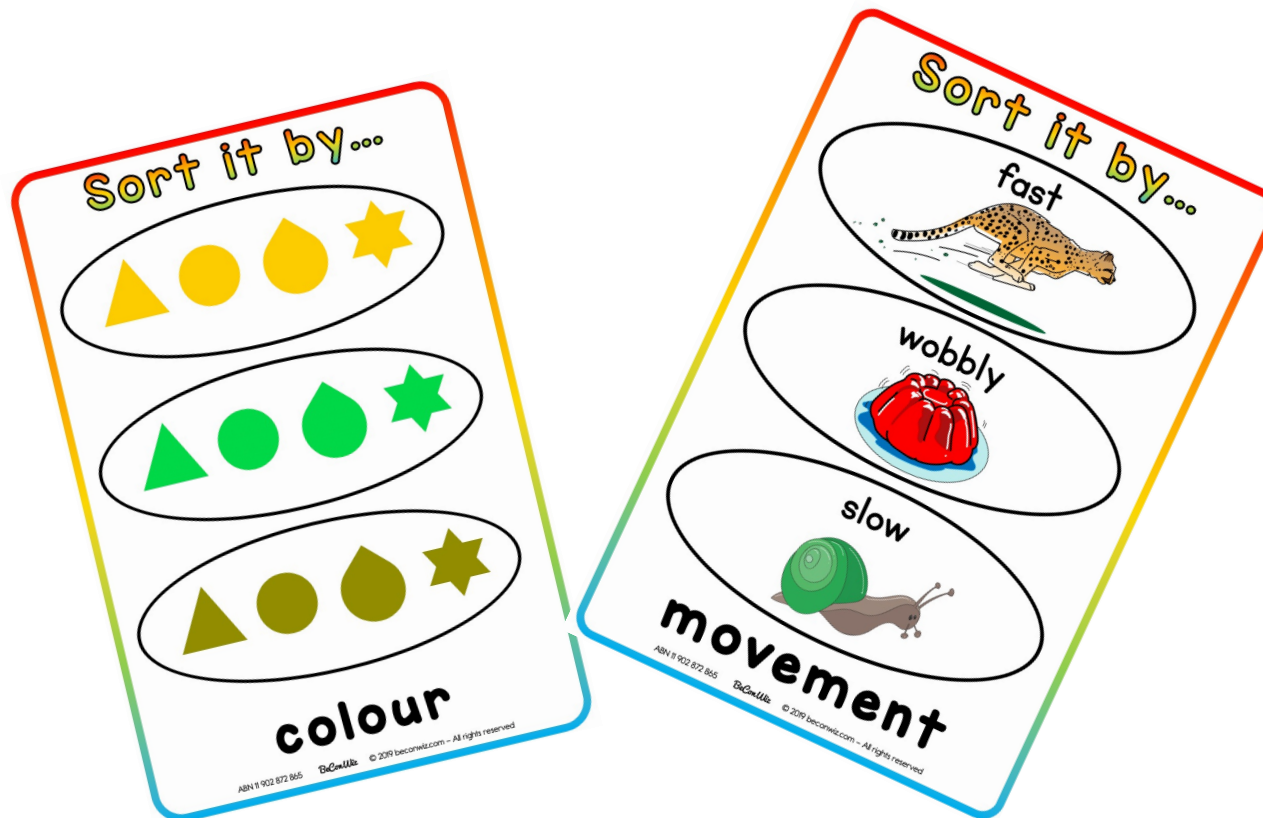
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TASK

The cards are designed to support and scaffold learning for students at different stages of understanding.

EMERGING UNDERSTANDING: *Using play to explore the world and how people organise ideas.*

For students in the very early emerging stages, encourage play based inquiries, such as setting up a toy farm, zoo or shop where they can organize objects/toys in a particular way according various attributes. Sit with the students during play and ask them questions or join in conversations about how and why they are making the choices they are making in the game. Photograph how they sort resources and use the photos later to develop the language of sorting with the students.



TASK

The cards are designed to support and scaffold learning for students at different stages of understanding.

EMERGING UNDERSTANDING: *Introducing attributes through wonder walks*

Introduce the single attribute cards and discuss them with students. Provide lots of opportunities for students to link and bring forth prior knowledge ideas and experiences.

In order to support the emerging language of sorting and grouping. Go on wonder walks with students and have them record or photograph what they see for various attributes in the real world. Let them use their sense to connect and develop experiences linked to key vocabulary.

Create posters with the attribute headings and stick the recordings/photos on the posters to remind and prompt students to use their prior knowledge.

As students develop a stronger understanding of attributes introduce them to the more abstract ideas used in math, science and the arts and how they can be used for grouping and sorting.

Use the single attribute cards to help the students set up their own inquiries into these attributes.



THE FIVE SENSES



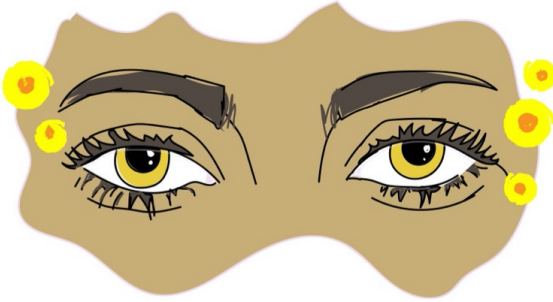
Helping students understand how useful the five sense can be in understanding the world around them is important.

