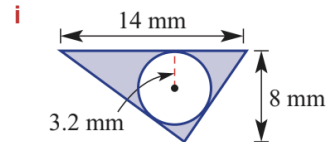
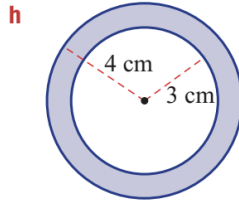
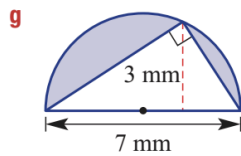
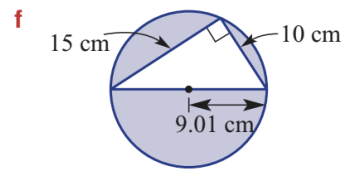
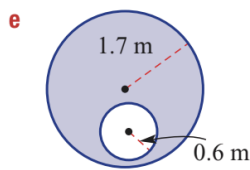
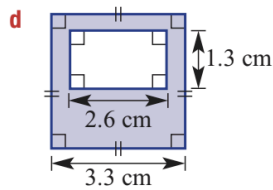
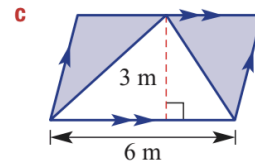
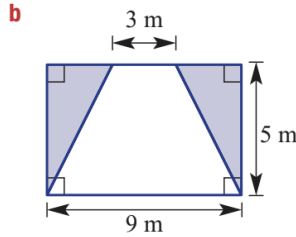
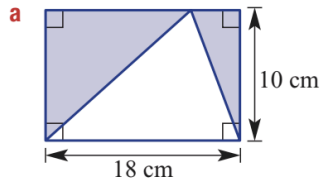


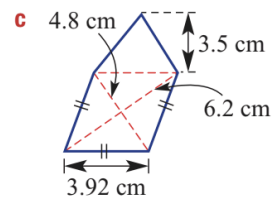
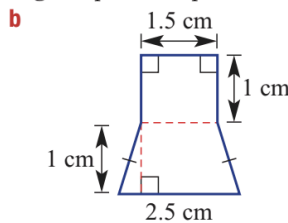
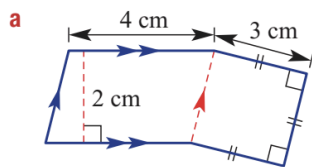
WALT
Success Criteria



9 Find the area of the shaded region of each of the following shapes by subtracting the area of the clear shape from the total area. Round to two decimal places where necessary.



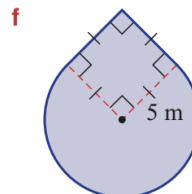
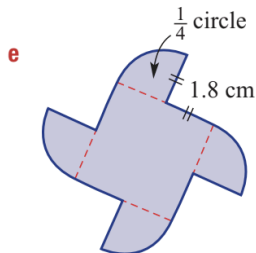
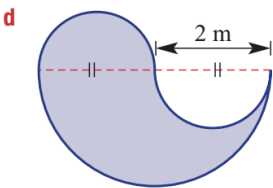
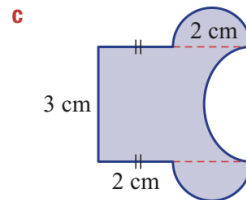
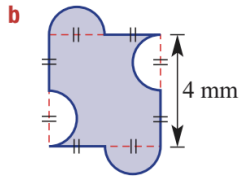
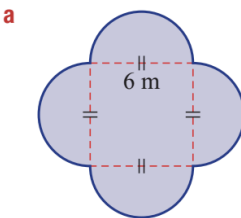
10 Find the area of each of the following composite shapes.



★ **Circular challenges**



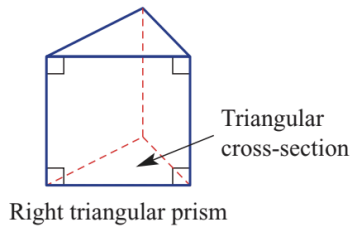
11 Find the perimeter and the area of each of the following composite shapes correct to two decimal places where necessary.



6.6 Surface area of prisms

Three-dimensional objects or solids have outside surfaces that together form the total surface area. Nets are very helpful for determining the number and shape of the surfaces of a three-dimensional object.

For this section we will deal with right prisms. A right prism has a uniform cross-section with two identical ends and the remaining sides are rectangles.



The Flatiron Building in New York City is the shape of a triangular prism.

- A **right prism** is a solid with a uniform cross-section and with remaining sides as rectangles.
 - Prisms are named by the shape of their cross-section.
- The nets for a rectangular prism (cuboid) and triangular prism are shown here.

