Forces and Magnets: Faster and Slower

Aim:	**Success Criteria:**	**Resources:**
To compare how things move on different surfaces by investigating the speed of a toy car over different surfaces. I can investigate the effects of friction on different surfaces.	I can explain the force of friction. I can make a prediction about which surface creates the most friction for a toy car. I can take measurements and record my results in a table. I can explain my results.	**Lesson Pack** Toy car 5 boards covered with different surfaces *(e.g. sandpaper, a towel, tinfoil, lino, carpet, corrugated cardboard or bubble wrap)* Rulers
	Key/New Words: Force, push, pull, friction, surface.	**Preparation:** **Investigating Friction Activity Sheet** - 1 per child

Prior Learning: Children will have learnt about pushes and pulls in lesson 1.

Learning Sequence

	**Making Things Move:** Recap forces using the **Lesson Presentation.** Ask the children to discuss how the cyclist can change the motion of the bicycle.	
	**Different Surfaces:** Explain the force of friction and how it is created by different surfaces using the information and diagrams on the **Lesson Presentation.**	
	**Investigating Friction:** Explain the investigation described on the **Lesson Presentation.** Children conduct the investigation in groups.	
	**Investigate!** Children complete their **Investigating Friction Activity Sheet** with their prediction, results and conclusion. Can the children explain the effect of friction? Can they use their prior knowledge to make sensible predictions? Can they record their results in a table? Can they explain their findings?  Children use their results to make a conclusion.  Children use the key words to explain their conclusion.  Children explain their prediction and conclusion.	
	**Friction Findings:** Use the prompt questions and discuss the children's results and address any issues.	

Task*it*

***Identify*it:** Fill in the table on this **Friction Worksheet** with different examples of high or low friction, and whether friction is useful in each example.

***Investigate*it:** Try the investigation shown in this **video.** Roll a toy car down a ramp over different surfaces to see how far it goes.

***Feel*it:** When friction slows a moving object down, the movement energy (kinetic energy) is not lost - it is converted into heat energy. You can feel how friction creates heat by rubbing your hands together.