Also important is beginning to understand when not to use a given sense, in order to stay safe.

This resource includes the five sense cards with questions to help prompt ideas and form connections with prior knowledge.

How can I find out about the world around me?

S. E. E. I. N. G.



Some things you might see...


- Colours
- Shapes
- Sizes
- Lines
- How something moves

What else might you see?

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How can I find out about the world around me?

H. E. A. R. I. N. G.



Some things you might hear...

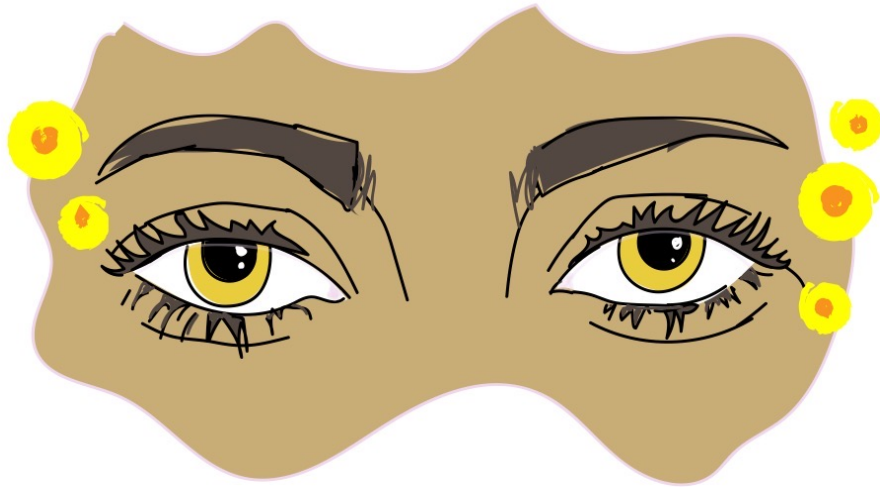
- Loud sounds
- Soft sounds
- High sounds
- Banging Sounds
- Quiet sounds

What else might you hear?

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How can I find out about the world around me?

S, E, E, I, N, G,



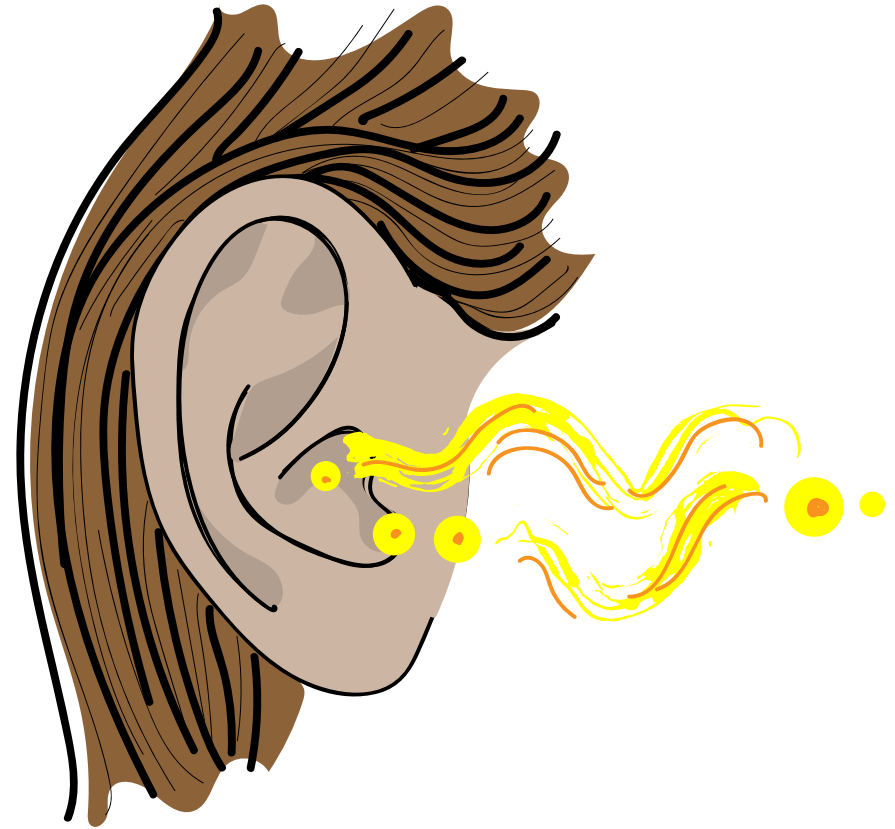
Some things you might see...

- Colours
- Shapes
- Sizes
- Lines
- How something moves

What else might you see?

How can I find out about the world around me?

H, E, A, R, I, N, G,



Some things you might hear...

- Loud sounds
- Soft sounds
- High sounds
- Banging Sounds
- Quiet sounds

What else might you hear?

How can I find out about the world around me?

