



Problem of the Week

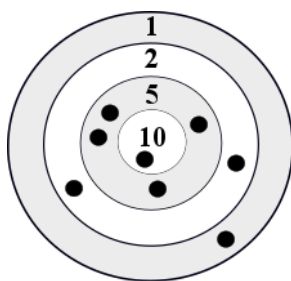
Problem B and Solution

Who Hit the Middle?

Problem

A dart board consists of four regions: an inner circle and three concentric circular bands. Any dart landing in the inner circle will receive 10 points. Any dart landing in the first band will receive 5 points. Any dart landing in the second band will receive 2 points. Any dart landing in the third band will receive 1 point.

Serena and Ebony each threw four darts. The locations where the eight darts landed are shown as black dots on the diagram below.



- (a) What was the total number of points scored by the two players?
- (b) If Ebony's total score was 1 more than Serena's, what was each person's score?
- (c) What individual shots could each player have had to get their scores?
- (d) Whose dart landed in the inner circle?

Solution

- (a) Since one dart landed in the band worth 1 point, two darts landed in the band worth 2 points, four darts landed in the band worth 5 points, and one dart landed in the inner circle worth 10 points, the total number of points scored by the two players was

$$1 + 2 + 2 + 5 + 5 + 5 + 5 + 10 = 35$$

- (b) Since $35 = 17 + 18$, Ebony scored 18 points and Serena scored 17 points.
- (c) Trying all combinations of four shots, we can see that the only way to get a score of 18 is as $1 + 2 + 5 + 10$.
Therefore, Ebony made shots worth 1, 2, 5, and 10 points. This means that Serena made shots worth 2, 5, 5, and 5 points.
- (d) Since the inner circle is worth 10 points, then one of Ebony's darts landed in the inner circle.