26th November

- \( n \) is the set of even numbers from 1 to 200
- \( O \) is the set of odd numbers
- \( P \) is the set of prime numbers
- \( C \) is the set of cube numbers
- \( S \) is the set of square numbers

<table>
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<tr>
<th>How many numbers are there in the set ( O \cup P \cup C \cup S )</th>
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The area of an ellipse, width \( a \) and height \( b \) is given by

\[
A = \frac{\pi ab}{4}
\]

Find the shaded area.

- Prove \((2n + 1)^2 - (2n + 1)\) is always a even number for all positive values of \( n \).

Mrs Jenkins is making decorations for a wedding.
She needs \(18\sqrt{5}\) metres of ribbon in total.
Mrs Jenkins has 40 metres of ribbon.
Does she have enough ribbon?

The point A has coordinates \((-6,0)\)
The point B has coordinates \((0,3)\)
The point C has coordinates \((9,-1)\)

Find the equation of the line that passes through C and is perpendicular to AB.