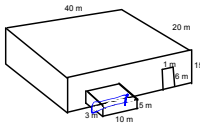
Find the area of the warehouse with the attached storage space.

(Think if you were going to paint this....How much paint is needed???)



door
A = bxh
= 1x6
= 6 m²

Step 1) Calculate the sides of all of the larger prism,

Top/Bottom
A = bxh
= 40x20
= 800m²

Left/Right
A = bxh
= 30x15
= 300m²

Front/Back
A = bxh
= 40x15
= 600m²

So surface area of the larger prism is:

SA: 800+800+300+300+600+600
= 3400m²

Step 2) Surface area of smaller prism

Top/Bottom
A = bxh
= 3x10
= 30m²

Front/Back
A = bxh
= 5x10
= 50m²

Left/Right
A = bxh
= 5x3
= 15m²

So surface area of the storage space is:

30+30+50+50+15+15
= 190 m²

Total SA = Big + Small − BB − BS (Back of Small x2) − door
= 3400 + 190 − 800 − 30 − 50 − 6

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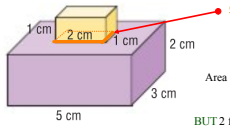
8 a)



Overlapped Faces
2 face involved

Area of one face = 2cm x 1cm
= 2cm²

BUT 2 faces involved for each overlap
THUS must multiply by 2 to get total ovelapped area

Area of overlap = 2(2cm²)
= 4cm²

BIG Prism (if alone)

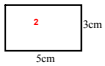
front/back

A₁ = l x w
= 5cm x 2 cm
= 10 cm²
2A₁ = 20 cm²

side/side

A₂ = l x w
= 3cm x 2 cm
= 6 cm²
2A₂ = 12 cm²

top/bottom



A₃ = l x w
= 3cm x 5 cm
= 15 cm²
2A₃ = 30 cm²

Total SA of BIG = 2A₁ + 2A₂ + 2A₃
= 20cm² + 12cm² + 30 cm²
= 62 cm²

Small Prism (if alone)

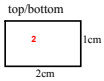
front/back

A = l x w
= 2cm x 1 cm
= 2 cm²
2A₁ = 4 cm²

side/side

A = l x w
= 1cm x 1 cm
= 1 cm²
2A₂ = 2 cm²

top/bottom



A = l x w
= 2cm x 1 cm
= 2 cm²
2A₃ = 4 cm²

Total SA of Small = 2A₁ + 2A₂ + 2A₃
= 4cm² + 2cm² + 4 cm²
= 10 cm²

Area of overlap = 2(2cm²)
= 4cm²

Remember from above

Surface area of object = Big area + Small area - 2(overlap area)
= 62 cm² + 10 cm² - 4 cm²
= 68 cm²

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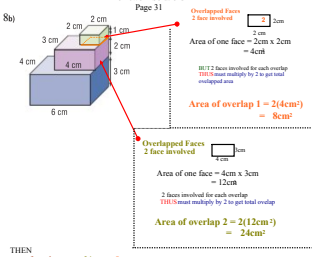
8b)



Overlapped Faces
2 face involved

Area of one face = 2cm x 2cm
= 4cm²

BUT 2 faces involved for each overlap
THUS must multiply by 2 to get total overlapped area

