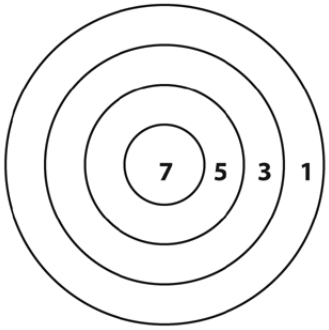
# Darts

Tony threw 6 darts and scored 32 points. Where did his darts land?



**Grade Levels Pre-K-2**

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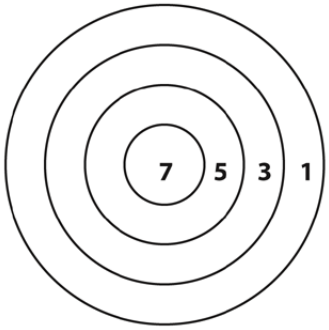


## Context

Students had learned various approaches to adding more than one number. The students were comfortable with the mechanics of the problem, but had difficulty illustrating it or explaining their reasoning.

## What This Task Accomplishes

The task shows students ability to solve problems in a different context and explain their results, while adding more than one number.

## What the Student Will Do

Students will try to arrive at 32 using the four given values. Most students used a "guess and check" approach to this problem. If students have not had experience with problem solving, they will have trouble explaining their reasoning.

## Time Required for Task

30 minutes

The problem was introduced and discussed for about 10 minutes before work began so that the students would be familiar with a dart board and scoring system. Most worked for 15 or 20 minutes longer to solve and explain.

## Interdisciplinary Links

This problem can be used to discuss degrees of difficulty and relative values in scoring sports and other parts of life.

## Teaching Tips

Students should have been introduced to different approaches of adding one number if this is to be used as an assessment problem. Students had been introduced to solving number sentences, labeling answers, illustrating problems and solving a problem in more than one way before the problem was given.

The problem can be made easier or more difficult by altering the number of darts and the number.

## Suggested Materials

- Paper
- Pencil
- Manipulatives (some students may want to use)

## Possible Solutions

7 + 7 + 7 + 7 + 3 + 1
7 + 7 + 7 + 5 + 5 + 1
7 + 7 + 7 + 5 + 3 + 3
7 + 7 + 5 + 5 + 5 + 3
7 + 5 + 5 + 5 + 5 + 5

## Benchmark Descriptors

**Novice**
The student does not seem to understand the problem. S/he made no attempt to begin. The diagram has three darts sitting in the center ring.

**Apprentice**
The student understood the problem and showed adequate reasoning, but could not completely carry out the mathematical procedures. The diagram and the formula are not accurate. The explanation is incomplete.

**Practitioner**
The Practitioner understands the problem, uses appropriate procedures and has a good explanation. The formula is accurate. The diagram is missing, but the student uses Roman numerals to keep track of the score.

**Expert**
The student clearly understood the problem and explained his/her reasoning in more than one way. The Expert clarified number sentences by diagramming in a different format.