T, O, U, C, H, I, N, G,



Some things you might feel...

- Hard things
- Fuzzy things
- Cold things
- Fluffy things
- Rough things

What else might you feel?

How can I find out about the world around me?

S, M, E, L, L, I, N, G,



Some things you might smell...

- Yummy smells
- Yucky smells
- Sweet smells
- Spicy smells
- Clean smells

What else might you smell?

How can I find out about the world around me?

T, A, S, T, I, N, G,



Some things you might taste...

- Sweet things
- Sour things
- Salty things
- Cold things
- Bubbly things

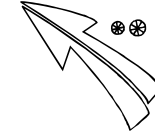
What else might you taste?



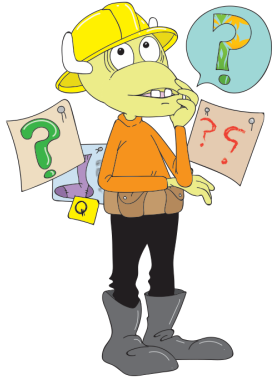
Remember to only taste something if you check with an adult first.



Wonder walks



A wonder walk is a chance for you to walk and look at the world around you, with a focus on specific things. It is, as the name implies, a chance to walk and wonder. You and your child(ren) are encouraged to use some of the following inquiry practices on a wonder walk.



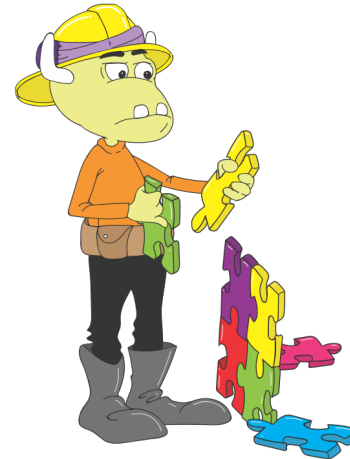
Asking questions



Staying focused



Collecting ideas



Forming connections



Providing evidence

Included in this resource are three different stages students can complete in order to support the wonder walk being a rich inquiry with sites of agency.

These three stages are

- Planning a wonder walk. This encourages you and your child(ren) to collaborate to set the scope and limits of the things people should and shouldn't do on the wonder walk.
- Example of wonder walk data gathering sheet. You and your child(ren) can develop or modify recording sheets to meet your classes specific needs.
- Example of a reflection process. Again, you can use other reflection tools, such as visible thinking routines or other processes that suit your child(ren) specific needs.

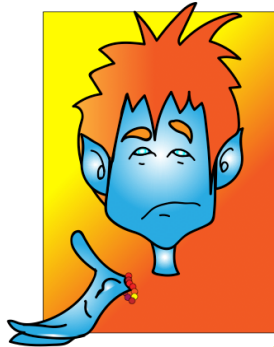
Wonder Walks

As you go for a walk and look carefully at the world around you, what choices you will make on the wonder walk.

What could you do that will help you explore the world?



What choices or ideas would you like to check?



What might you do that will make it difficult to explore the world?



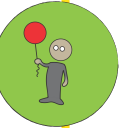
Wonder Walks

A wonder walk is a chance to look carefully at the world around you.

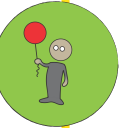
What did you discover on your wonder walk?

How did you explore the world around you?

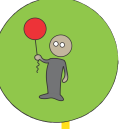
Did you look around you?



Did you smell different things?



Did you listen to sounds?



Did you touch different things?



Adult supervision recommended



Did you taste different things?



Adult supervision needed



Wonder Walk Reflection

Reflect on your wonder walk

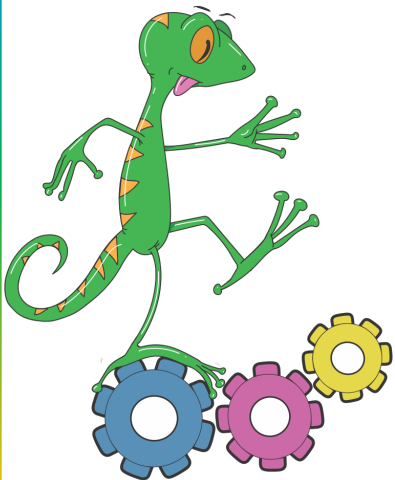
How did you feel on your wonder walk?



Did you discover anything? Are you now curious about different things?



Is there anything you might change if you went on another wonder walk? Why or why not?



Does the wonder walk make you want to do something? Try something? What? Or Why not?





SINGLE ATTRIBUTE CARDS



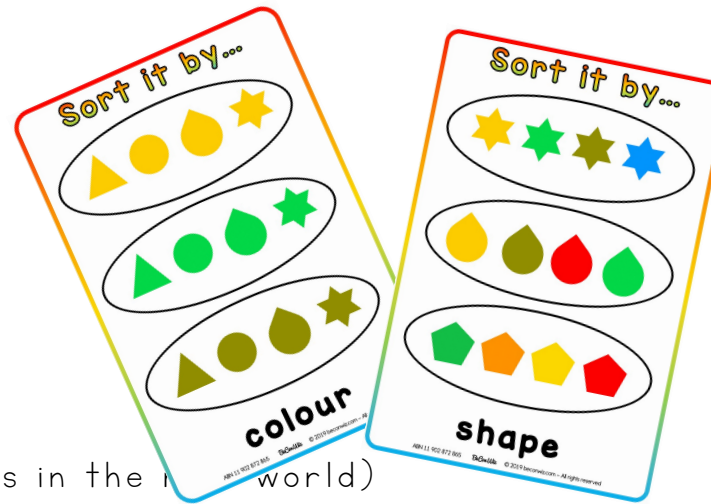
A set of nine single attribute cards to help introduce concrete and abstract ways of making sense of and organizing ideas about things in the real world.

