

Friends of Longford Park

Angular Momentum

Lesson Plan

Approximate duration:	20 minutes
Suitable for:	Key Stage 3
Learning objective:	To understand the action of centrifugal force and conservation of angular momentum
Overview:	Roundabouts can illustrate how centrifugal force pushes us away from a central point and how we can use the law of conservation of angular momentum to vary the speed of the roundabout.
Location:	Play area near the former Longford Hall.
Materials required:	<ul style="list-style-type: none">• Pens and paper• Small ball
Session Plan:	<p>Have children use the roundabout and describe the direction of any forces they feel while the roundabout is going round.</p> <ul style="list-style-type: none">• How does the speed of the roundabout affect the strength of the force?• What is the name of this force? Where else can it be found on the playground?• What influences the strength of centrifugal force?• Ask children to predict what would happen if they did not hold onto the roundabout and the centrifugal force was stronger than friction?• What would happen to an object after centrifugal force pushed it off the roundabout? <p>Demonstrate by placing a small ball or similar object on the roundabout and spinning it at various speeds, measuring the distance the ball travels to illustrate the relationship between the speed of the roundabout and the strength of the centrifugal force.</p>



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Extension Activity: Have children vary their position on the roundabout by leaning backwards away from the central point and then reaching forwards as far as possible towards the centre. What happens to the speed of the roundabout when they do this?

The circular motion of the roundabout around a central point creates a centrifugal force (as do swings). The faster the roundabout moves, the stronger the force. If a child did not hold onto the roundabout, they would be thrown off at the point when the centrifugal force is stronger than the friction between them and the roundabout. The ball will demonstrate that centrifugal force will push something away in a straight line. When children lean backwards on the roundabout, it should move slower than when they reach forward due to the law of conservation of angular momentum.

