# Forces in Action: Science: Year 5

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| Lesson 1 | To explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. | Children will consider what weight is, and how the impact caused by falling objects can vary, depending on their size, shape, mass, and the height they fall from. | • Can children explain why objects fall towards the centre of the Earth?  
• Do children understand the causal link between the mass of an object and the amount of force with which gravity acts on it? | • Slides  
• Worksheets 1A/1B/1C  
• Large trays, flour, cocoa/chocolate powder, marbles, ball bearings, golf balls etc.  
• Challenge Cards (FSD? activity only)  
• Books, internet etc. (FSD? activity only) |
| Lesson 2 | To identify the effects of friction acting between moving surfaces. | Children will learn about what friction is and some ways in which it can be measured. They will also identify instances of high and low friction and conduct friction investigations. | • Can children define friction?  
• Do children know that friction can be useful and give some examples?  
• Can children carry out an investigation, making sure that it is a fair test? | • Slides  
• Worksheets 2A/2B/2C/2D  
• Forcemeters  
• Variety of surfaces to test  
• Rubbers (FSD? activity only)  
• Challenge Sheet (FSD? activity only) |
| Lesson 3 | To identify and explain the effects of air resistance. | Children will learn about ways in which air resistance affects moving objects, then plan and conduct investigations where they will determine how air resistance affects falling objects. | • Do children know that air resistance is a force that slows objects moving through the air?  
• Can children plan, carry out and assess experiments to investigate air resistance?  
• Can children draw conclusions from their investigations? | • Slides  
• Worksheets 3A/3B/3C/3D  
• Plastic Bag Parachute sheet  
• Plastic bags, string/wool, paper clips, rubber bands  
• Spinner Template (FSD? activity only) |
| Lesson 4 | To identify and explain the effects of water resistance. | Children will learn about water resistance and how it affects objects moving through water. They will then conduct water resistance investigations. | • Do children know that water resistance slows an object moving through water?  
• Can children plan and carry out an experiment, making sure it is a fair test?  
• Can children identify trends in results and draw conclusions? | • Slides  
• Worksheets 4A/4B/4C/4D  
• Measuring cylinders or equivalent  
• Water  
• Plasticine  
• Stopwatches  
• Results Sheet (FSD? activity only) |
| Lesson 5 | To recognise that levers and pulleys allow a smaller force to have a greater effect. | Children will learn how simple machines can make it easier to move objects. They will then make and test models which have pulleys or levers. | • Do children recognise that levers and pulleys allow a small force to have a greater effect?  
• Can children make and improve models that use pulleys or levers?  
• Can children explore the effects of changing parts of their model? | • Slides  
• Worksheets 5A/5B/5C  
• Lollipop sticks, rubber bands (FSD? activity only)  
• Lolly Stick Catapult sheet (FSD? activity only)  
• Marshmallows or play dough (FSD? activity only)  
• Milk/water bottles with handles  
• String, cord or thin rope  
• Broomsticks or thick dowel rods |
| Lesson 6 | To recognise that gears allow a smaller force to have a greater effect. | Children will learn about how gears work together in transmissions and look at a variety of transmission. They will then make models to explore in greater depth how gears work. | • Do children recognise that the speed or amount of force transmitted is affected by changing the size of the gears in a transmission?  
• Can children make transmissions where two or more gears work together? | • Slides  
• Worksheets 6A/6B/6C  
• Cut-out Gears  
• Types of Transmission sheet (FSD? activity only) |