By encouraging and scaffolding this understandings students can develop

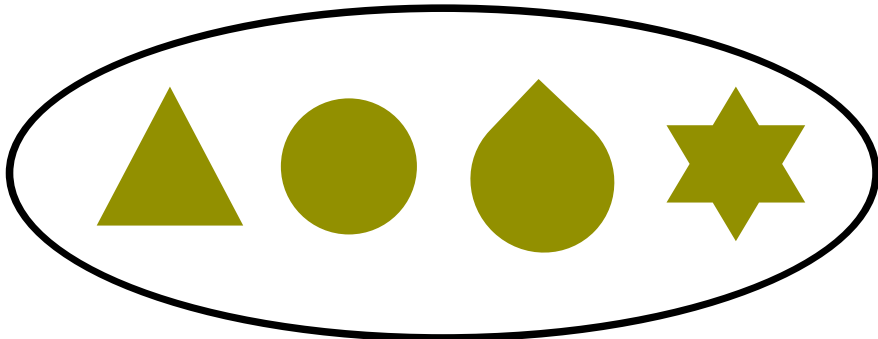
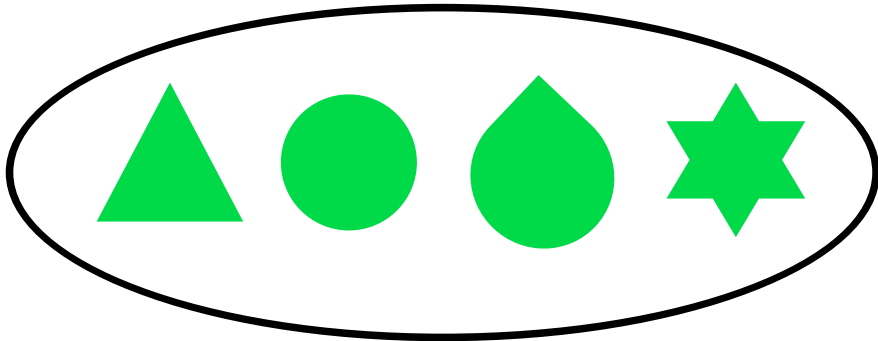
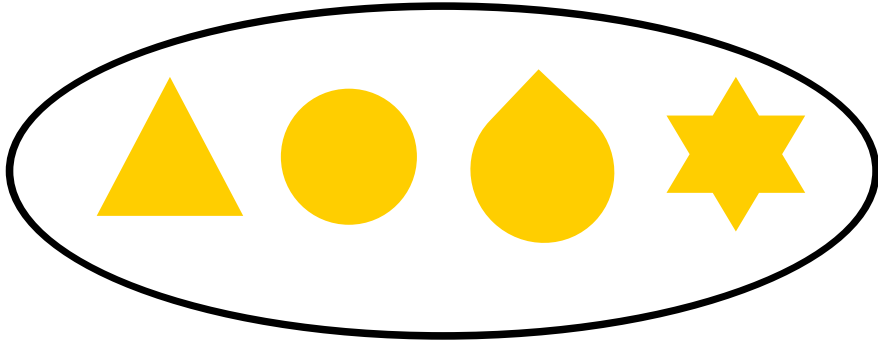
- Knowledge about different attributes/properties objects, actions, events or experiences can have
- Skills in sorting, matching, grouping and organizing
- Recognizing how things are the same, similar or different. This is an important building block, that needs to be developed before patterning can be introduced. Patterning is a building block to early algebraic thinking and understanding.

The attributes included are

- Colour
- Shape
- Size
- Line
- Pattern
- Sound
- Texture
- Movement
- Function (The purpose something has in the real world)
- Three blank cards to be modified to meet specific class or subject needs.

