Friction

WALT : compare how things move on different surfaces

What do you already know?

FRICTION

When objects are pushed or pulled, an opposing force can be felt. This opposite force is called 'friction'. Friction causes things to slow down or stop. The grip on our shoes stops us slipping. Therefore, friction is great. Ice-skates on an ice-rink will move for a long time because there is very little friction. The rougher the surfaces, the greater the friction. This rubbing of two surfaces can release energy, causing heat.

Use your knowledge organiser to help you.

| friction | a 'sticking' force – the resistance that a surface or object encounters when moving over another surface or object. E.g. Air resistance, water resistance and surface resistance. |

We are going to drag a shoe over different materials to see if the amount of friction changes

1 (WS) Make some suggestions about how to answer a question.
(WS) Identify one or more control variables

What is static friction?
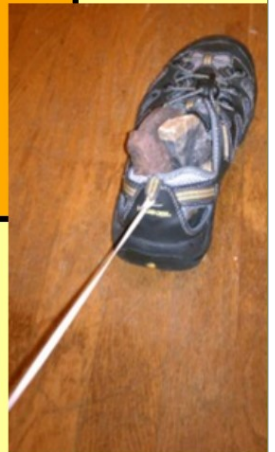
1 (WS) Make some suggestions about how to answer a question.

(WS) Identify one or more control variables

What is static friction?

When an object isn't moving, it has static friction. It will take a certain amount of force to get the object moving. The amount of force it will take depends on the surfaces and the weight of the object, among other factors. To test how much force is needed to overcome static friction, you can try dragging a shoe over various surfaces.

(WS) Identify one or more control variables

How easy is it to drag a shoe?

What variable could you change?

You can only change ONE thing, everything else (even the person doing the pulling) MUST stay the same. Why?

How easy is it to drag a shoe?

What variable could you change?

The shoe? What happens if you try a shoe with a different type of sole? What does this tell you about friction?

The surface? You could try a different surface, try dragging the shoe over concrete or grass or other types of terrain to see how easy or hard it is to get the shoe moving. Drag the shoe over it and measure the rubber band.

The weight of the shoe? You could put something in the shoe to make it heavier, like rocks or weights. Try pulling the shoe to see how far the rubber band has to stretch before the shoe starts moving.

You can only change ONE thing, everything else (even the person doing the pulling) MUST stay the same. Why?

You will record your plan on a variables sheet.

Planning

Name_____ Date_____

Question - What are you trying to find out?
Will our object move differently on different surfaces?

Draw a labelled diagram to show your idea.
(Draw in pencil, write label in pen and use a ruler)

Prediction - What do you think will happen?
I think

Why? – Real life experience or scientific knowledge (I have seen…, I know that…)

Method - What are you going to do?
Equipment needed:

Step by step instructions:
1.

2.

3.

4.

5.

put
lay
push
pull
attach
fix

Independent variable - What are you going to change?

Dependent variable - What are you going to measure (including units)?

Control variables - What are you going to keep the same?

How can we record our observations so we can make an accurate conclusion?

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Starting Length 30cm	Description	Length of the band in cm / mm
Variable 1 shoe on table		
Variable 2 shoe on playground		
Variable 3 shoe on grass		
Conclusion – What have you found out?		

bigger, longer, heavier, rougher, smoother, shorter, lighter

How can we describe what we have found out?

Conclusion 'I found out that.....'

Conclusion – What have you found out?
bigger, longer, heavier, rougher, smoother, shorter, lighter

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Conclusion – What have you found out?
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...the smoother the surface the shorter the band stretched.