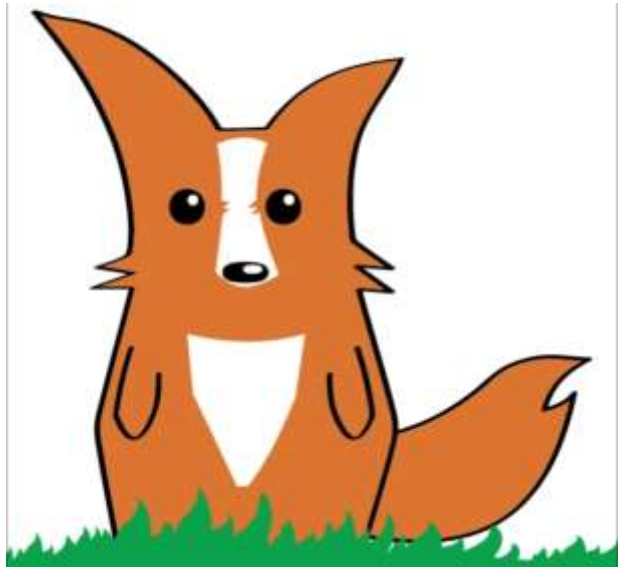
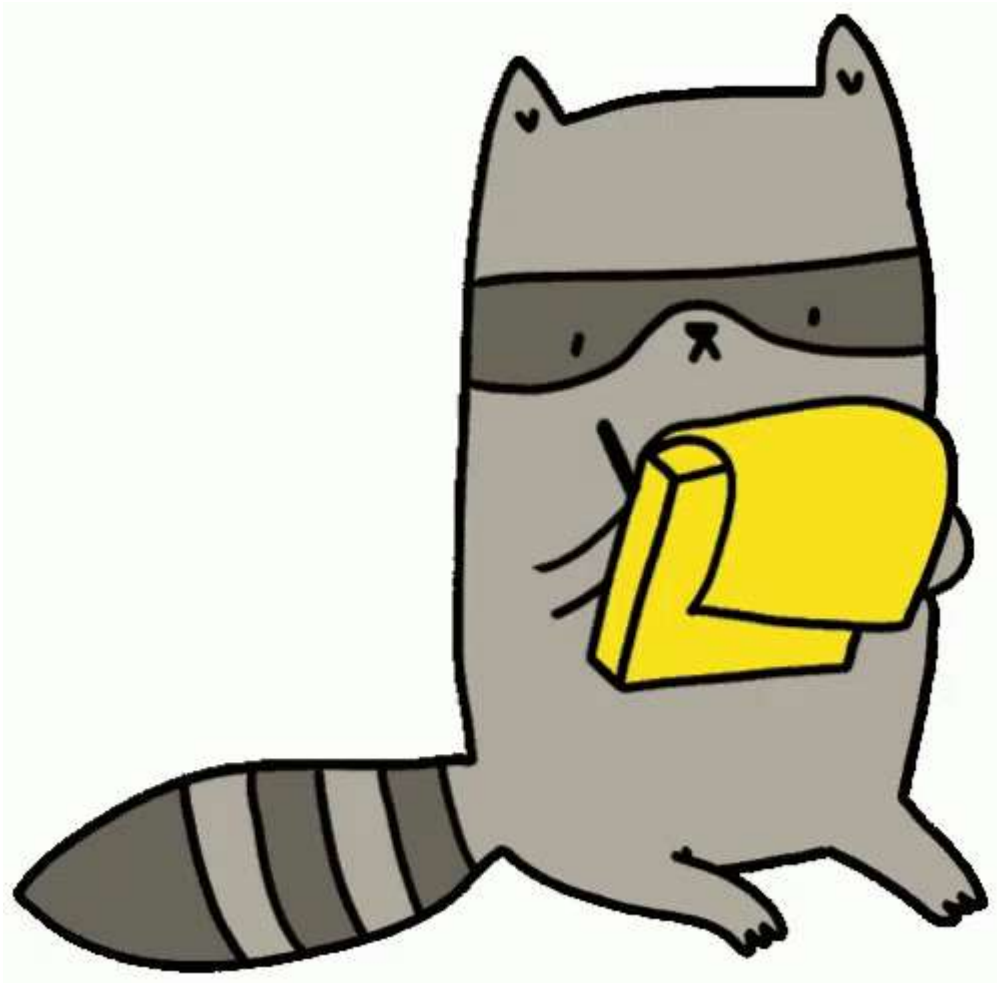
Get some paper and a pen!