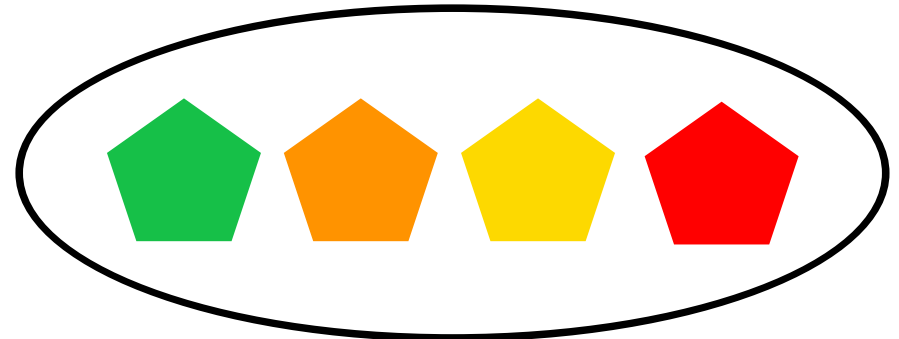
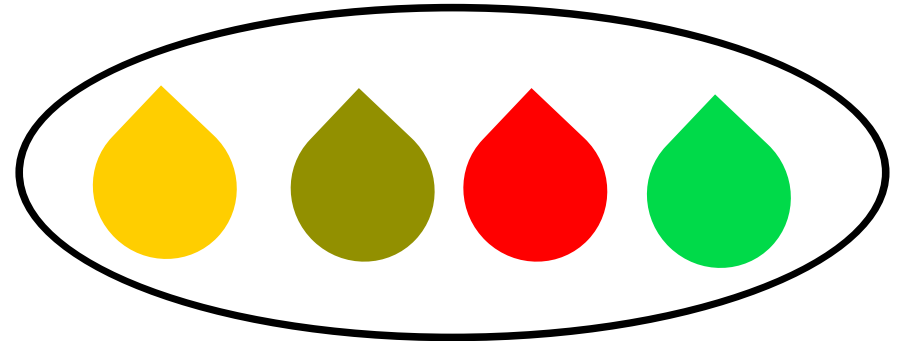
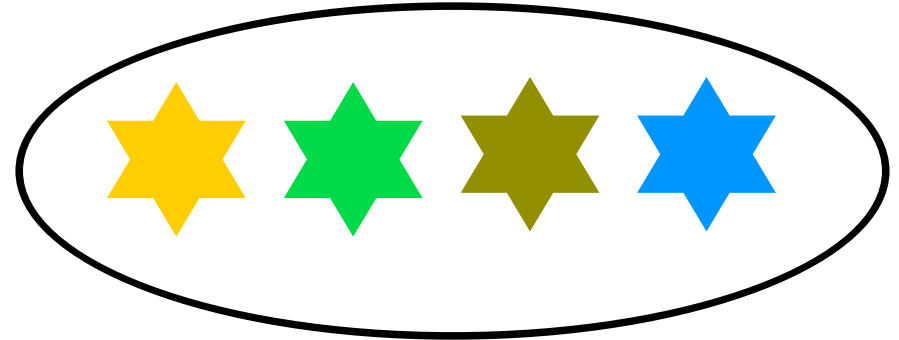


Sort it by...



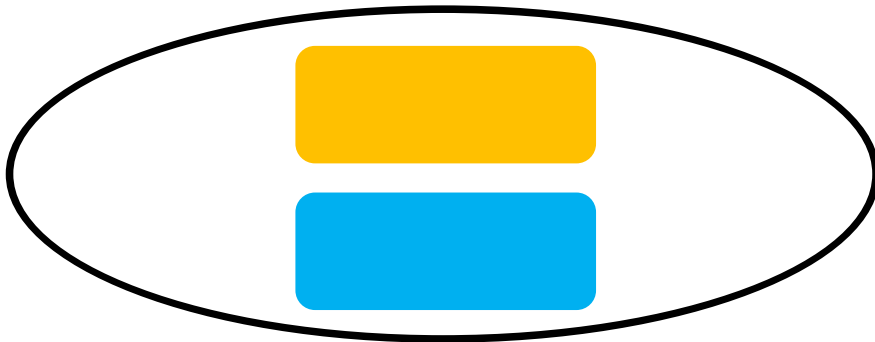
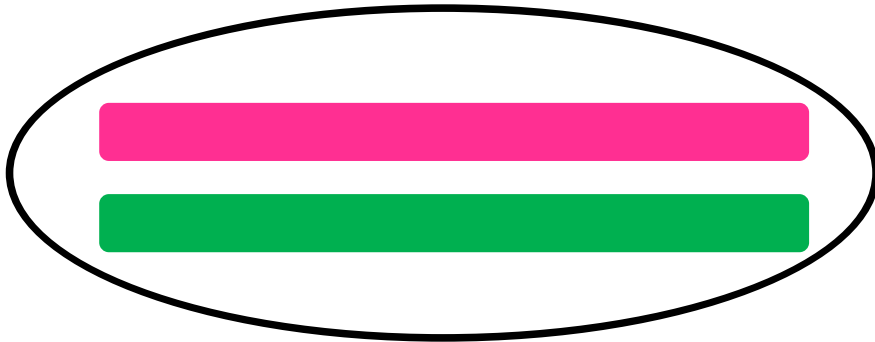
colour

Sort it by...



