Games on all fields

Purpose:

The purpose of this activity is to engage students in using counting strategies, images and/or materials to solve a problem.

Achievement Objectives:

NA1-1: Use a range of counting, grouping, and equal-sharing strategies with whole numbers and fractions.

NA1-3: Know groupings with five, within ten, and with ten.

NA1-4: Communicate and explain counting, grouping, and equal-sharing strategies, using words, numbers, and pictures.

Description of mathematics:

In readiness for this problem, the students should have familiarity with each of the following components of mathematics. The problem may be solved with different combinations of these components.

- Finding information needed from a context
- Using images to represent a problem
- Using materials to represent a problem
- Using counting on strategies
- Counting forward to find an unknown

This activity may be carried out with guidance, or by allowing the student to follow their own method of solution. It should be noted that students may need assistance to explore the context. It may not be immediately obvious that a game of football comprises two opposing teams. The level and style of guidance provided, should be chosen in sympathy with students' skills and depth of understanding.

Activity:

A school has three football fields.

At lunchtime, there is a five-a-side football game on each of the fields.

Two of the teams are made up of year one students and the others are all year two students.

How many of the **players** on the fields are year two students?

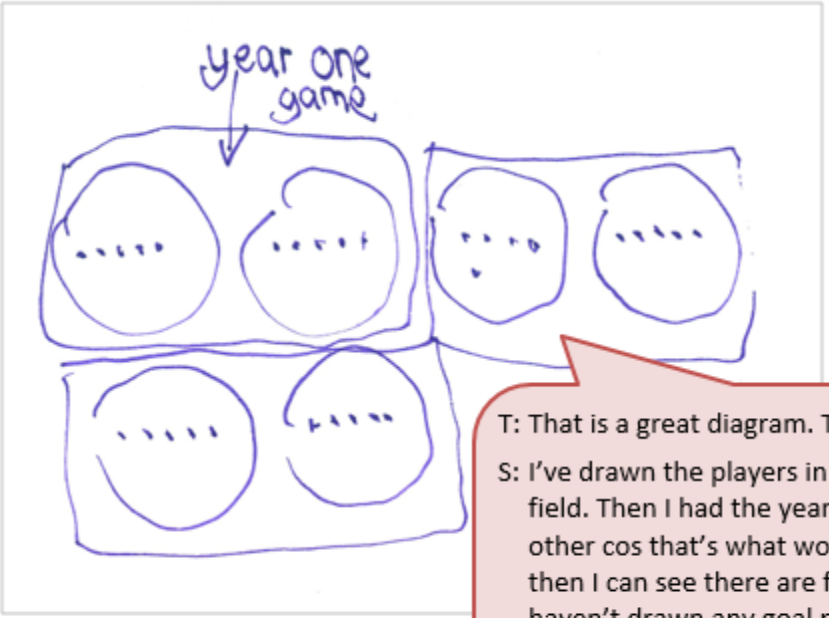
Note: Five-a-side means five players on each team. There are no subs.

The visual approach

The student is able to represent, visually, the information given in order to solve a problem.

Prompts from the teacher could be:

1. How could you show the three fields?
2. How many teams can at the same time on these fields?
3. How many players are on each team?
4. How could you show one player?
5. How many of those players are year one students?
6. How many of those players are year two students?



T: That is a great diagram. Talk me through it.

S: I've drawn the players in each team on each field. Then I had the year ones versing each other cos that's what would happen. And then I can see there are four more teams. I haven't drawn any goal posts or other stuff, just the players. So I can count them up and it comes to … twenty!

The conceptual approach

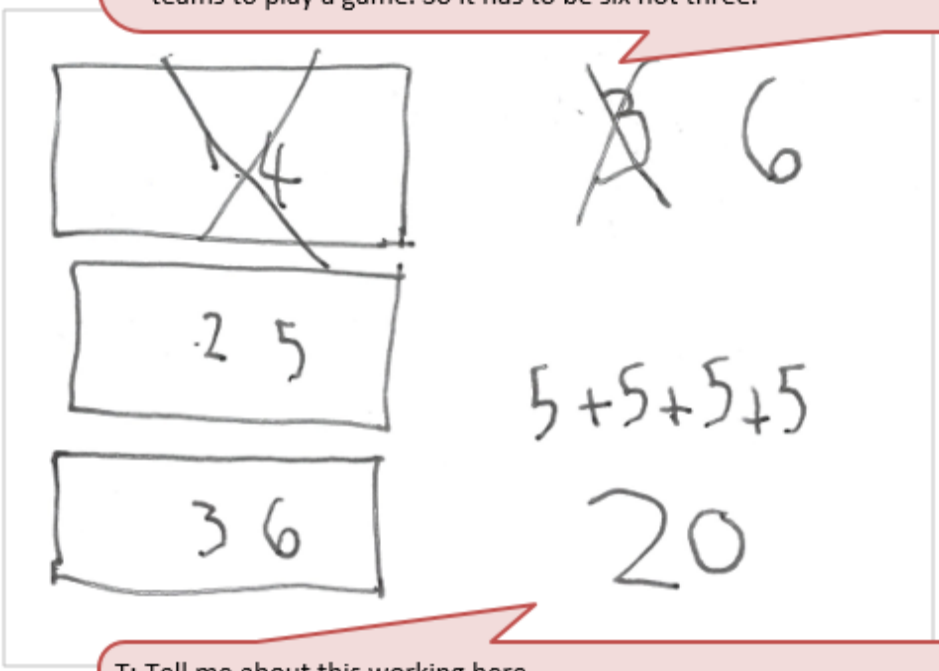
The student is able to use the information provided to solve a problem.

Prompts from the teacher could be:

1. How many teams can play at once?
2. How many of those teams are year one students?
3. How many of the teams are year two students?
4. How many players in each team?
5. How many players are year two students?

T: I see that you have crossed out a three here. Tell me about what you were thinking about when you crossed it out.

S: First I drew three fields. Then I counted out a team for each field. So I wrote a three for how many teams there are. But then I thought they can't be playing a game if they are just standing there. You need two teams to play a game. So it has to be six not three.



T: Tell me about this working here.

S: Well, I crossed out the field with the year ones on it, so then there are four lots of five players who must be year twos, and that makes twenty.