

Notes for parents (1).

The purpose of the activity is to help your student to:

- Solve problems involving areas in square metres.
- Perform and interpret calculations with decimals in context.
- Use fractions and whole numbers to work out how many times bigger one amount is than another.

Here is what to do:

Read through the activity page together with your students. Check to see that you can both identify the regions of the court that players in each position can occupy. Then look at the dimensions of the court.

You may need to discuss what area is (flat space) and the units that area is measured in. Given the length and width of the court are in metres the best unit for measure in this situation is the square metre, written as m^2 .

Let your student try to calculate the area that players in each position occupy, in square metres. They should use a calculator to do the calculations. There are various ways to get the answers so be flexible in accepting different strategies to your own.

- The whole court has an area of $30.5 \times 15.25 = 465.125m^2$.
- The 'shooting circle' is half a circle. Area of circle can be calculated using πr^2 , where $\pi = 3.14\dots$ and r is the radius of the circle. $\pi \times (4.9)^2 = 75.430m^2$.
- Half of the shooting circle is $1/2 \times 75.430 = 37.715m^2$.

The areas for each position are:

Centre:

$465.125 - (2 \times 37.715) = 389.695m^2$ [The subtraction is the area of the two shooting circles]

Goal Shoot and Goal Keep

$1/3 \times 465.125 = 155.042m^2$ or $10.167 \times 15.25 = 155.047m^2$. The small difference is due to rounding.

Goal Attack and Goal Defence

$2/3 \times 465.125 = 310.083m^2$ or $(10.167 + 10.167) \times 15.25 = 310.094m^2$.

Wing Attack and Wing Defence

$(2/3 \times 465.125) - 37.715 = 272.368m^2$.



Notes for parents (2). Activity next page.

The claim that the Centre occupies three times the area of a Goal Shoot or Goal Keep can be checked using either multiplication or division.

$3 \times 155 = 465\text{m}^2$ which is more than 390m^2 that a Centre occupies.

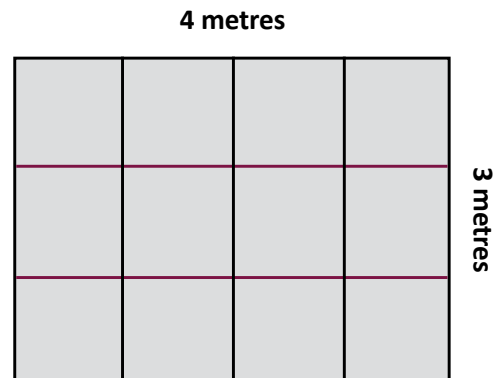
$390 \div 3 = 130\text{m}^2$ which is less than 155m^2 that a Goal Keep or Shoot occupy.

Therefore, the claim is false.

Points to note:

Calculating area involves the concept of an array which is an arrangement of objects in rows and columns. For example, a rectangle that measures 3 metres x 4 metres has an area of 12 square metres. Note that the lengths are expressed in different units, metres, to the area in square metres.

At this stage your student should have a good 'feel' for the square metre as a unit of measure. You might check that by asking them to estimate the area of the room you are in.



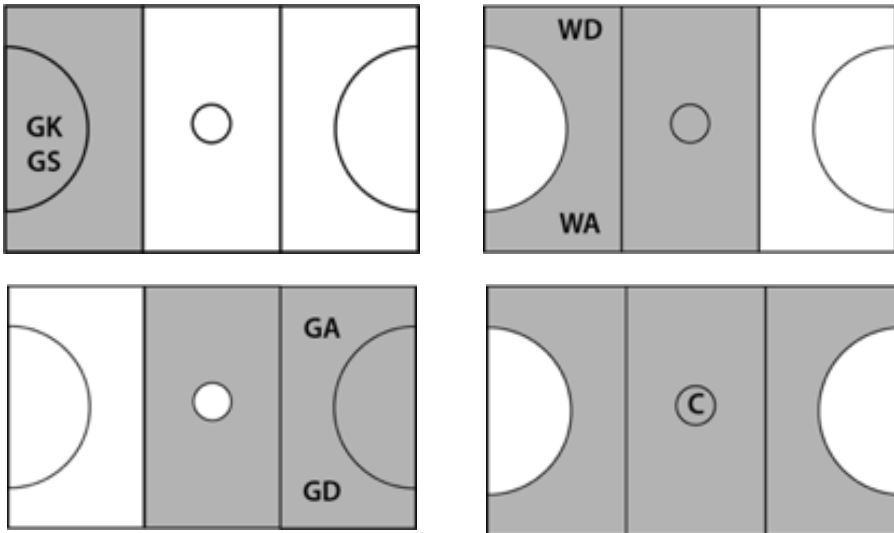
The measures are given as decimals, not whole numbers. Several of the decimal parts of the measures should be well known to your student. For example, 30.5 equals $30 \frac{1}{2}$, and 15.25 equals $15 \frac{1}{4}$. 10.167 is equal to $10 \frac{1}{6}$, which is less well known. The areas are to be given to three decimal places. That is equivalent to expressing the areas to the nearest thousandth of a square metre.

Rounding to three decimal places involves considering the fourth decimal place. If the digit in the fourth place (ten thousandths) is 5 or more then the digit in the third place is rounded up. For example, with 23.4296m^2 (area of the circle) the fourth digit is 6 so 9 is rounded up. If 9 is rounded up to 10 then this 'overflows' to the hundredths place to increase that digit by one. So, 23.4296 rounds to 23.430m^2 .

Similarly, if the digit in the fourth place (ten thousandths) is less than 5 then the digit in the third place (thousandths) stays the same. For example, 310.0833333333m^2 is the area occupied by the Goal Attack and Wing Defence. The 3 recurs infinitely (forever). Since the fourth decimal place has the digit 3 the decimal is rounded to 310.083.



In netball there are zones that players in different positions can occupy. *Centres (C)* can go anywhere but the shooting circles. *Goal Shoots (GS)* and *Goal Keeps (GK)* can only go in the attacking or defending one third of the court. *Goal Attacks (GA)* and *Goal Defences (GD)* can go in two-thirds of the court. *Wing Attack (WA)* and *Wing Defence (WD)* can go in two-thirds of the court, less the shooting circle.



Here are the dimensions of a netball court. Work out the area the players in each position can occupy. Give your answers in square metres (m^2) to three decimal places. A *Centre* has three times as much area to cover as a *Goal Shoot* or *Goal Keep*. Is that true?