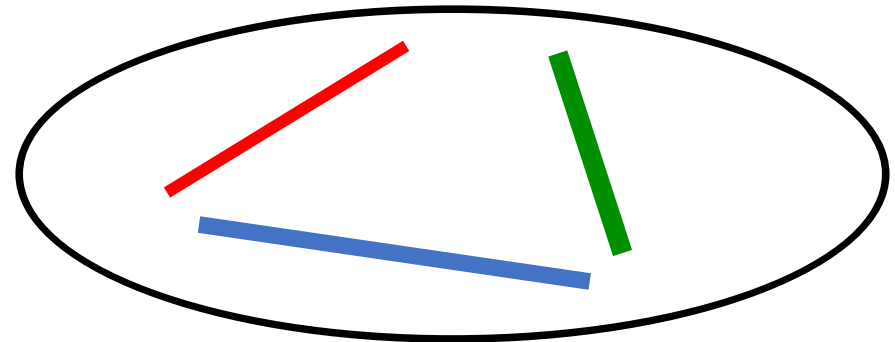
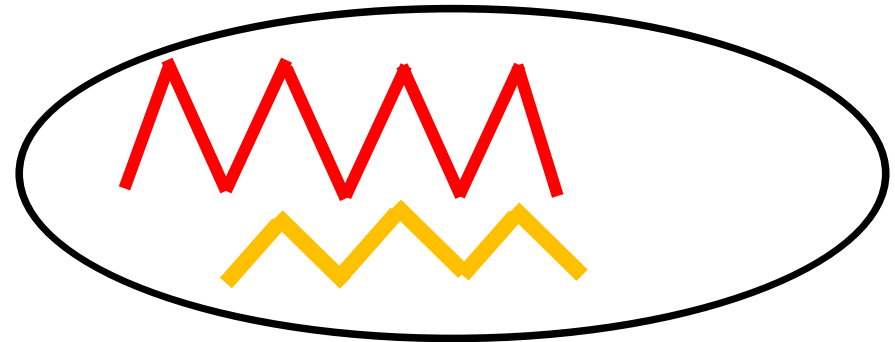
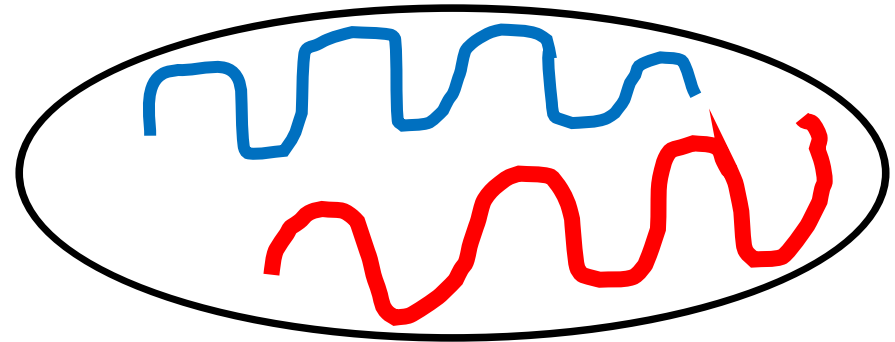
shape

Sort it by...



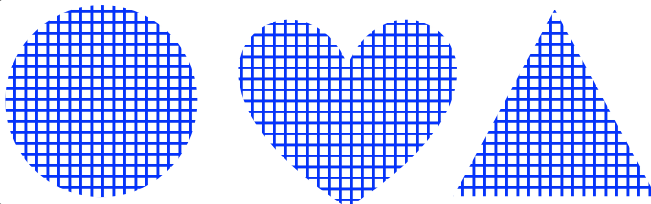
size

Sort it by...



lines

Sort it by...



patterns

Sort it by...

loud



quiet



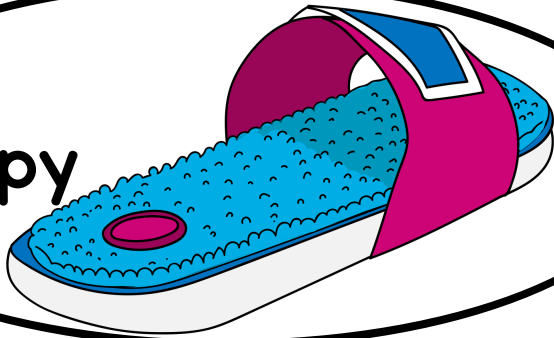
relaxing



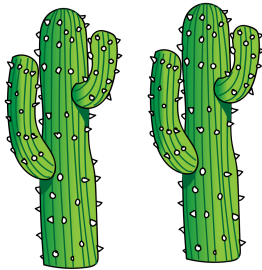
sounds

Sort it by...

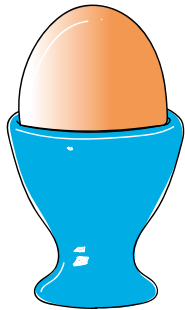
bumpy



prickly



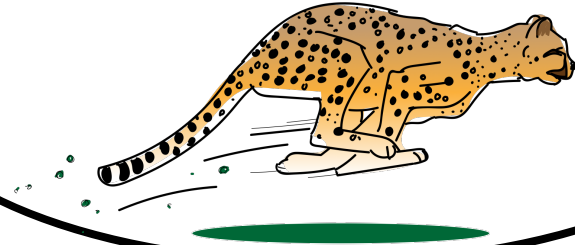
smooth



texture

Sort it by...

