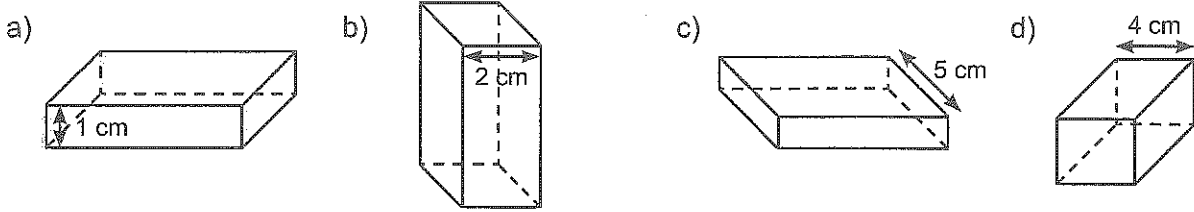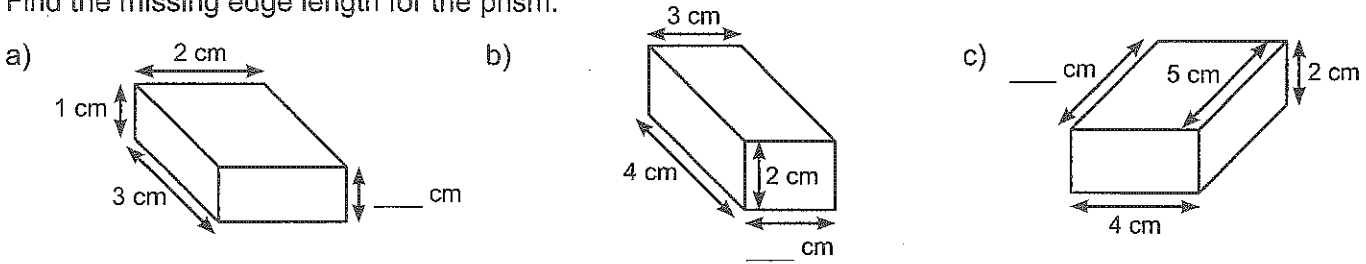Note: Pictures are not drawn to scale.
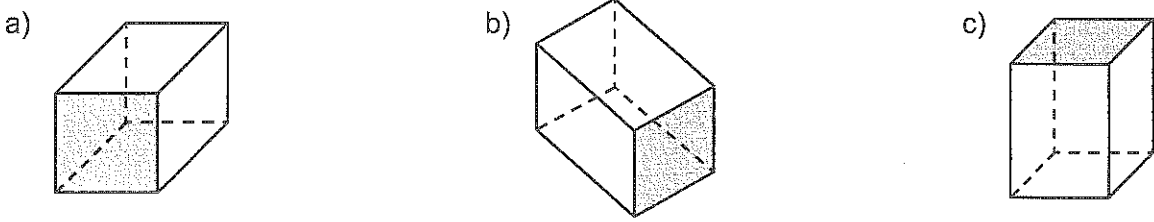
1. In each prism, shade all the edges that have the same length as the edge marked.

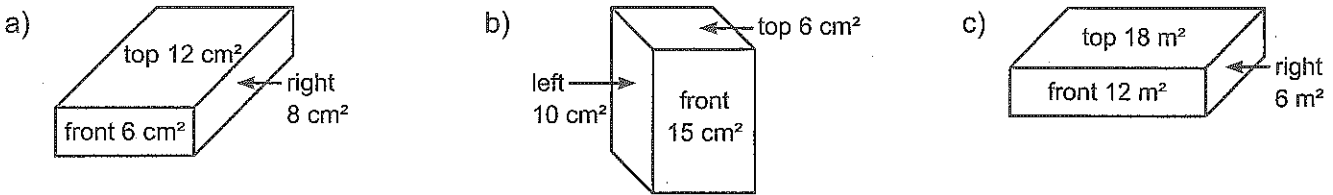a)   b)   c)   d)

2. Find the missing edge length for the prism.

a)   b)   c)

3. Shade the face that has the same area as the shaded face.

a)   b)   c)

