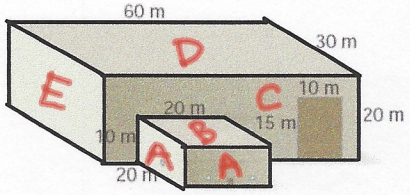
Ex.

A warehouse measures 60 m by 30 m by 20 m. An office attached to one wall of the warehouse measures 20 m by 20 m by 10 m.

a) Determine the surface area of the building.

b) A contractor quotes to paint the exterior of the building at a rate of $2.50/m^2.
These parts of the building are not to be painted: ~~the 2 roofs, the office door with area 2 m^2, 3 loading doors, each measuring 10 m by 15 m,~~ and 4 windows on the office, each with area 1 m^2.
How much would it cost to paint the building?



→ ROOF D OFFICE DOOR = 2 m^2
ROOF B 3 loading docks = 450 m^2
4 windows = 4 m^2

a) $A_A = 20m \times 10m = 200m^2 \times 4 = 800m^2$
$A_B = 20m \times 20m = 400m^2 \rightarrow + 400m^2$
$1200m^2$

$A_C = 20m \times 60m = 1200m^2 \times 2 = 2400m^2$
$A_D = 60m \times 30m = 1800m^2 \rightarrow 1800m^2$
$A_E = 30m \times 20m = 600m^2 \times 2 = 1200m^2$
$5400m^2$

Overlaps:
$2 \times A = 2 \times 200m^2 = 400m^2$

Total surface area:
$SA = 1200m^2 + 5400m^2 - 400m^2 = \boxed{6200m^2}$

b) Roof: $D + B = 1800m^2 + 400m^2 = 2200m^2$
Office door: $2m^2 \rightarrow 2m^2$
Loading doors: $10m \times 15m = 150m^2 \times 3 = 450m^2$
Windows: $1m^2 \times 4 = 4m^2 \rightarrow + 4m^2$
$\boxed{2656m^2}$

Surface to paint $= 6200m^2 - 2656m^2$
$= 3544m^2 \times \$2.50/m^2$
$\boxed{\$8860}$