

Forces Lesson Scope and Sequence

Lesson Number	Focus Question	Main Learning Goal	Science Content Storyline
1	What makes something start to move?	A force is a push or a pull. Forces cause changes in motion.	Objects start to move because something pushes it or pulls it. Pushes and pulls imply that there is the something being pulled or pushed and something doing the pushing or pulling – there is an interaction between two objects. Gravity is a type of pull. When an object drops or falls, we can say that Earth is pulling on the object with the force of gravity.
2	How can we draw the forces pushing or pulling an object when we cannot see a push or a pull?	Forces acting on an object have a strength and a direction that can be represented by arrows of various lengths and directions.	A force between two objects can be represented by an arrow. The direction of the arrow shows the direction of the force. The length of the arrow shows the strength of the force.
3	Why do moving objects slow down and eventually stop?	Objects slow down and stop at different distances on different surfaces.	All objects on Earth eventually slow down and stop. The surface an object moves over determines how long it takes for the object to stop. Objects take longer to slow down and stop on smooth surfaces and slow down and stop much more quickly on rough surfaces.
4	What force makes a moving object slow down and stop?	When bumps on the surface of two objects touch, the push between them creates a force called friction. Friction is the reason that moving objects on Earth eventually slow down and stop.	The car in our experiment travelled a different distance over each of the three surfaces. We can imagine the bumps on the three surfaces as creating a push in the opposite direction of motion. The force that pushes in the opposite direction of motion is called friction . In a world without friction, object in motion would keep moving forever.
5	What would happen if more than one force is pushing or pulling an object?	If there is more than one force acting on an object, you could add them together (forces in the same direction) or subtract	You can add together the forces and predict the motion of an object. If the forces are equal and in opposite directions, the object will remain at rest. If the forces are unequal and in opposite directions, the object will move in the direction of the greater force.

		them (forces in opposite directions) to predict motion.	
6	How can ideas about forces help me predict the motion of objects?	Ideas about forces can help us predict motion.	Forces are caused when there is push or pull between two objects. Forces can cause change the motion of objects, for example, a force could cause something to start moving, cause something to change direction, cause something to slow down or stop. Friction is a force pushing in the opposite direction of the motion of an object. The rougher the surface, the more friction there is. Gravity is a force that pulls an object toward the Earth. Each of these ideas can help predict motion in everyday situations.