

Conic Cuts



You need: a torch, sticky tape, cardboard, greaseproof paper

ACTIVITY ONE

Conic sections are curves that can be created by cutting a cone with a single straight cut.

Circle **Ellipse** **Parabola**

You can also create them using a torch. Make a pinhole in a small piece of card and tape the card over the torch. In a dark room, shine the beam onto a flat surface. Change the angle of the torch to create the different sections.

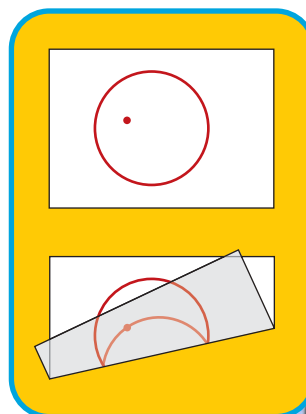
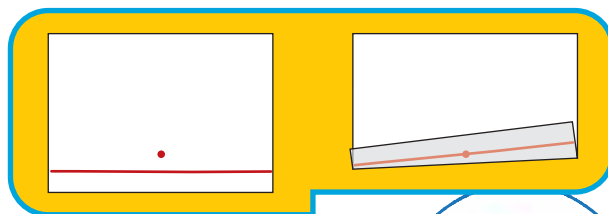


Circle **Ellipse** **Parabola**

- When does the section change from a circle to an ellipse?
- When does it change from an ellipse to a parabola?

ACTIVITY TWO

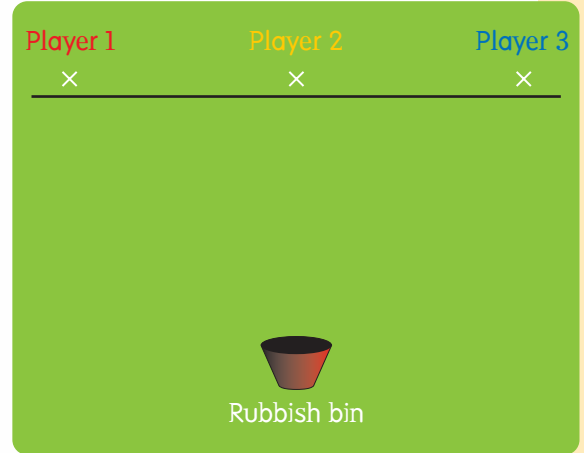
- Draw a line and a point on a piece of greaseproof paper. Fold the line onto the point. Unfold the paper and refold it so that a different part of the line touches the point. Do this many times. The uncreased area should have the shape of a conic section. Which conic section is it?
- Draw a point inside a circle. Fold the circle onto the point in many places. Name the conic section your folds have made.



Change each of these unfair physical education games to make them fair.

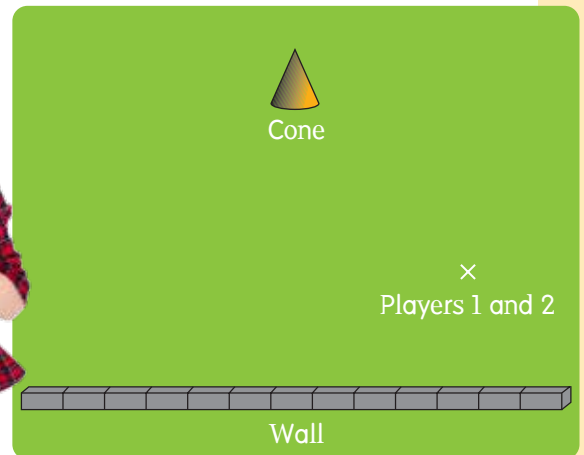
GAME ONE

Each player tries to throw 10 tennis balls into a rubbish bin. For the game to be fair, where could the players stand?



GAME TWO

In this race, 2 players start at X. Player 1 must touch the cone. Player 2 must touch the wall. For the game to be fair, where could the players start?



GAME THREE

Both players must touch the 2 cones and return to their marker (X). For the game to be fair, where could the players start?