Get some water!



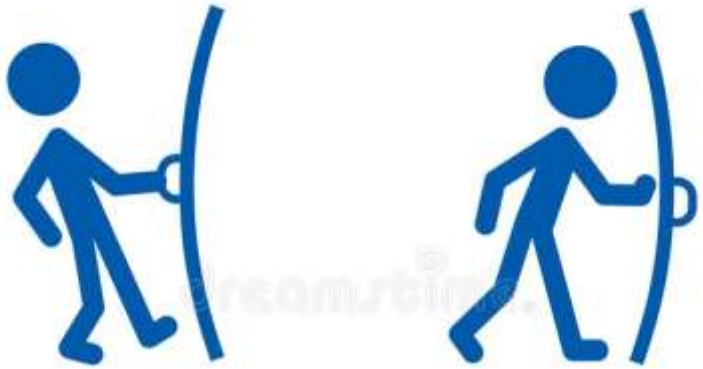


Friction Review

Useful Friction

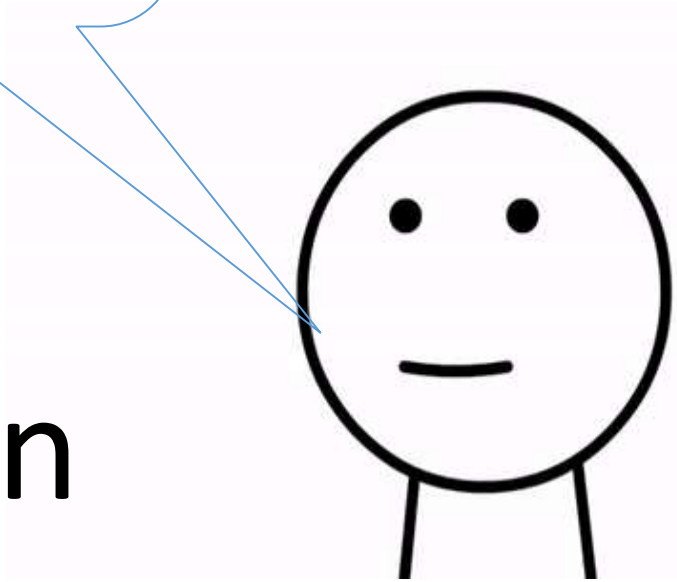
Investigating Friction

Brainstorm - 1 minute



Write down
all the words
you remember
about ***forces***.

What is friction?



It is a force between two surfaces.

