

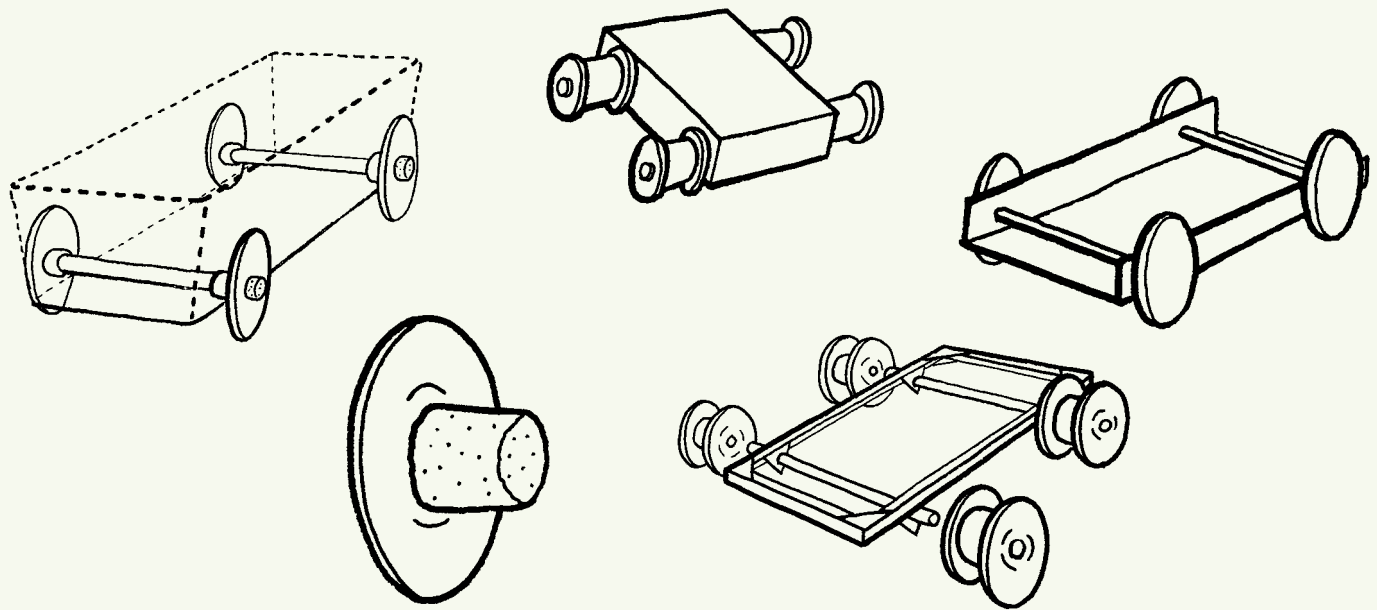
Exemplar 32

Friction

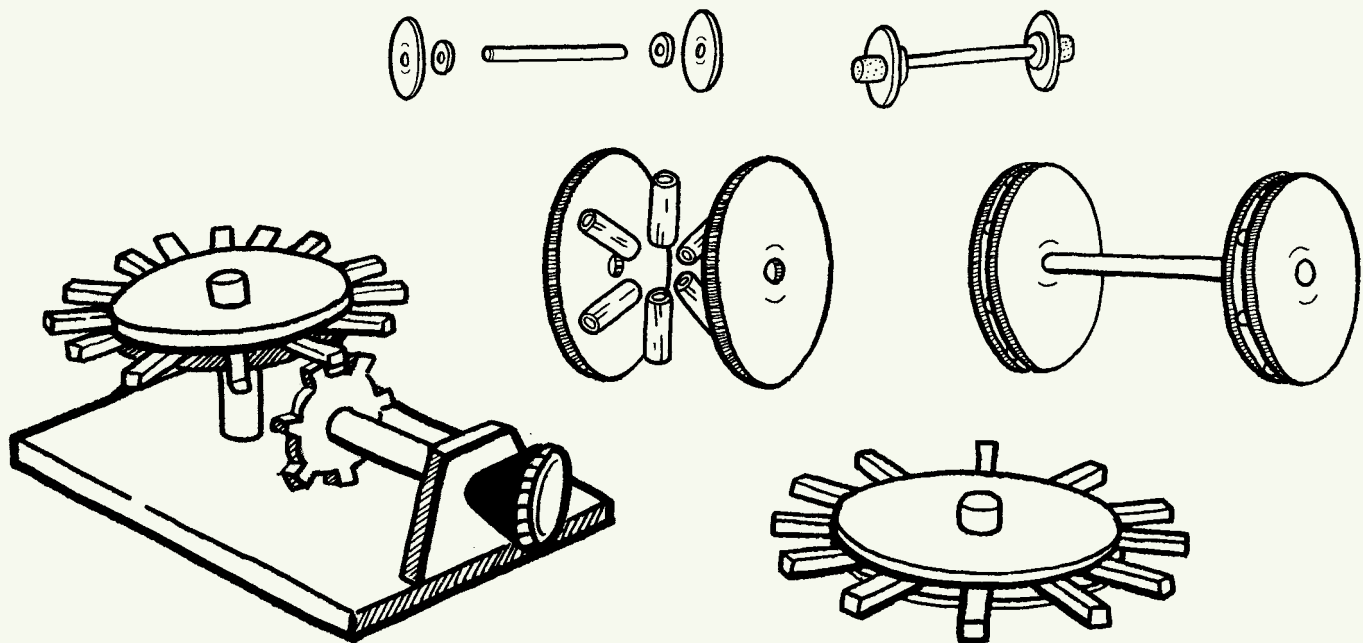
third and fourth classes

<p>Initial problem: How does friction affect moving things?</p> <p>Background Friction is the force that opposes the movement of an object. Friction is useful in that it prevents too much slipping and sliding. It has drawbacks in that two materials rubbing against each other can cause surfaces to wear away.</p>	<p>Assessment: Techniques that may be used include</p> <ul style="list-style-type: none">• teacher observation: willingness to try different ideas; willingness to work with others• portfolio: annotated drawings of work. <p>Resources Wheeled toys, plastic bottles and cans; different surfaces, such as carpet, smooth tiles, a plank or bread board, to use as a ramp or slope.</p>
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<p>Starting points observation</p> <p>Development of lesson predicting</p> <p>measuring experimenting</p> <p>fair testing</p> <p>Extension of lesson: follow-up activities</p>	<p>Children play with toy cars and lorries and ramps.</p> <ul style="list-style-type: none">• <i>What happens when the car travels down the slope?</i>• <i>What makes the car move?</i>• <i>Can you get the car to go up the slope?</i> <ul style="list-style-type: none">• <i>How far do you think the car will travel when it moves down the slope?</i>• <i>How will you mark where each car stops?</i>• <i>How will you measure the distance?</i> <p>Children move the car down slopes. Place different surfaces, such as carpet, tiles or sandpaper, at the bottom of the slope.</p> <ul style="list-style-type: none">• <i>How far will the car travel on the smooth surface?</i>• <i>Which surface has most grip (that is, creates the most friction)?</i> <p>Encourage the children to consider how they will make a fair test. The factors they should keep the same are the angle of the slope, the cars used, the push given to each car and the way the distance travelled is measured. The variable they will change is the surface on which the car travels.</p> <p>Children will plan a test to establish which type of shoe gives the best grip. Initial discussions on moving in socks, runners, bare feet, leather shoes. The children might observe and compare the soles of the different types of shoes that are to be examined. They might make prints of the different soles. A slope could be used to test the grip. Children can test to establish which objects can be moved easily in water.</p> <p>Note: This theme may be developed as a lesson or as a unit of work.</p>
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Axes on a basic rectangular chassis, wheels made from thread spools or circles of cardboard



Wheels made from two pieces of cardboard, strawspokes glued between the card circles