

Topical Applications of Mathematics

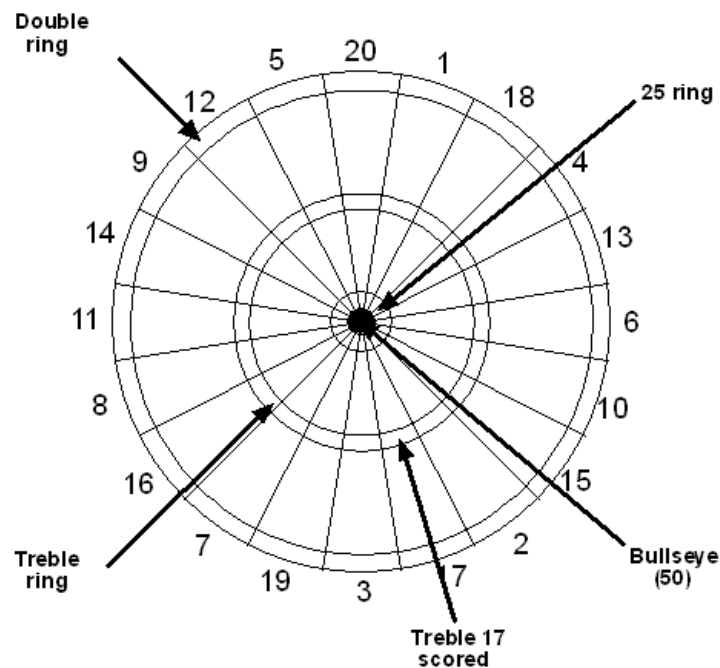
Darts

PUPIL TEXT

The darts board most commonly found in pubs, clubs and homes is the clock or trebles board. It consists of a circle of 20 segments numbered from 1 to 20 in a seemingly random fashion.

The small black circle at the centre is called the **bullseye**; the thin red ring that surrounds this is the **25 ring**. The **treble ring** is about half way to the edge of the board and the **double ring** is at the rim of the circle. If a dart lands, for instance, in the segment marked 17 and is within the treble ring, a treble 17 (51) has been scored.

Sketch of Darts Board



Activity 1

With 3 darts, and assuming that every dart scores, what is

- the **highest** score possible
- the **lowest** score possible?

Activity 2

With just one dart it is possible to score 50 (with the bullseye) or 51 (with a treble 17).

What other scores between 50 and 60 are possible with just one dart?

Activity 3

Find the **lowest score** it is **impossible** to obtain with just **1 dart**.

Activity 4

Using up to but not more than **3 darts**, what is the **lowest score** it is **impossible** to get?

In the game '501' two players each start with a score of 501 and, taking it in turns, throw 3 darts at the board. The total score is deducted from 501. The winner is the one who reaches a score of **exactly** zero, with their final dart landing in the 'double ring' or the 'bullseye'.

Activity 5

With 3 darts you can score 180 $60 + 60 + 60$ and 160 $60 + 60 + 40$. There are 10 other scores between 160 and 180 which you can obtain with 3 darts. Find as many of these scores as you can, writing down on Data Sheet 2 how they can be obtained.

Activity 6

In a game of '501', in how many ways is it possible to get to zero, finishing with a double or bullseye, when your score is 15?

Activity 7

What is the lowest number of darts thrown with which it is possible for a player to complete a game of 501?

The darts board has a specific design in which high numbers are usually next to low numbers. There are 20 sectors on the board. Any 5 adjacent sectors make up one quarter of the board.

Activity 8

Which quarter of the board gives the highest total when the numbers around its outside edge are added up?

Activity 9

Design your own darts board in the same style. Justify your style.
