1.3 SURFACE AREA OF RECTANGULAR PRISMS

REMEMBER

Prisms are named after THEIR BASE

RECTANGULAR PRISM → "BOX" → BASE IS A RECTANGLE
TRIANGULAR PRISM → "TOBLERONE" → BASE IS A TRIANGLE

LET'S START WITH FIGURES MADE OF CUBES

REMEMBER

- Unless otherwise specified, the side length of each cube is 1. That means

$A_{\square} = b \times h$ $\quad A_{cube} = 1 \times 1 = 1 \times 6 \text{(faces)} = 6$

- A cube has 6 identical faces

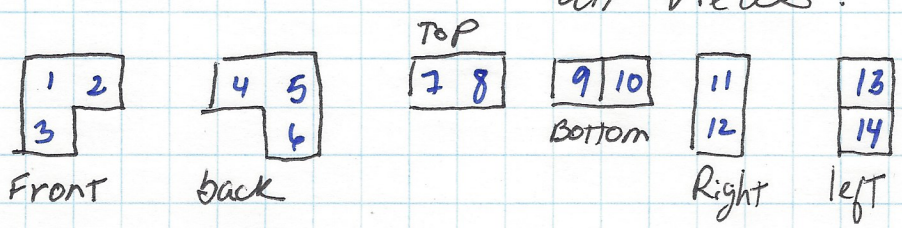
THERE ARE 2 METHODS YOU CAN USE. CHOOSE THE ONE THAT WORKS FOR YOU, AND STICK WITH IT!

METHOD #1

- DRAW All views of your object: Top, bottom, Front, back, Right, left.
- Remember that lines between cubes indicate that that cube is in a different plane (in front, behind)

- After you've drawn all 6 views, count all the individual squares you see AND ADD THEM together. Multiply by area of 1 face (1 in our case)
- S.A. (Surface Area) = All the squares in all views.

Ex:



14 squares. thus

S.A = 14 Squares × 1 (area of each) = 14

HANG IN THERE FOR AN EXAMPLE!!

BUT BEFORE:

METHOD 2

(1) • Determine how many cubes you have.

(2) • Multiply that number by 6. THIS IS BECAUSE EACH CUBE HAS 6 FACES

→ THIS gives you the TOTAL amount of faces you have.

(3) • Now, notice the places where the cubes are joined to each other. This is called an "Overlap"

Overlap → THE PLACE WHERE TWO FIGURES "TOUCH" OR "COME TOGETHER

→ REMEMBER → OVERLAPS INVOLVE 2 SURFACES, SO YOU MUST ALWAYS MULTIPLY THE NUMBER OF OVERLAPS by 2!

Important

(4) • Count the overlaps.

(5) • Multiply the overlaps by 2.

• then

Minus

$$S.A. = \left(\text{Total number of faces (Step 2)}\right) - \left(\text{Overlaps} \times 2\right)$$

NOTE: YOU SHOULD GET THE SAME ANSWER WHETHER YOU USE METHOD # 1 or METHOD # 2