St Martins Primary School - Science

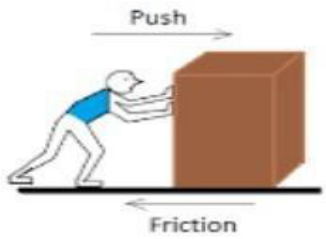
Topic: Forces	Year: 5	Strand: Physics

What? (Key Vocabulary)

Spelling	Definition/Sentence
Streamlined	A shape that presents least resistance to air or water
Surface	The top layer of something
Grip	To have a good connection with a surface
Drag	To cause to slow down
Centre	The middle

Diagrams and Symbols

Diagrams of forces in action



Gravity pulls us towards the centre of the Earth.

Recommended experiments

A minimum of two experiments should take place during this unit of work with one final written outcome linked tothe scientific enquiry skills and approaches used.

	Identify the effects of air resistance by designing and testing a parachute which would slow a car down a ramp.
	Choosing a feature of a spinner to investigate, for example, size of wings, height dropped or number of paper clips
	Recognising the impact of mechanisms on forces when using pulleys, levers and gears during technology lessons

What? (Key Knowledge)

Forces

What is a force?	A force is either: push or a pull
Forces can make things...	Speed up, slow down, change shape and change direction
A force that speeds something up	The child is pushing the car to speed it up 
A force that slows something down	The girl is pulling the dog to slow it down 
A force that changes the shape of something	The can is being squeezed so that it changes shape and becomes smaller 
A force that changes the direction of something	When the ball is hit with the racket, it will change direction 

Types of force

Magnetism Magnets attract or repel each other or other objects	Attract:  Repel:  North and South attract. But North and North or South and South will repel.
Air Resistance	• Air resistance slows down moving objects, because air slows you down asyou move through it • To travel faster through the air, things need to be streamlined
Water Resistance	• Water resistance slows down moving objects, because water slows you downas you move through it • To travel faster through the water, things need to be streamlined
Friction	• Friction happens when two surfaces touch each other • Friction gives us grip • Friction produces heat • Rougher surfaces slow things down a lot • Smoother surfaces don't slow things down as much

Gravity (another force)

What is gravity?	Gravity is the forces that **pulls** objects **down** towards the centre of the Earth. Gravity stops things from floating away into space. When things go into the air (like a football) gravity pulls them back down.

Learning links

Builds on: learning in Year 3 - Summer - Unit: Sound and Electricity

Leads to: learning in Year 5 - Summer 2 - Unit: Earth and Space

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Question 1: Which describes the best idea of a force?	Start of unit:	End of unit:
A Push		
Motion		
Pressure		
A Pull		
Energy		

Question 2: Which of the following is the unit of force?	Start of unit:	End of unit:
Centimeters		
Decibels		
Lux		
Newtons		
Grams		

Question 3: Which of the following is NOT a force?	Start of unit:	End of unit:
Magnetism		
Air Resistance		
Movement		
Water Resistance		
Gravity		

Question 4: Which statement about gravity is the true? (tick 2)	Start of unit:	End of unit:
Gravity is a pull force.		
Heavier objects fall more quickly.		
Gravity and magnetism are the same thing.		
Gravity pulls objects to the center of the Earth		
Small objects don't have gravity		

Question 5: Which of the following forces are types of friction? (tick 2)	Start of unit:	End of unit:
Air Resistance		
Gravity		
Magnetism		
Water Resistance		
Pressure		

Question 6: You are investigating whether the mass of an object affects the amount of friction. Name one thing you will do to make the test fair.	Start of unit:	End of unit:

Question 7: Look at the force arrows on this tennis ball. What is happening to the ball? 	Start of unit:	End of unit:
It is moving up		
It is staying still		
It is moving left		
It is falling		
It is moving right		

Question 8: Johnny throws a paper airplane. As it travels through the air, 2 forces act to slow it down. Tick which forces these are. (tick 2)	Start of unit:	End of unit:
Pressure		
Air Resistance		
Thrust		
Water Resistance		
Gravity		

Question 9: Water Resistance is an example of what?	Start of unit:	End of unit:
A non-contact force		
A contact force		
Both a contact and non-contact force		
Anti-gravity		

Question 10: Which type of simple machine is a door hinge?	Start of unit:	End of unit:
Screw		
Inclined Plane		
Pulley		
Lever		
Wheel and Axle		
Wedge		

Question 11: Why would you use a pulley to lift an object?	Start of unit:	End of unit:
To steer the object		
You wouldn't, you would use an inclined plane		
The object becomes lighter		
You use less effort to lift the object		
To increase the weight of the object		
To stop yourself tripping over the object		

Question 12: Heidi, is biking and then reaches a hill. What happens when she changes up a gear to make it easier to climb the hill?	Start of unit:	End of unit:
She pedals faster because she is using a smaller cog to move the bike		
She pedals more slowly because she is using a larger cog to move the bike		
Her pedalling speed doesn't change		