4. The area of each visible face is given. What is the area of each hidden face?

a)

top 12 cm²
right 8 cm²
front 6 cm²

back _____

bottom _____

left _____

b)

top 6 cm²
left 10 cm²
front 15 cm²

back _____

bottom _____

right _____

c)

top 18 m²
right 6 m²
front 12 m²

back _____

bottom _____

left _____

5. Write the area of each visible face directly on the face. Then double each area to find the total area of each pair of congruent faces.
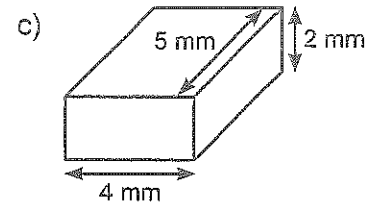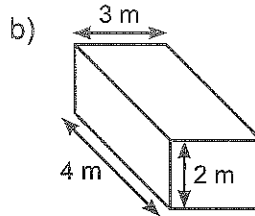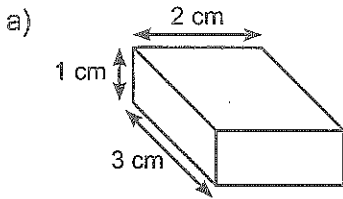
5 cm
top
right
2 cm
front 6 cm²
3 cm
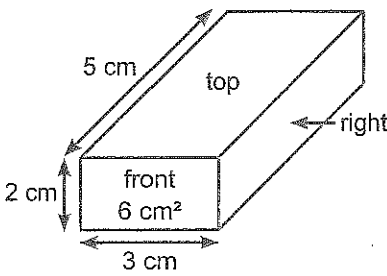
front + back = _6 cm² × 2_ = _12 cm²_

top + bottom = _____ = _____

_____ + _____ = _____ = _____

The **surface area** of a 3-D shape is the total area of all the faces of the shape.

6. Calculate the surface area of the prism.

a)

2 cm
1 cm
3 cm

b)

3 m
4 m
2 m

c)

5 mm
2 mm
4 mm

7. Miki calculates the surface area of the prism to be 40 cm². What did she do wrong?

4 cm
top
right
3 cm
front
4 cm
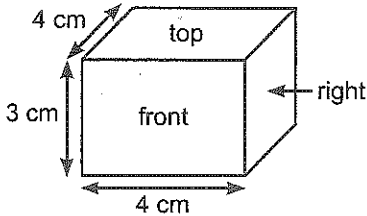
8. a) Alexandra says that she needs to find the area of only two faces of this prism to calculate the surface area. Is she correct? Explain.

b) What is the surface area of the prism?

8 cm
5 cm
8 cm
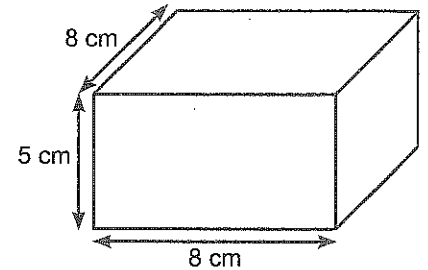
9. Write the name of each face of the prism on the net, then mark the length of each edge on the net.

a)

4 cm
top
right
1 cm
front
3 cm

4
right | 1
4

b)

5 m
3 m
4 m
4 m

c)

5 m
4 m
4 m
4 m
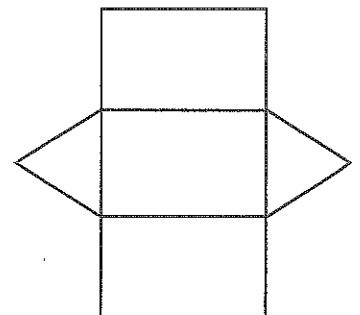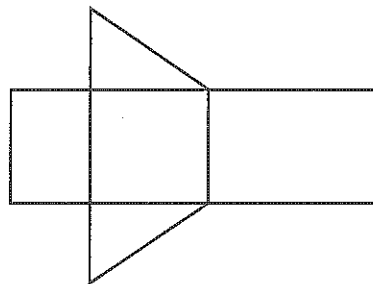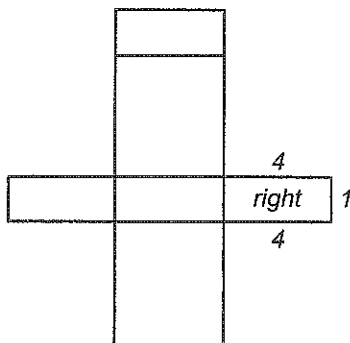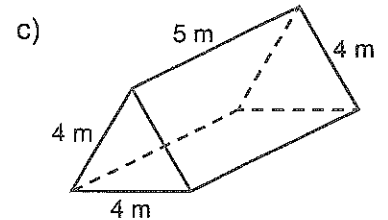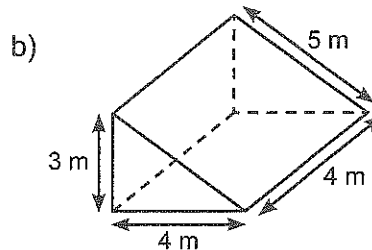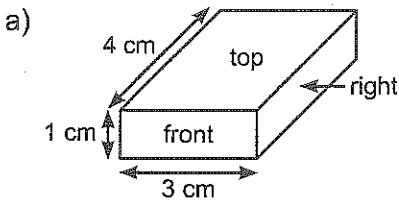
10. Find the surface area of each prism from Question 9. Include the units.

