Surface Area or Volume of Triangular Prisms

15. a) Which triangular prism do you think has a greater volume?

\[ V_{dA} = \frac{1}{2} \times 9 \times 5 \times 4 = 90 \, m^3 \]
\[ V_{dB} = \frac{1}{2} \times 8 \times 3 \times 14 = 168 \, m^3 \]

Example: Find Surface Area or Volume

The diagram shows the dimensions of a wave pool. It has been emptied so it can be painted.

a) Determine the amount of paint needed.
   The paint coverage rate is 10 m²/L.

b) How much water is needed to fill the pool?
   Hint: 1000 L = 1 m³

\[ SA = 2 \Delta s + 2 \square s \]
\[ \Delta s = \frac{20}{4} = 5 \]
\[ = \frac{15}{4} = 3.75 \]
\[ \square s = 20 \times 15 = 300 \]
\[ 2 \times 40 + 60 + 306 = 80 + 60 + 306 = 446 \, m^2 \]
\[ Paint \, needed = \frac{446}{10} = 44.6 \, L \]

\[ Volume = \frac{1}{2} \times 20 \times 4 \times 15 = 600 \, m^3 \]
\[ 1000 \, L = 1 \, m^3 \]
\[ \Rightarrow \text{Water needed} = 600 \times 1000 = 600,000 \, L \]
Key Ideas

- The surface area of a triangular prism is the sum of the areas of its faces.
- Volume of a triangular prism = area of base $\times$ height of prism