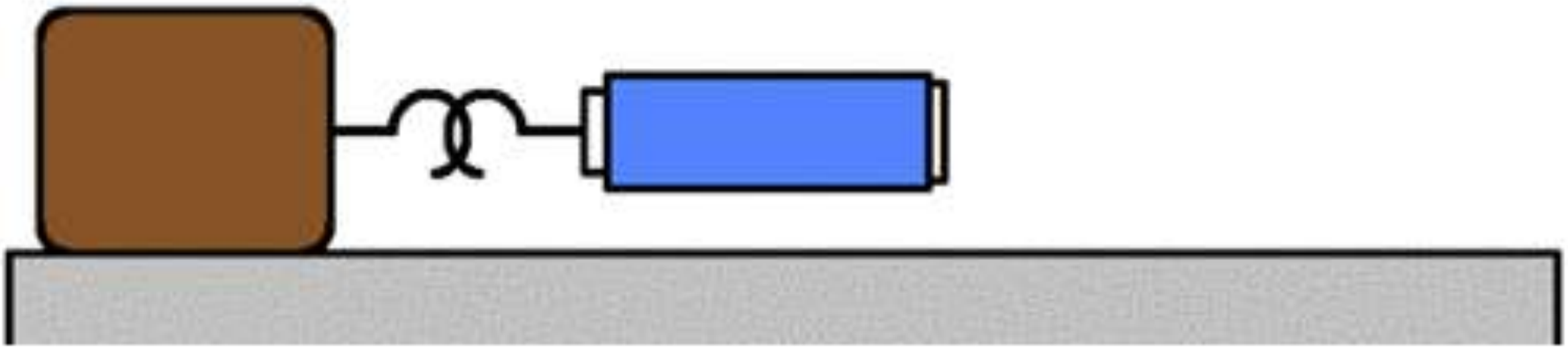
Low Friction

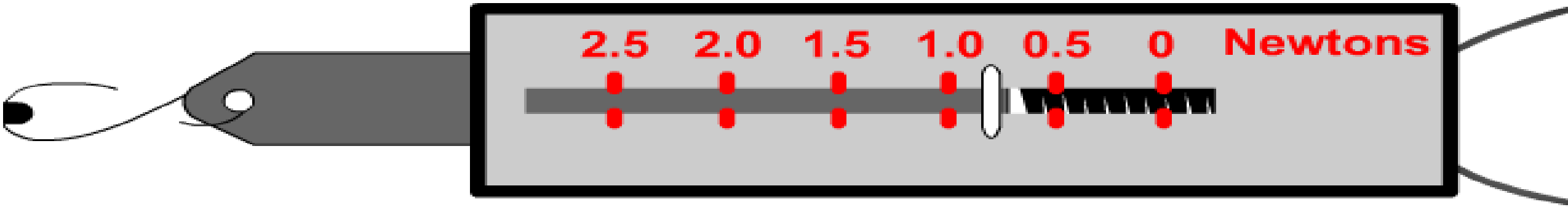
High Friction

What would make the box more difficult to pull?

* A rougher surface.

* A heavier box.

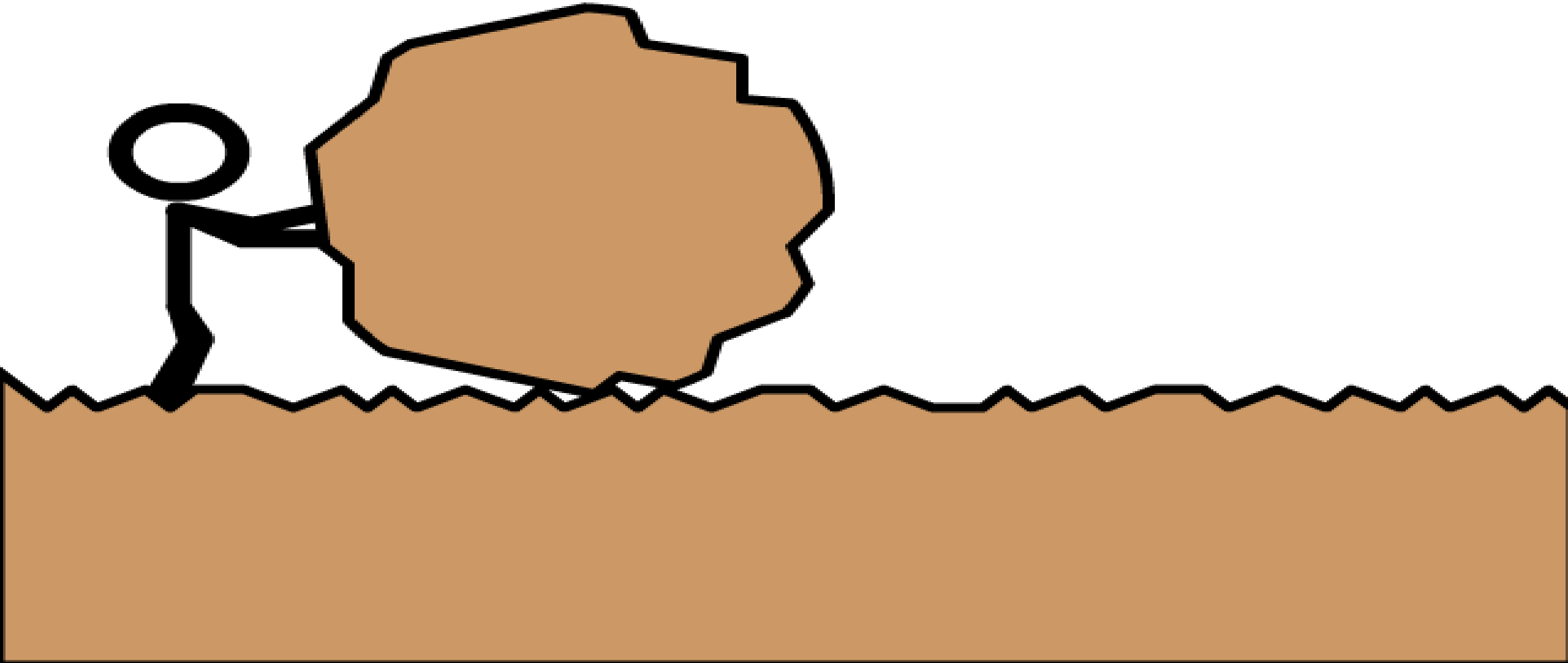




What is this equipment called?