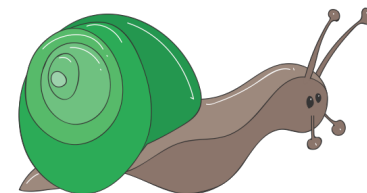
fast



wobbly



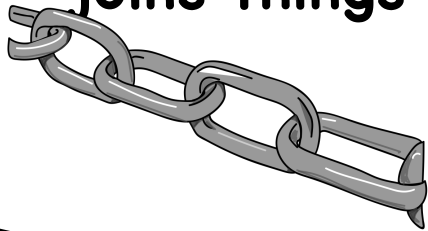
slow



movement

Sort it by...

joins things



pushes things

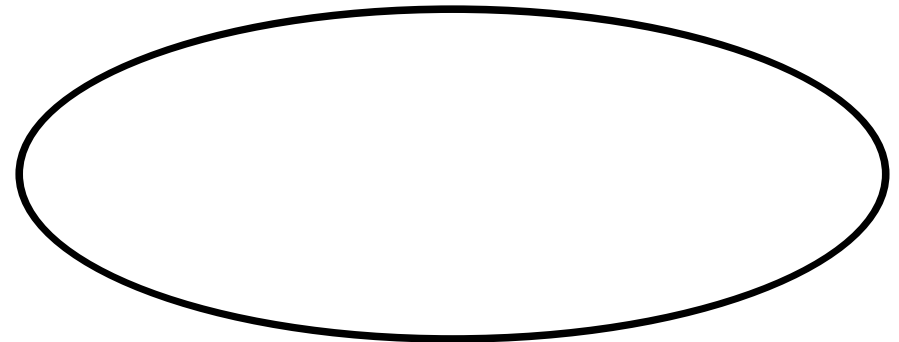
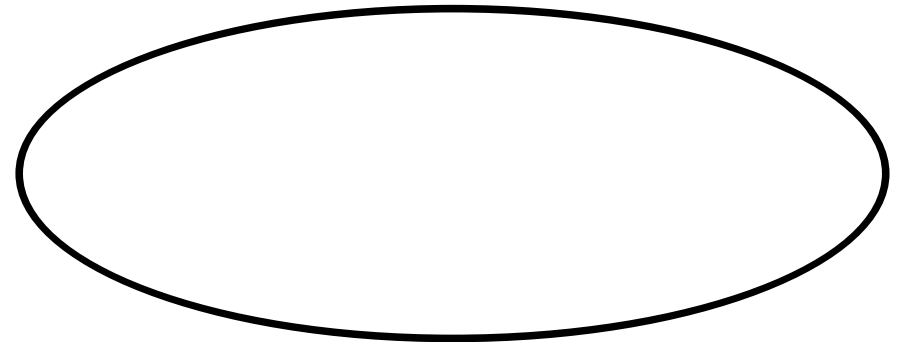
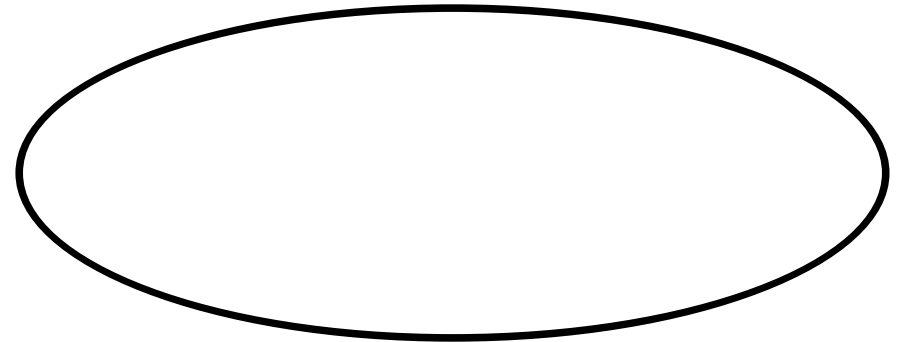


