

I Can Move 1 - Friction relay race

Topic: I Can Move – Forces and Motion

Time: 15 min

Age group: 3 - 5

What you need

- Kia Rapua dome with standard and texture slide
- “Different Surfaces” chart

What to do

Set up

- Have all your materials at hand

Activity

Tell children they’ll go outside to explore the way their body moves on slides with different surfaces.

Have children gather around the different Kia Rapua dome frames with standard and texture slide.

- Tell the children to touch the different surfaces of the slides and ask them to describe them (you can link this activity with I can feel activities). How do they feel? Do they feel the same?
- Have the children in two groups and tell them to get ready to go down the slide, one by one.
- Then switch the groups. After they all have had a go at the two different slides gather them in a circle and tell them to describe their experience.

The Science

The motion and speed of a rolling or sliding object is affected by the shape and texture of the object and the texture of the surface on which it is rolling or sliding.

Gravity – when you drop things they fall, when you have a slide things will move down the slide due to the force of gravity.

Friction – the texture of the slide and object affects the friction of the object, friction is a type of force that opposes movement that has to be overcome in order for something to move. Surfaces with rough texture will create more friction. Movement down a slide will be determined by the competing forces of gravity (pulling down, creating movement) and friction (resisting movement).

Science talk

Description words

Incline, ramp, slide, texture, and surface, faster, slower, steep, less steep, gentle (a gentle slope), bumpy, smooth, and rough.

Science process words

Observe, compare, same, different, change, predict and test.

Open ended questions

- What were the differences when going down the two slides?
- Did they go faster or slower in the standard slide?

- Did they go faster or slower in the texture slide? Why?

Skills

Observing, predicting, recording

Stay Safe

- Keep an eye on children climbing the dome and taking turns.

Ways to document

- Chart "Different Surfaces"

Extending the activity

Other science links

Textures, materials, weight.

Cross curricular links

- Literacy (increasing vocabulary)

I Can Move 2 - Slides are Ramps!

Topic: I Can Move – Ramps, friction

Time: 15 min

Age group: 3 - 7

What you need

- The Kia Rapua playground slides with different textures
- First set of objects including some that will roll, some that will slide, and some that will stay put. If have done the playcentre activity previously then use same/similar objects as used for that. For example:
 - Roll – ball, toilet paper roll
 - Slide – whiteboard eraser, piece of cardboard, square block
 - Stay put – scratchy sponge, piece of sandpaper
- A second set of objects to test, ideally new objects that have not been tested by the children on ramps before. For example:
 - An orange/round fruit
 -
 - A lunchbox
 - Triangle block
 - Cylinder block
 - Piece of cloth
 - Toy cars
 - Other toys

Set up

- Make sure slides are free of debris

Activity

- This activity builds on the Playcentre Activity → I Can Move - Investigating Ramps
- Based on what the children know already (if have done playcentre activity) ask them whether the first set of objects will roll slide or stay put down the slide.
- Ask them to describe the textures of the two slides.
- Ask them whether they think the different texture of the slide will affect how the objects move and how.
- Ask the children to test the first set of objects on the smooth textured slide one by one and record the results in the chart.
- Then test the first set of objects on the rough textured slide and record the results.
- Pass the second set of objects around for the children to examine and describe. Discuss how they look using the vocab of shapes and textures.
- Using the second set of objects ask the children to predict, based on what they know, what will happen on both slides when they test the objects. Remember, it doesn't matter if they predict incorrectly, what matters is that they are starting to build hypotheses based on previous information – this is the scientific method!



- Get the children to test putting the objects down the two slides and ask them to tell you what happened.
- Make a chart to record the results (textured vs untextured slide).

The Science

Gravity – When you drop things they fall, when you have a ramp things will move down the ramp due to the force of gravity acting on that object. Gravity is a force by which a planet draws objects towards its centre, so all objects are drawn to the centre of Earth.