force meter

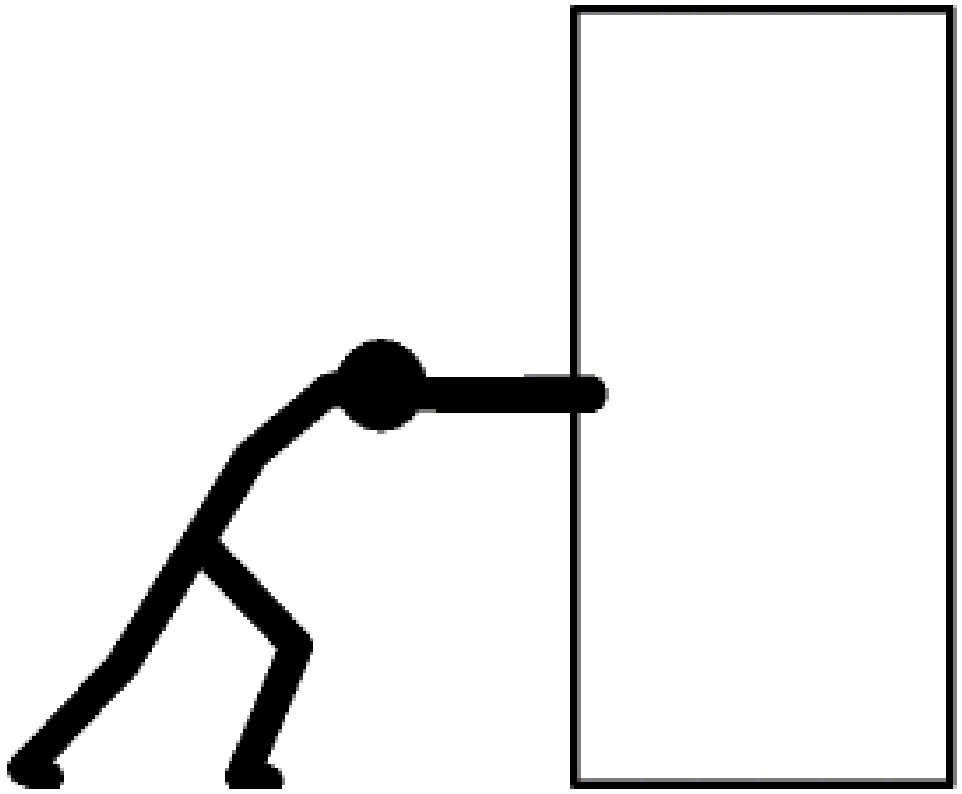
What would make the rock easier to push?



Friction can be ***useful*** - we want more friction.

Friction can be ***not useful*** - we don’t want friction.

