Year 7 Forces – Objectives and Assessment

Lesson	Range and Content Objective	Skills Objective	Activities	Formal Assessment	Success Criteria
1.	To understand the effects of balanced and unbalanced forces	To use models to explain a scientific process	• Friction video (active book) to identify forces (yr6 recap) • Definition of forces • Realisation that forces work in pairs, considering a parked car and the effect of balanced/unbalanced forces on it (or other examples) • Consideration of moving objects. • Changing speed sheet		• Must explain the effect of forces on stationary objects • Challenge: explain the effect of forces on moving objects.
2.	To apply knowledge of balanced and unbalanced forces on a moving object.	To link applications of science to underpinning scientific ideas	• Consider a parachute (use toy army man) how does it work? (referring to forces) • Watch video (exploring science forces video, section on parachutes) • Groups work out the forces at each stage of the drop • Parachute worksheet		• Must identify the names of the forces involved at each stage of the drop. • Challenge: correctly identify the size of the forces at each stage and explain the effect it has on the parachutist.

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3.	To apply knowledge unbalanced forces on a moving object.	To choose the most appropriate format to present scientific data	• Investigate elastic limit of springs (Hooke's law exploring science) • Conclude why knowledge of elastic limit is important.	Graph of extension vs. mass (see s/c)	• Must explain what is meant by the elastic limit. • Challenge: explain how this applies to sports involving ropes. ○ Line graph s/c
4.	To apply knowledge unbalanced forces on a stationary object object.		• Consider forces involved in floating (active book) • Recap upthrust • Groups make boat that holds as much mass as possible before sinking out of one sheet of paper and sellotape. (class competition) • Explain winning design (larger surface area= more upthrust, therefore more mass can be supported.)		• Must explain yours and the winning boats design referring to forces. • Challenge: explain why a penny sinks, but a cruise ship floats.
5.			A chance to consider density as another factor in floating ○ Measuring density of blocks (volume, mass)		

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6.	What is pressure?		• Pressure calculations		
7.	To apply knowledge of friction to everyday examples.	To link applications of science to underpinning scientific ideas	• Groups list reasons a bike might not go fast. • Define friction (use OUP year 7 on whiteboard to define) • Investigation friction tests • What makes more friction? (mass, roughness, area) • Comparison of a racing bike and a mountain bike, which needs more/less friction? How is this achieved? • Consider further examples such as tyres.		• Must name 3 factors that affect the amount of friction • Challenge: Explain why some objects have more/less friction than others.
8.	To be able to calculate speed.		• Watch Usain Bolts world record for the 100m,		

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			estimate how fast he was travelling, refer to the time and the distance.
			• Measure and calculate speeds
			  ○ Travelling on yard/in hall
			  ○ Catching speeding cars outside
			  ○ Toy cars down ramps
			
			• Supporting worksheets on world records.		

9.	Streamlining		• What is streamiling? • Streaminling in air and in water. • Applications of streamlining (e.g. athletics, cars, boats, submarines)		
10.			END OF TOPIC TEST		