Right prism
A solid with a uniform cross-section, and remaining sides are rectangles

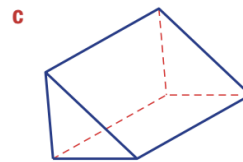
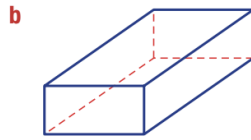
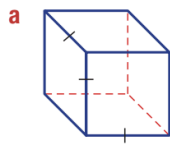
Solid	Net	TSA
Rectangular prism 		$\text{TSA} = 2(lw) + 2(lh) + 2(hw)$
Triangular prism 		$\text{TSA} = l_1 w_1 + l_2 w_2 + l_3 w_3 + 2 \times \frac{1}{2} bh$

Exercise 6F

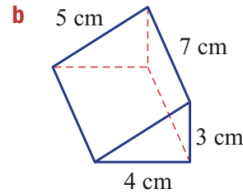
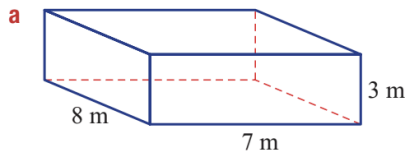
Understanding

- 1 How many faces do the following solids have?
a rectangular prism **b** cube **c** triangular prism

- 2 Draw a suitable net for these prisms and name each solid.



- 3 Copy and complete the working to find the surface area of these solids.



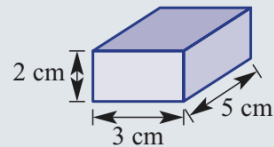
$$\begin{aligned} \text{TSA} &= 2 \times (8 \times 7) + 2 \times (8 \times _) + 2 \times (_ \times _) \\ &= _ + _ + _ \\ &= _ \text{ m}^2 \end{aligned}$$

$$\begin{aligned} \text{TSA} &= 2 \times \frac{1}{2} \times 4 \times _ + 5 \times 7 + 4 \times _ + _ \times _ \\ &= _ + _ + _ + _ \\ &= _ \text{ cm}^2 \end{aligned}$$

Fluency

Example 14 Finding a total surface area of a rectangular prism

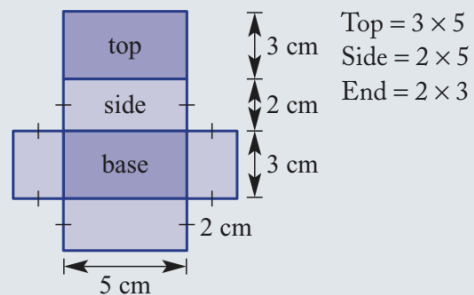
Find the total surface area of this rectangular prism.



Solution

$$\begin{aligned} \text{TSA} &= 2 \times (5 \times 3) + 2 \times (5 \times 2) + 2 \times (2 \times 3) \\ &= 30 + 20 + 12 \\ &= 62 \text{ cm}^2 \end{aligned}$$

Explanation

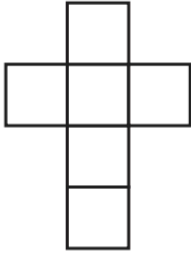


- 9 **a** 90 cm^2 **b** 15 m^2 **c** 9 m^2
d 7.51 cm^2 **e** 7.95 m^2 **f** 180.03 cm^2
g 8.74 mm^2 **h** 21.99 cm^2 **i** 23.83 mm^2
10 **a** 17 cm^2 **b** 3.5 cm^2 **c** 21.74 cm^2
11 **a** $37.70 \text{ m}, 92.55 \text{ m}^2$ **b** $20.57 \text{ mm}, 16 \text{ mm}^2$
c $18.00 \text{ cm}, 11.61 \text{ cm}^2$ **d** $12.57 \text{ m}, 6.28 \text{ m}^2$
e $25.71 \text{ cm}, 23.14 \text{ cm}^2$ **f** $33.56 \text{ m}, 83.90 \text{ m}^2$

Exercise 6F

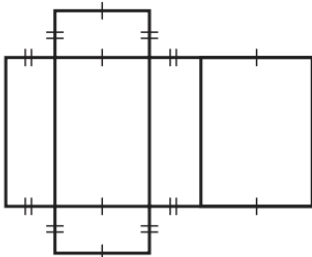
1 a 6 b 6 c 5

2 a



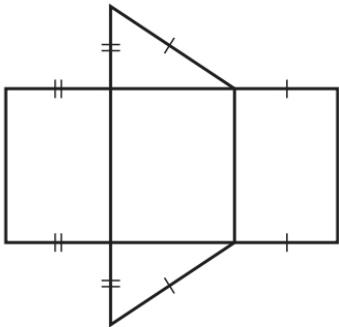
Cube

b



Rectangular prism

c



Triangular prism

$$\begin{aligned} 3 \text{ a } \text{TSA} &= 2 \times 8 \times 7 + 2 \times 8 \times 3 + 2 \times 7 \times 3 \\ &= 112 + 48 + 42 \\ &= 202 \text{ m}^2 \end{aligned}$$

$$\begin{aligned} \text{b } \text{TSA} &= 2 \times \frac{1}{2} \times 4 \times 3 + 5 \times 7 + 4 \times 7 + 3 \times 7 \\ &= 12 + 35 + 28 + 21 \\ &= 96 \text{ cm}^2 \end{aligned}$$

4 a 52 m^2 b 242 cm^2 c 76 m^2

d 192 cm^2 e 68.16 m^2 f 85.76 m^2

5 a 96 cm^2 b 240 m^2

c 199.8 cm^2 d 238 cm^2

6 6 m^2

7 14.54 m^2

8 $34\,000 \text{ cm}^2$

9 a 44.4 m^2 b 4.44 L

10 a $[6, 10, 14, 18, 22, 26, 30, 34, 38]$

b $S = 4n + 2$

c 402

11 a 39 mm^2 b 224 cm^2 c 9.01 m^2