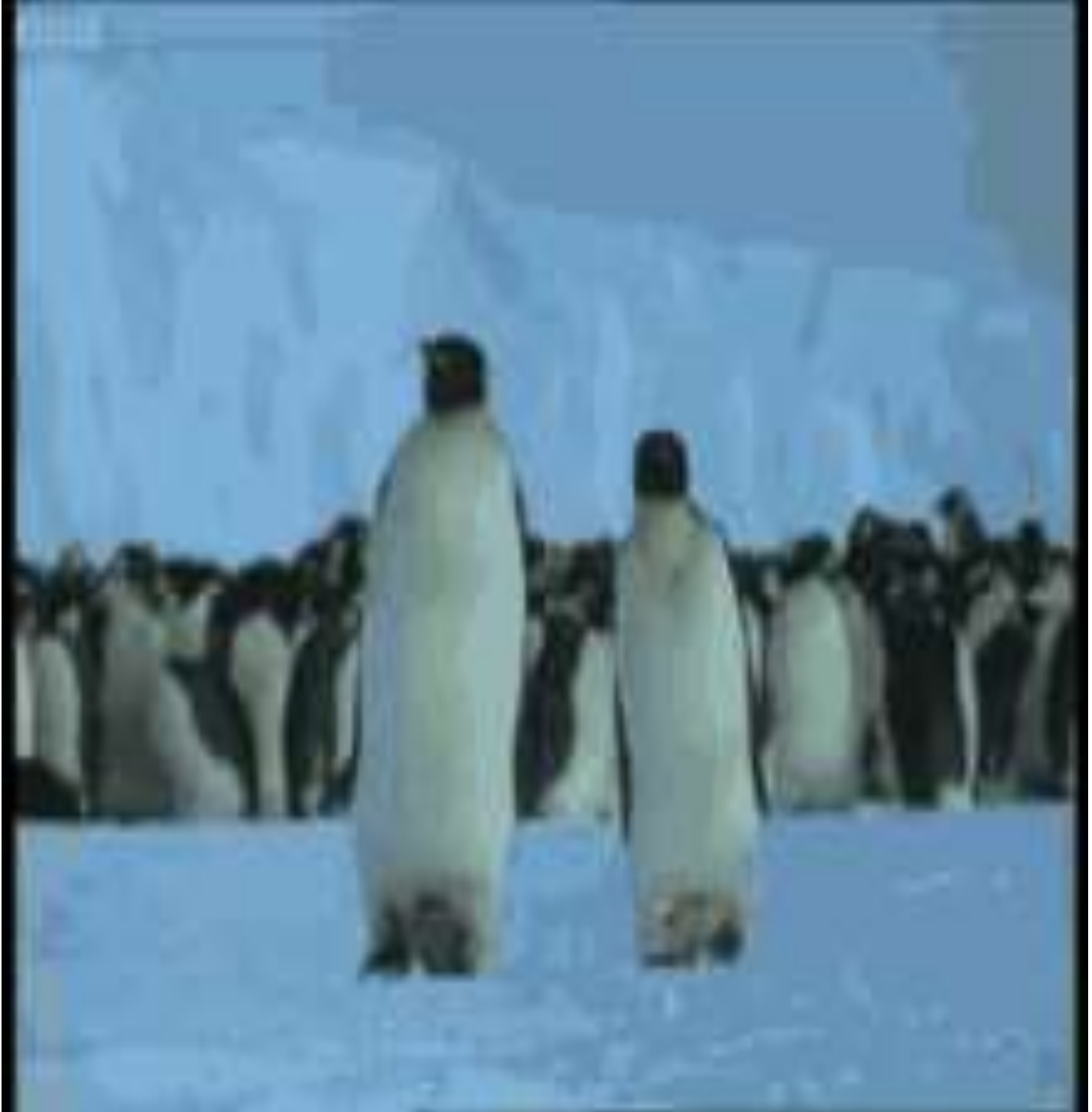
Pushing heavy object



Pushing a heavy object.

Is friction useful or not useful?

It’s not useful because the person wants to move the box easily.



The penguins walking.

Is friction useful or not useful?

It’s useful because the penguins want to walk and not fall over.

Friction Sorting

Sort the cards into two groups.

friction is useful and **friction is not useful**.

You need to explain your answers.

Is friction useful or not useful?

Make a table like this.....

Sort the cards into useful and not useful

Useful	Not useful

 Making a fire.	 Pushing a box.	 Skiing down a mountain.	 Stopping a car.	 Roller skating.
 A dolphin swimming.	 Opening a bottle.	 Running uphill.	 Using your bike brakes.	 Pulling the rope.
 Catching a ball.	 Parachuting.	 Writing a story.	 Using a slide.	 Walking on ice.

Discussion Time

useful

Making a fire.

Is friction useful or not useful?

explain

Skiing down a mountain.

Is friction useful or not useful?

not useful

explain

Walking on ice.

useful

Is friction useful or not useful?

explain

useful

Catching a ball.

Is friction useful or not useful?

explain

Writing a story.

useful

Is friction useful or not useful?

explain

Using a slide.

not useful

Is friction useful or not useful?

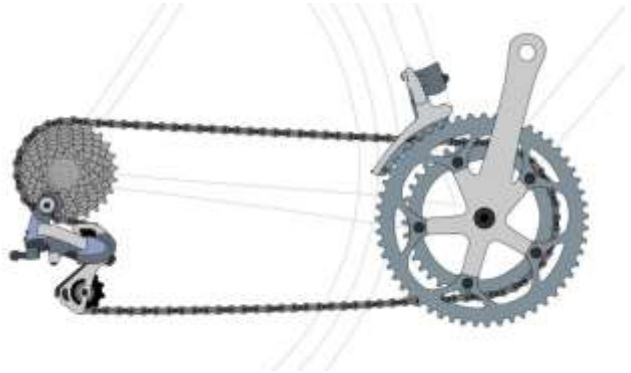
explain

Using your bike brakes.

useful

Is friction useful or not useful?