Friction – The texture of the ramp and object affects the amount of friction. Friction is a type of force that opposes movement, it occurs when two objects are in contact. This force of friction must be overcome in order for something to move. Surfaces with rough texture will create more friction. Movement down a ramp will be determined by the competing forces of gravity (pulling down, creating movement) and friction (resisting movement).

Shapes – the shape of an object affects the kind of friction that has to be overcome, rolling friction is easier to overcome than sliding friction (which means round objects move easier!).

Science talk

Description words

Roll, Slide, Ramp, Steep, Slope, Flat, Slanted, Round, Square, Texture, Rough, Smooth

Science process words

Observe, compare, same, different, change, predict and test.

Open ended questions

- How does the texture on the first slide feel? How about the texture on the second slide?
- What do you think will happen when we put this object on the textured slide?
- How does the different texture affect how the objects moved?
- Which slide will be more fun to slide down? Why?
- How do you think we can make a slide even faster to slide down?

Skills

Observing, predicting, recording, learning about the concepts of gravity and friction.

Stay Safe

- Be careful with children standing at the top of the slide to send objects down.
- Keep the bottom of the slide clear so no object slides down and hits a child.

Ways to document

- Chart your predictions and results of how the different objects will move down the untextured and textured slides.



Extending the activity

If you have a slide in your playcentre already use it as an extension – Ask the children to note and discuss any differences between the playcentre slide and the Kia Rapua slide. Then use the same second set of objects to test how they move down the playcentre slide.

Other science links

Textures, materials, weight.

Cross curricular links

Literacy (increasing vocabulary)



I Can Move 3 - Exploring steepness

Topic: I Can Move – Forces and Motion

Time: 15 min

Age group: 3 - 5

What you need

- Kia Rapua dome frames
- Wooden or cardboard ramps
- Different objects that roll (marbles, small balls, cardboard tubes)
- Craft sticks or other object for marking distance of the objects roll
- Chalk, strings or masking tape (optional for marking distance)

What to do

Set up

- Have all your materials at hand

Activity

- Place the ramp in the lowest point of the dome structure. Place a marble, ball, or tube at the top of the ramp and let it roll down. Mark where it stops.
- Now, place the second ramp in a higher point of the dome structure. Ask children how the two ramps are different. Have them predict how far a ball sent down the steeper ramp will travel. Do they think that it will go as far as the previous ball did? Do they think that it will go farther? Why do they think so? Then send identical balls down the two ramps at the same time and mark how far each ball rolls.
- You can repeat the experiment by positing the ramp in different points of the playground structure. And rolling down different objects. Another option is to ask the children to search for objects that they think will go the farther.

The science

- Rolling and sliding objects move faster and farther down steeper inclines.

Gravity – when you drop things they fall, when you have a ramp things will move down the ramp due to the force of gravity. Gravity is a force by which a planet draws objects towards its centre, so all objects are drawn to the centre of Earth.

Friction – the texture of the ramp and object affects the friction of the object, friction is a type of force that opposes movement that has to be overcome in order for something to move.

Shapes – the shape of an object affects the kind of friction that has to be overcome, rolling friction is easier to overcome than sliding friction (which means round objects move easier!).

Angles – the angle we place the ramp at means it is steeper or not and therefore things will move down it easier or not.



Science talk

Description words

Incline, slope, slide, roll, steep, steeper, steepest, fast, faster, fastest, slow, slower, slowest, far and farther

Science process words

Observe, notice, compare, same, different, change, test, and predict.

Open ended questions

Give them a challenge:

- What did you notice about how the balls or tubes rolled down the different ramps?
- What did you do to get the balls (or tubes) to roll faster and farther?
- What did you do to get the balls (or tubes) to roll slower and less far?

Skills

Observing, predicting, recording, learning about motion and friction.

Stay Safe

- Keep an eye on the small objects, to prevent children swallowing.
- Watch out for balls and other object left unattended and potential tripping hazards.
- Be careful with children standing on ramps or knocking over objects

Ways to document

- Chart "Far and Farther"

Extending the activity

Other science links

Shape, materials, weight.

Cross curricular links

- Literacy (increasing vocabulary)