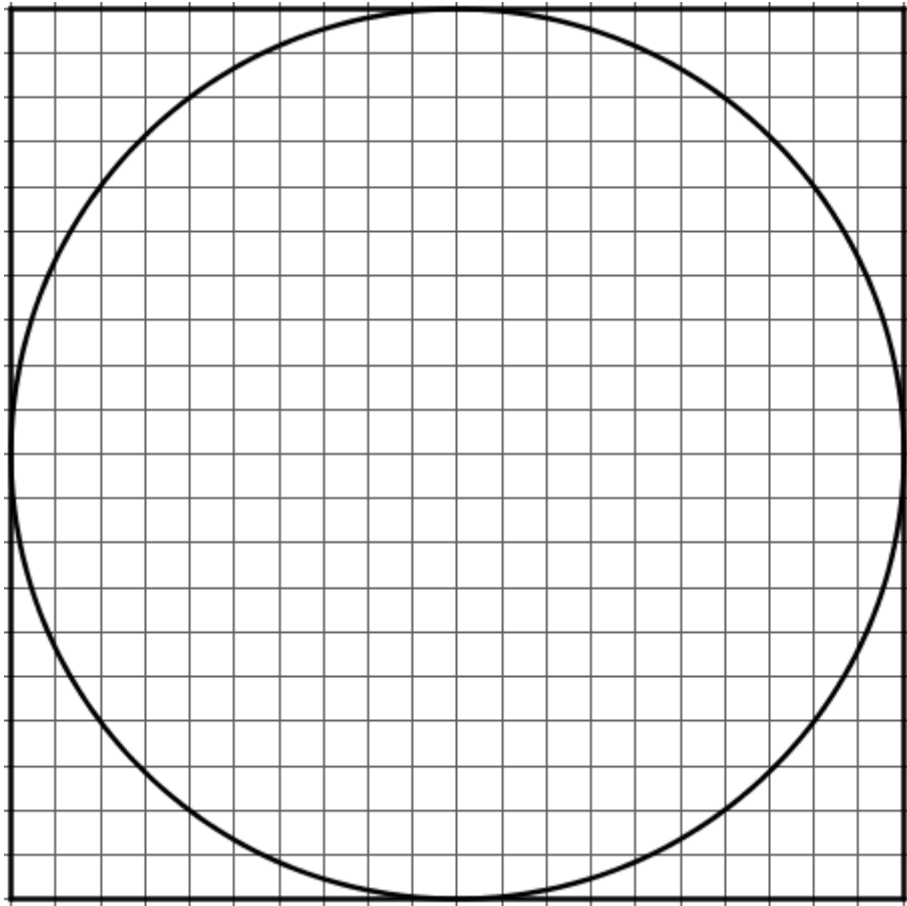


The Area of a Circle

Many shapes can be broken down into simpler ones such as rectangles and triangles, but a circle, because of its curved line, cannot easily be simplified.

One method that is used to *estimate* area for irregular shapes is using a square grid and counting *roughly* how many squares fit inside.

1. Find the area of the large square that fits around the circle in the diagram: (each square represents 1cm^2)



The rule for estimating area by counting squares is:

- If a square is *completely* or *mostly* **inside** the circle, **count it as one** whole square.
- If a square is *completely* or *mostly* **outside** the circle, **don't count it** at all.

2. Estimate the area of the circle using the rules above.

Hint: To save time, work out the area of the bits outside the circle, then subtract from your answer to question 1 (the area of the large outer square).

3. To calculate the area of a circle, you need to square the radius, then multiply your answer by a special number. Use your answer to question 2 to predict this number.

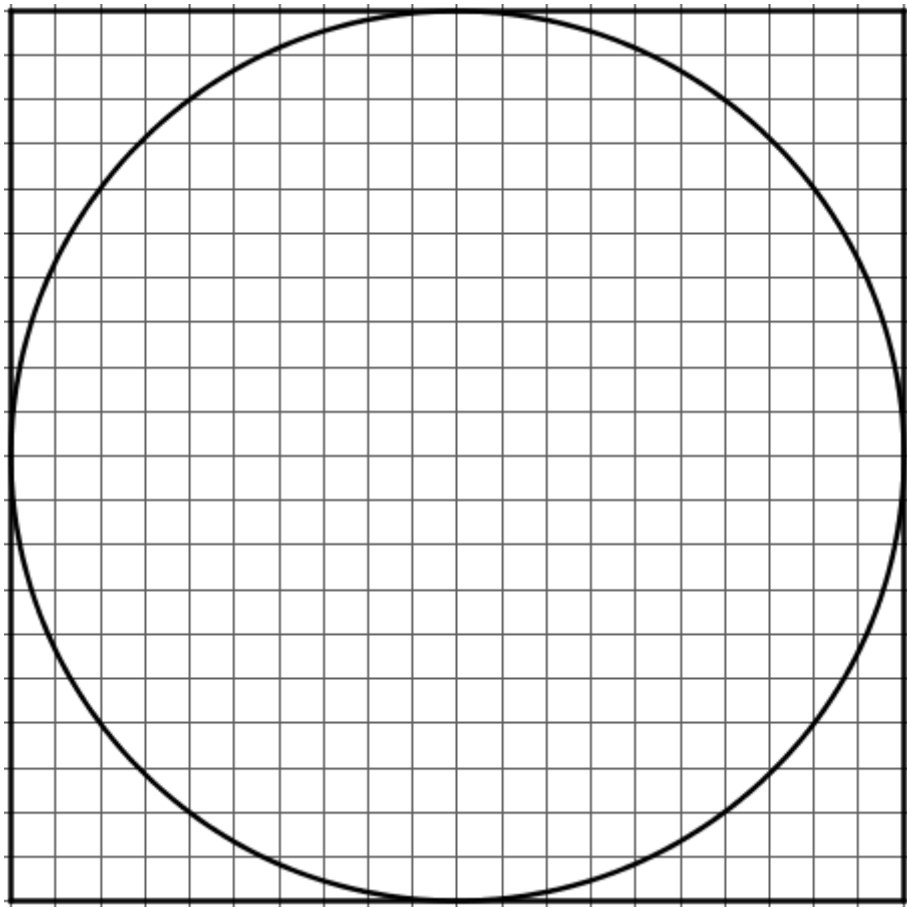
The Area of a Circle SOLUTIONS

Many shapes can be broken down into simpler ones such as rectangles and triangles, but a circle, because of its curved line, cannot easily be simplified.

One method that is used to *estimate* area for irregular shapes is using a square grid and counting *roughly* how many squares fit inside.

1. Find the area of the large square that fits around the circle in the diagram:
(each square represents 1cm^2)

400cm^2



The rule for estimating area by counting squares is:

- If a square is *completely* or *mostly* **inside** the circle, **count it as one** whole square.
- If a square is *completely* or *mostly* **outside** the circle, **don't count it** at all.

2. Estimate the area of the circle using the rules above.

Hint: To save time, work out the area of the bits outside the circle, then subtract from your answer to question 1 (the area of the large outer square).

314cm^2 (accept anything between 300cm^2 and 332cm^2)

3. To calculate the area of a circle, you need to square the radius, then multiply your answer by a special number. Use your answer to question 2 to predict this number.

3.14 (or anything between 3 and 3.34. Note: $\pi = 3.1415926535 \dots$)