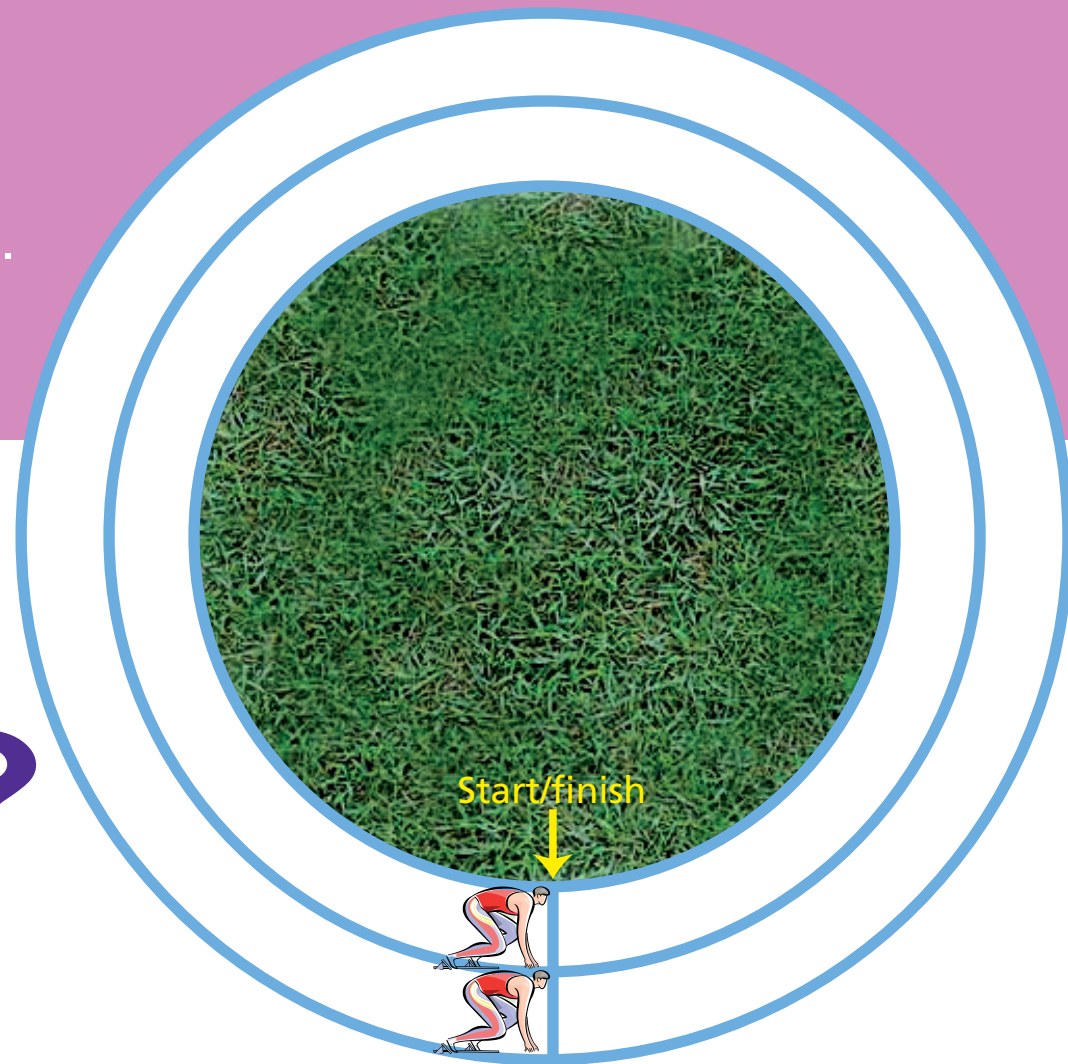


Running tracks need careful planning and design.

Distances run must be accurate and the same at different venues.

All competitors must run the same distance.

Is this race
fair?



Construct a **scale drawing** of a fair circular running track.

The track needs to be for
4 runners for a **100m race**.
Use a **scale** of 1centimetre = 1 metre

Useful information: the distance round a circle is approximately 3.14 times the distance across.

Designing a running track



This track is to be used for **100 metre**, **200 metre** and **400 metre** races. All these races are run in lanes and all finish at the same place.

Work out the **start lines** for the three different races. You will need to use **staggerers**.

Useful information:
the distance round a circle is approximately 3.14 times the distance across.



Scale 1 : 500

A running track for your school

If you are lucky enough to have a **running track** at school, find out how the people responsible for the track mark it out.



How do they check the distances for accuracy?

Check the staggers and see how they compare with the ones you designed.

- If you do not have a running track, explore the school grounds to find a place where one could be made.
- Use your previous work to make a sensible estimate for the smallest space that could be used.
- Measure up to see how a track could be fitted in.



Working at play : Running tracks

Description

When designing spaces for competitive sports events, care has to be taken to ensure that individual competitors are not advantaged or disadvantaged and that one sports site compares accurately with another. In the case of running tracks, this requires accurate measurement and precise calculations to create appropriate staggers for longer runs.

Resources

A3 paper, simple surveying equipment, in particular a surveying length measuring tape.

Activity 1: Running in circles

Activity 2: Designing the track

Activity 3: Local track

Running in circles involves scale drawing and requires the pupil to construct a simple but accurate scale model of a circular running track. Begin with a whole class discussion about whether or not the track displayed is fair. Where is the length of the race measured? A decision needs to be taken – the inside length of the lane, the middle of the lane, the outside edge of the lane? Using the **scale** and the **useful information** provided, the pupils can work out the difference between the length of the race for the two runners. At this point, a discussion will bring out the suggestion of introducing staggers. Races always have the same **finish** line so the staggers need to be introduced at the **start** line.

Whole class discussion will be needed to set up the activity **Designing a track**. This can draw on the pupils' own experience of running tracks in order to establish the need for three different sets of starting lines. They will need help in recognising that the track is composed of straight runs joined by semi-circular ones. They will also draw on their understandings about the use of lanes established in **Running in circles**.



Local track takes the classroom work one stage further and invites the pupils to consider the reality of their own school. If the school is lucky enough to have a running track, the task will involve accurate measuring in the field and, if at all possible, the follow-up will be a chance to hear from the groundsman the practical details of how the track is marked out and checked. If the school does not have a track, then the measurement will be of the apparently suitable available spaces and the follow-up will be back in the classroom, attempting the design activity but with real constraints.

The mathematics

This topic gives the opportunity for accurate measurement, scale drawing and calculations involving pi.