$\boxed{10.4.5}$ a) Neither: circular bases b) Pyramid: one base, other sides are $\triangle$s.

c) prism: 2 congruent bases, other faces are ▱. d) Neither: This is a pyramid attached to a prism.

$\boxed{10.4.12}$ a) 10 lateral faces + 2 bases = 12 faces

20 vertices

So $V-E+F=2$ gives $E = V+F-2 = 12+20-2 = \boxed{30 \text{ edges}}$ (10 edge in each base + 10 connecting edges)

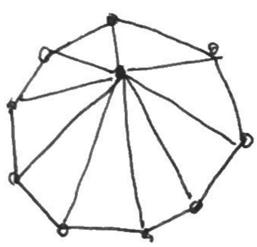
b) 4 lateral faces + base = 5 faces

8 edges

So $V-E+F=2$ gives $V = E-F+2 = 8-5+2 = \boxed{5 \text{ vertices}}$

c) 10 vertices, 18 edges. So $V-E+F=2$ gives $F = E-V+2 = 18-10+2 = \boxed{10 \text{ faces}}$

(Enneagonal Pyramid)



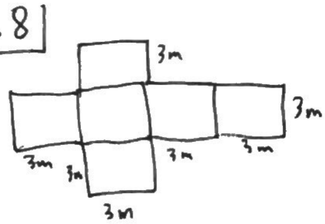
$\boxed{10.4.18}$ a) False. Only the bases of a triangular prism are triangular.

b) True. (Just check?)

c) False: The net of a dodecahedron is made up of regular pentagons.

d) True: It has 6 edges and since all of its faces are congruent equilateral triangles the edges are all congruent.

$\boxed{11.3.8}$

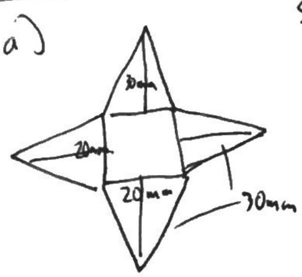


$SA = 6 \cdot \underbrace{3 \cdot 3}_{\text{area of 1 square}} = \cancel{\boxed{45 m^2}}$ $54 m^2$

↑ # of squares

$\boxed{11.3.10}$

a)

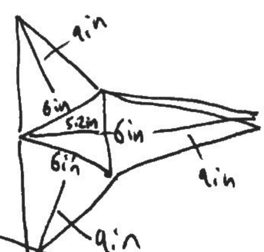


$SA = 4 \cdot \overbrace{\left(\tfrac{1}{2} \cdot 20 \cdot 30\right)}^{\triangle s} + \overbrace{20^2}^{\square}$

$= 1200 + 400$

$= \boxed{1600 \text{ mm}^2}$

b)

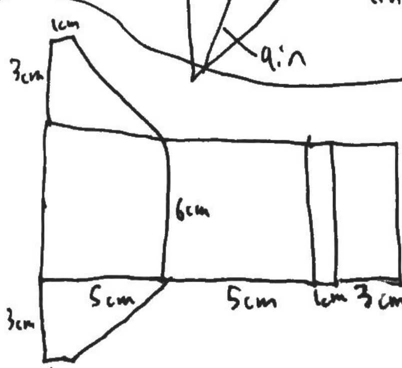


$SA = 3 \cdot \left(\tfrac{1}{2} \cdot 6 \cdot 9\right) + \tfrac{1}{2} \cdot 6 \cdot 5.2$

$= 81 + 15.6$

$= \boxed{96.6 \text{ in}^2}$

$\boxed{11.3.12}$



$SA = 5 \cdot 6 + 5 \cdot 6 + 1 \cdot 6 + 3 \cdot 6 + 2 \cdot \left(\tfrac{1}{2}(1+5) \cdot 3\right)$

$= 30 + 30 + 6 + 18 + 18$

$= \boxed{102 \text{ cm}^2}$

11.3.14 a) $S = 2lw + 2lh + 2wh$

$W = 4\text{ ft}$
$l = 2w = 8\text{ ft}$
$h = w = 4\text{ ft}.$

$= 2(8)(4) + 2(8)(4) + 2(4)(4)$
$= 64 + 64 + 32$
$= \boxed{160\text{ ft}^2}$

b) S = area of base + areas of lateral faces

$= 93.5\text{ cm}^2 + 6 \cdot (\tfrac{1}{2}\cdot 6\cdot 6)\text{ cm}^2$
6 faces, area of △.

$= 93.5\text{ cm}^2 + 108\text{ cm}^2$
$= \boxed{201.5\text{ cm}^2}$

11.3.16 a) False. Also need the area of the base. b) True. Each product lw, lh, wh decreases by a factor of 4, so their sum does also.

11.3.18

a) Area of pyramid: $4 \cdot \frac{1}{2} \cdot 3 \cdot 5 = 30\text{ m}^2$
(ignore base b/c not a surface face)
Area of prism: $3^2 + 4\cdot 7\cdot 3 = 93\text{ m}^2$
Total: $\boxed{123\text{ m}^2}$

b) Area of pyramid: $4 \cdot 3 \cdot 1 = 12\text{ m}^2$
Area of prism: $1\cdot 1.5\cdot 2 + 12\cdot 1.5\cdot 2 + 12\cdot 1 + 11\cdot 1$
$= 3 + 36 + 23$
$= 62\text{ m}^2$
Total area: 74 m^2

11.3.20

$SA = 176\text{ in}^2$
$= 8^2 + 4 \cdot \frac{1}{2}\, l \cdot 8$
$176 = 64 + 16l$
$16l = 112$
$\boxed{l = 7\text{ in}}$

11.3.33 a) It will have no effect, because the 3 faces that we removed are congruent to the 3 new faces.

b) The large cube has side length 6 in, the small cube 1 in. The new solid has 3 6x6 square faces and 3 6x6 − 1x1 faces and 3 1x1 faces $= 96\text{ in}^2$.

c) Yes.

11.3.34 a) $2\cdot(2\cdot 7 + 3\cdot 2 + 3\cdot 7) = 2(14 + 6 + 21) = 82\text{ cm}^2$

b) The new solid has two 2x3 faces, one 2x7 face, one 3x7 faces, one 3x7 − 1x3 face, one 2x7 − 3x1 face, two 3x1 faces, and 2 1x1 faces, for a total of 84 cm^2.

c) Increases it.

d) Here there are only 2 sides removed from the prism, so the 2 ends of the removed prism give 2 new sides, increasing the surface area.