pulls things

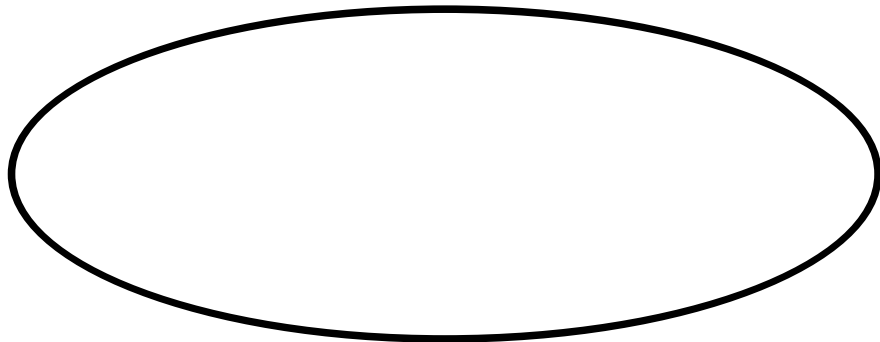
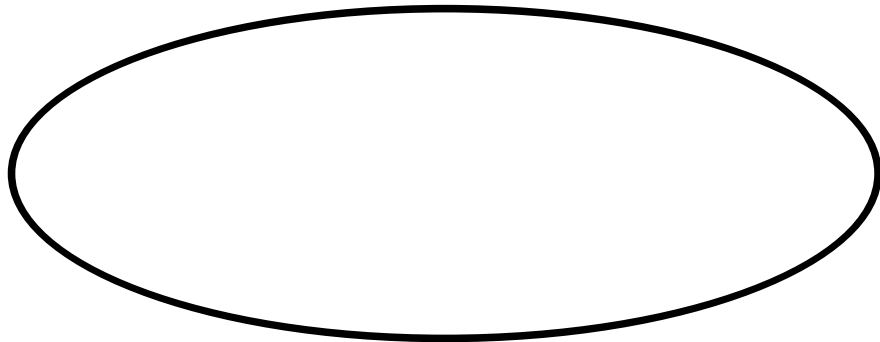
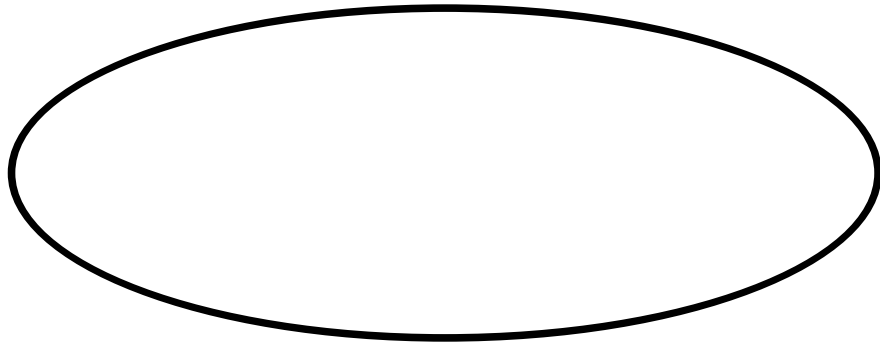


what it does

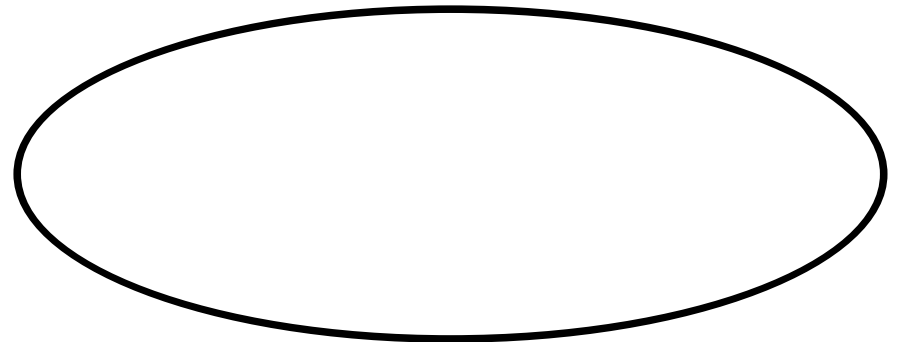
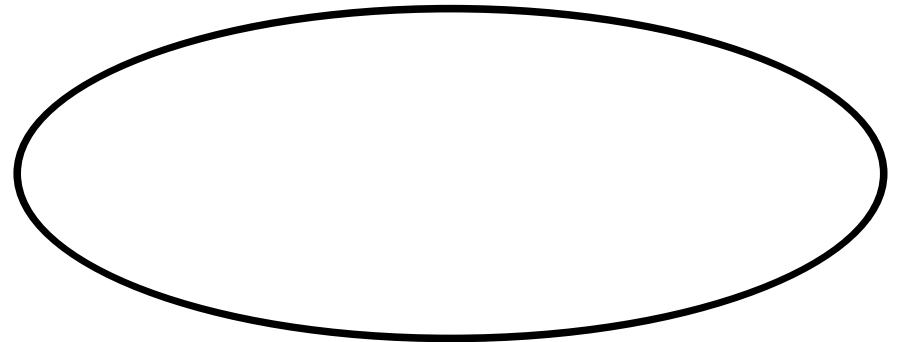
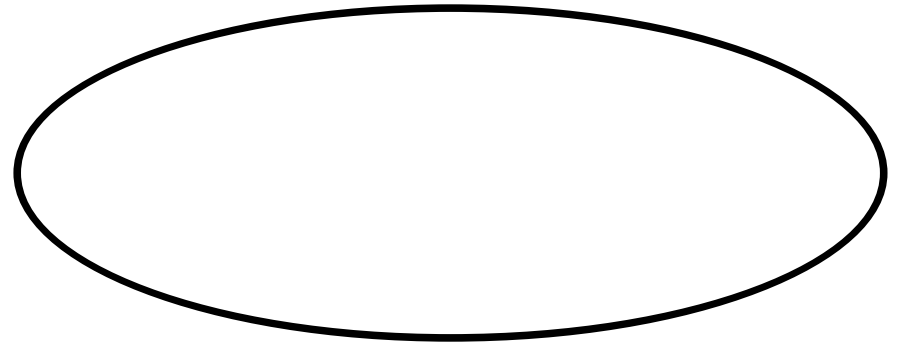
Sort it by...



Sort it by...



Sort it by...



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