What can we do if the bicycle is too hard to move?

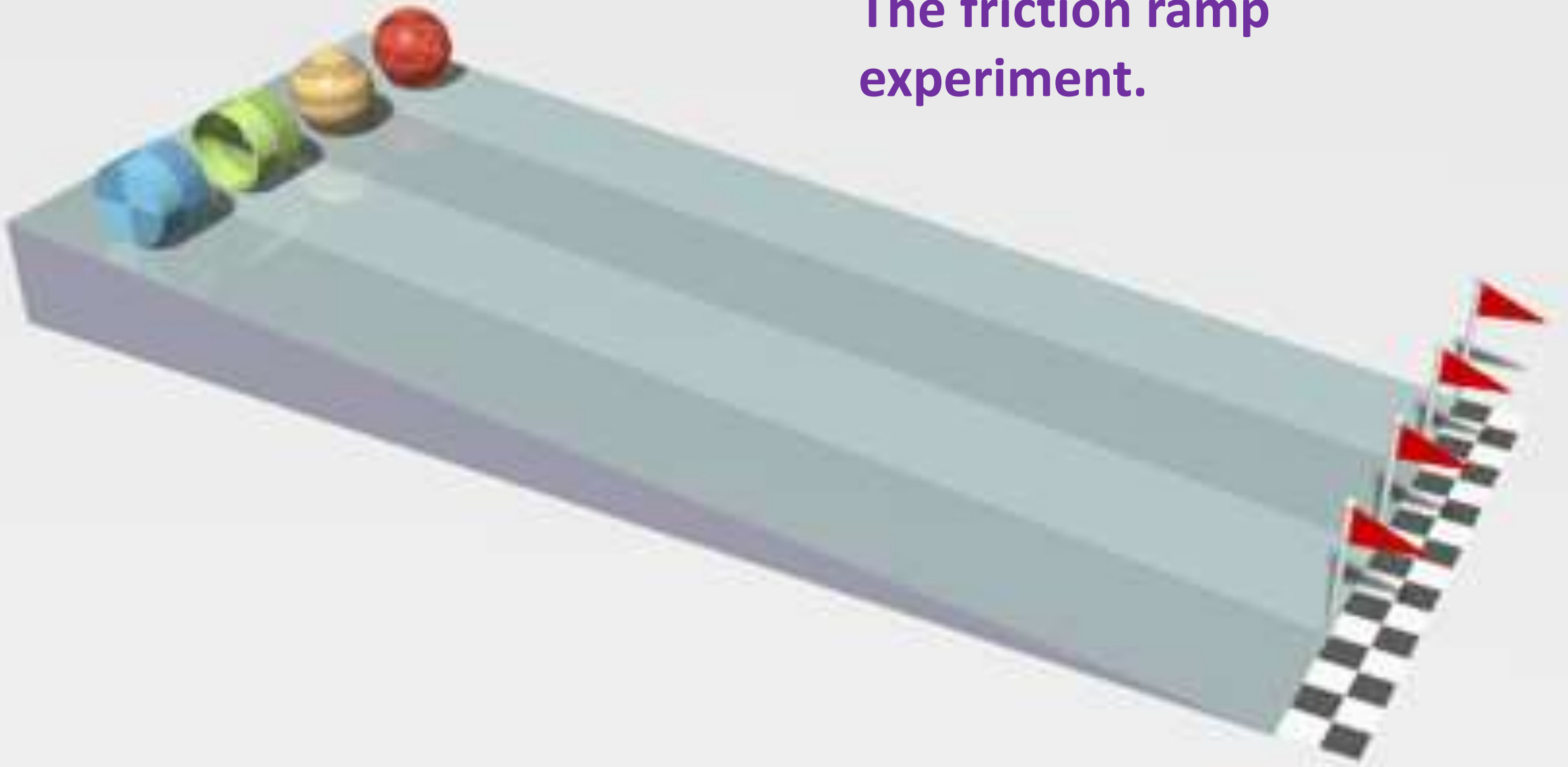


gears

Put some oil in the gears.
Why?

This reduces friction!!!

