Problem of the Week: Week 6 (Sum2): Year 10: Number: Integers, powers and roots

- **{estimate powers and roots of any given positive number}**
- calculate with roots, and with integer **{and fractional}** indices
- calculate exactly with fractions, **{surds}** and multiples of π; **{simplify surd expressions involving squares [for example** $\sqrt{12} = \sqrt{4 \times 3} = \sqrt{4} \times \sqrt{3} = 2\sqrt{3}$ **] and rationalise denominators}**

Estimating roots and powers

√225 = 15 {since $15^2 = 15 \times 15 = 225$}. We can also write this as $225^{1/2} = 15$

$\sqrt[3]{27} = 3$ {since $3^3 = 3 \times 3 \times 3 = 27$}. We can also write this as $27^{1/3} = 3$

a) Estimate the value of √82 using a known square number.
b) Estimate the value of 8.2^4
c) Estimate the cube root of 3250
d) Estimate the value of √820,000

Surd Area

The area of this rectangle is 60 cm^2

Find the value of x

Give your answer in the form a√b where a and b are integers