Area of overlap 1 = 2(4cm²)
= 8cm²

Overlapped Faces
2 face involved

Area of one face = 4cm x 3cm
= 12cm²

2 faces involved for each overlap
THUS must multiply by 2 to get total overlap

Area of overlap 2 = 2(12cm²)
= 24cm²

THEN
sum of overlap area = 24 cm² + 8 cm²
= 32 cm²

BIG Prism (if alone) BLUE

front/back: 6cm × 3cm
$A_1 = l \times w$
= 6cm x 3 cm
= 18 cm²
$2A_1 = 36$ cm²

side/side: 4cm × 3cm
$A_2 = l \times w$
= 3cm x 4 cm
= 12 cm²
$2A_2 = 24$ cm²

top/bottom: 6cm × 4cm
$A_3 = l \times w$
= 6cm x 4 cm
= 24 cm²
$2A_3 = 48$ cm²

Total SA of BIG = $2A_1 + 2A_2 + 2A_3$
= 36cm² + 24cm² + 48 cm²
= 108 cm²

Middle Prism (if alone) Purple

front/back: 4cm × 2cm
A = l x w
= 4cm x 2 cm
= 8 cm²
$2A_1 = 16$ cm²

side/side: 3cm × 2cm
A = l x w
= 3cm x 2 cm
= 6 cm²
$2A_2 = 12$ cm²

top/bottom: 4cm × 3cm
A = l x w
= 3cm x 4 cm
= 12 cm²
$2A_3 = 24$ cm²

Total SA of Middle = $2A_1 + 2A_2 + 2A_3$
= 16cm² + 12cm² + 24 cm²
= 52 cm²

Small Prism (if alone) Green

front/back: 2cm × 1cm
A = l x w
= 2cm x 1 cm
= 2 cm²
$2A_1 = 4$ cm²

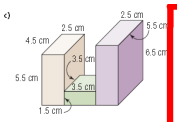
side/side: 2cm × 1cm
A = l x w
= 1cm x 2 cm
= 2 cm²
$2A_2 = 4$ cm²

top/bottom: 2cm × 2cm
A = l x w
= 2cm x 2 cm
= 4 cm²
$2A_3 = 8$ cm²

Total SA of small = $2A_1 + 2A_2 + 2A_3$
= 4cm² + 4cm² + 8 cm²
= 16 cm²

Surface area of object = Big area + Middle area + Small area - overlap area
= 108 cm² + 52 cm² + 16 cm² - 32 cm²
= 144 cm²

c)



Overlapped Faces
2 face involved

Area of one face = 1.5cm x 3.5cm
= 5.25cm²

BUT 4 faces involved for each overlap
THUS must multiply by 4 to get total overlapped area

Area of overlap = 4(5.25cm²)
= 21 cm²

BIG Prism (if alone) Purple

front/back: 2.5cm × 6.5cm
A = l x w
= 2.5cm x 6.5 cm
= 16.25 cm²
$2A_1 = 32.5$ cm²

side/side: 5.5cm × 6.5cm
A = l x w
= 5.5cm x 6.5 cm
= 35.75 cm²
$2A_2 = 71.5$ cm²

top/bottom: 2.5cm × 5.5cm
A = l x w
= 2.5cm x 5.5 cm
= 13.75 cm²
$2A_3 = 27.5$ cm²

Total SA of BIG = $2A_1 + 2A_2 + 2A_3$
= 32.5cm² + 71.5cm² + 27.5cm²
= 131.5 cm²

Middle Prism (if alone) Brown

front/back: 2.5cm × 5.5cm
A = l x w
= 2.5cm x 5.5 cm
= 13.75 cm²
$2A_1 = 27.5$ cm²

side/side: 4.5cm × 5.5cm
A = l x w
= 4.5cm x 5.5cm
= 24.75 cm²
$2A_2 = 49.5$ cm²

top/bottom: 2.5cm × 4.5cm
A = l x w
= 2.5cm x 4.5 cm
= 11.25 cm²
$2A_3 = 22.5$ cm²

Total SA of Middle = $2A_1 + 2A_2 + 2A_3$
= 27.5cm² + 49.5cm² + 22.5 cm²
= 99.5 cm²

Small Prism (if alone) Brown

front/back: 1.5cm × 3.5cm
A = l x w
= 1.5cm x 3.5 cm
= 5.25 cm²
$2A_1 = 10.5$ cm²

side/side: 1.5cm × 3.5cm
A = l x w
= 4.5cm x 5.5cm
= 5.25 cm²
$2A_2 = 10.5$ cm²

top/bottom: 3.5cm × 3.5cm
A = l x w
= 2.5cm x 4.5 cm
= 12.25 cm²
$2A_3 = 24.5$ cm²

Total SA of Middle = $2A_1 + 2A_2 + 2A_3$
= 10.5cm² + 10.5cm² + 24.5 cm²
= 45.5 cm²

Surface area of object = Big area + Middle area + Small area - overlap area
= 131.5 cm² + 99.5 cm² + 45.5 cm² - 21 cm²
= 255.5 cm²

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#10

Warehouse question :)