The friction ramp experiment.



How do different surfaces affect fricton?

Let’s see how friction affects how far the car moves.

We will measure how far the car moves on four different surfaces.

What equipment do we need for this experiment?

A car, a ramp, different materials, a tape measure.

What variable are we changing?

The material.

What variables do we control?

The ramp, the car and the tape measure, same height to drop.

Prediction

We will test four different materials.

On which surface will the car travel furthest?

bubble wrap

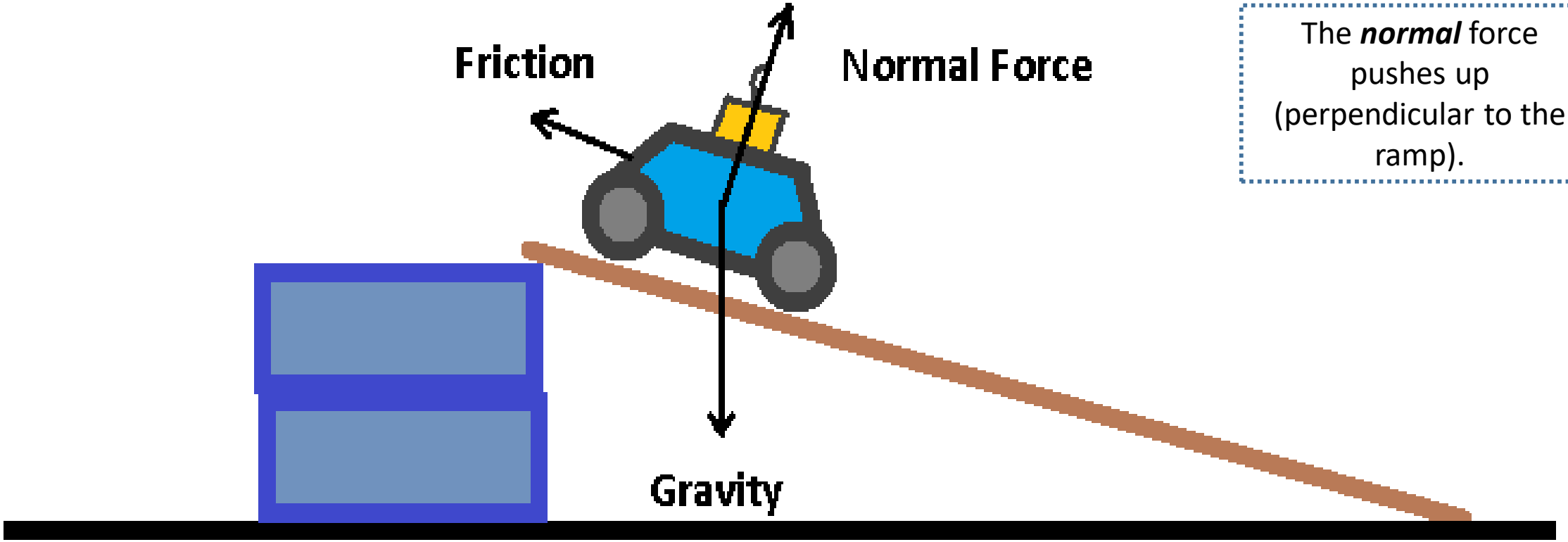
towel

foil

sandpaper

Let’s watch the video.

Remember the forces acting on the car.

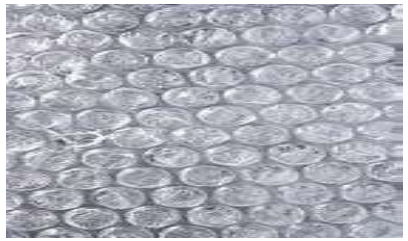


The ***normal*** force pushes up (perpendicular to the ramp).

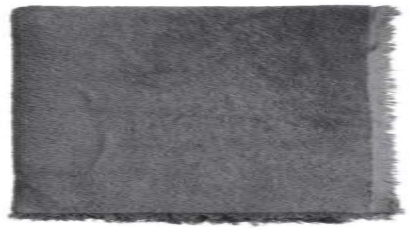
Let’s watch the video.

First - make a prediction - which surface will make the car move furthest?

I think that the car will go furthest on _____.



bubble wrap



towel

foil

sandpaper

Let’s watch the video.