a) _____

b) _____

c) _____

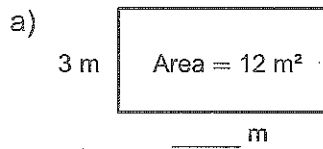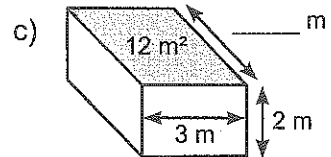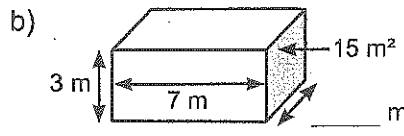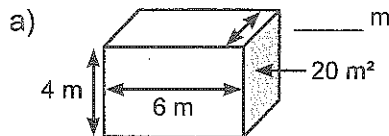How is the surface area of a prism related to the area of its net? Explain.

11. Find the missing length.

a)

3 m | Area = 12 m²

_____ m

b)

5 m

_____ m | Area = 15 m²

c)

2 m | Area = 14 m²

_____ m

12. Find the missing edge length.

a)

_____ m

4 m   6 m   20 m²

b)

15 m²

3 m   7 m   _____ m

c)

_____ m
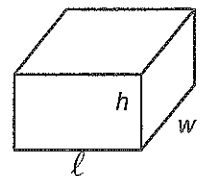
12 m²   3 m   2 m
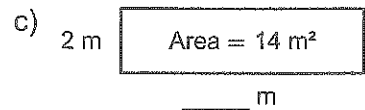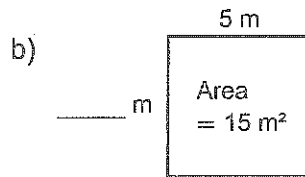
13. Edges *a*, *b*, and *c* have lengths that are whole numbers. The surface area of each face is written directly on the face. What are some possible lengths for edges *a*, *b*, and *c*? (Hint: Why can edge *a* not be 4 m long?)
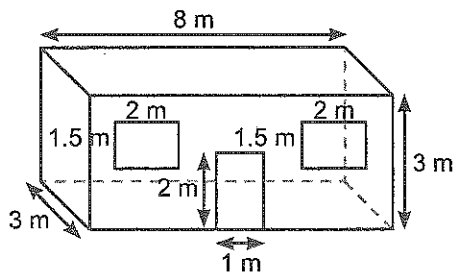
18 m²   *b*   6 m²
a
12 m²   *c*
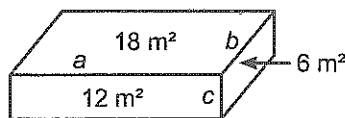
14. Write a formula for the surface area of the prism using the length (ℓ), width (*w*), and height (*h*).

h   *w* ℓ

15. Calculate the surface area of the prism. Be careful with the units!
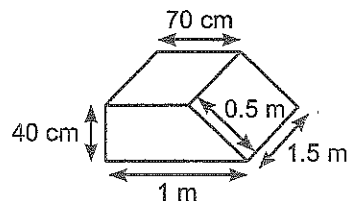
1 m   50 cm   40 cm
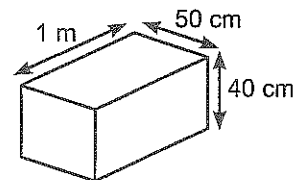
16. It costs $0.40 per square metre to paint a room. How much would it cost to paint the walls of this room (not including the door and windows)?

8 m

2 m   2 m
1.5 m   1.5 m
2 m   3 m
3 m
1 m

17. Look at the prism at right. It is not drawn to scale.

70 cm
0.5 m
40 cm   1.5 m
1 m

a) Draw a better sketch.
b) Find the volume and surface area of this prism.

18. a) Write a rule that tells you how to calculate the surface area of the figures from the figure number. (Each cube has length, width, and height 1 cm.)

b) Use your rule to predict the surface area of the 20th figure.

Figure 1   Figure 2   Figure 3