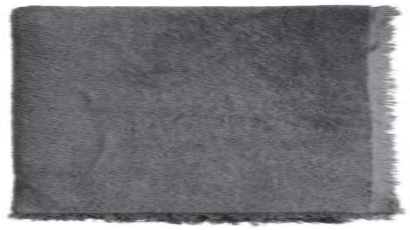
Conclusion

Write a ***conclusion*** for this experiment.

The smoother the surface, the further the car travels.

This is because there is less friction.

bubble wrap



towel

foil

sandpaper

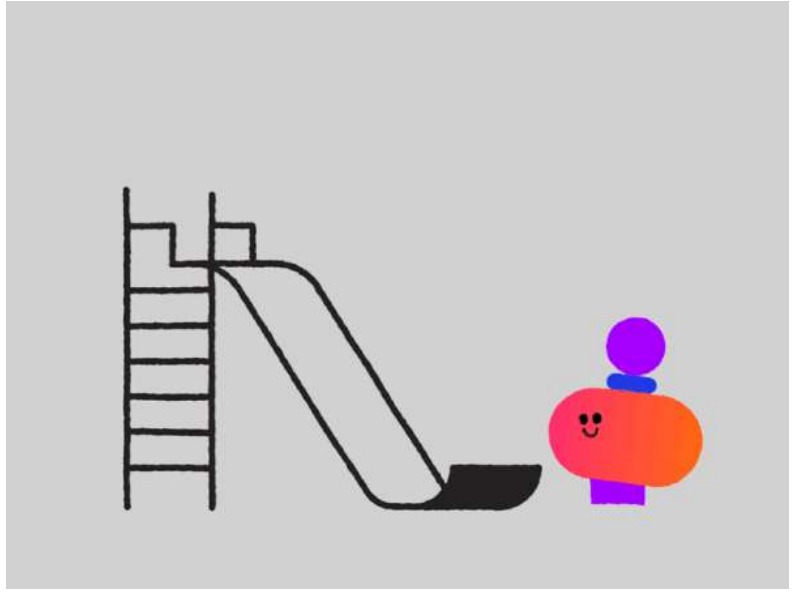
Summary:

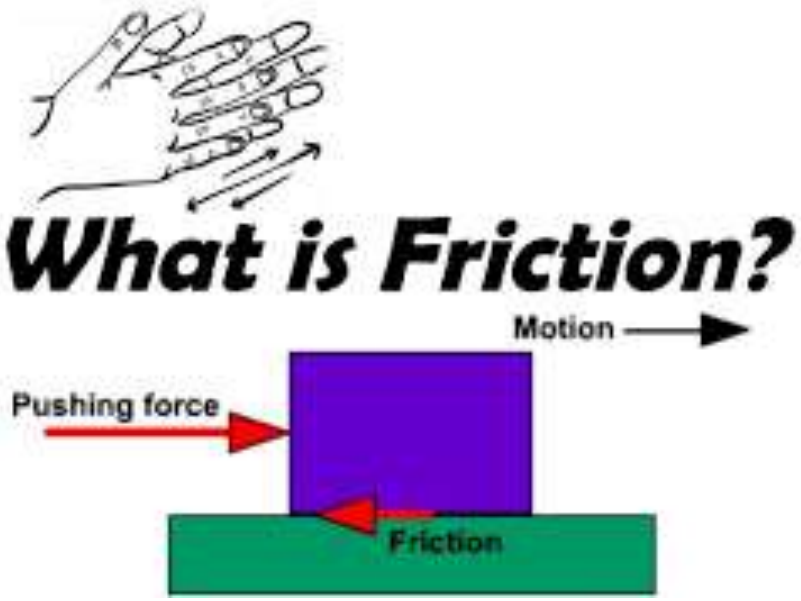
- Friction force acts between two objects

- Friction slows things down

- Rougher surfaces make more friction

- Smooth surfaces make less friction





Forces

e	c	r	o	f	y	p	s	e	p
l	d	a	h	p	c	u	u	c	m
i	e	d	n	r	n	l	l	n	a
y	c	v	n	e	a	l	y	a	t
t	a	p	e	e	y	e	m	t	e
i	f	e	d	r	o	e	g	s	r
v	r	s	n	h	u	z	t	i	i
a	u	r	s	d	b	a	e	s	a
r	s	p	u	l	l	e	y	e	l
g	o	n	o	i	t	c	i	r	f

Word search race game.

friction force
pull resistance
gravity surface
material