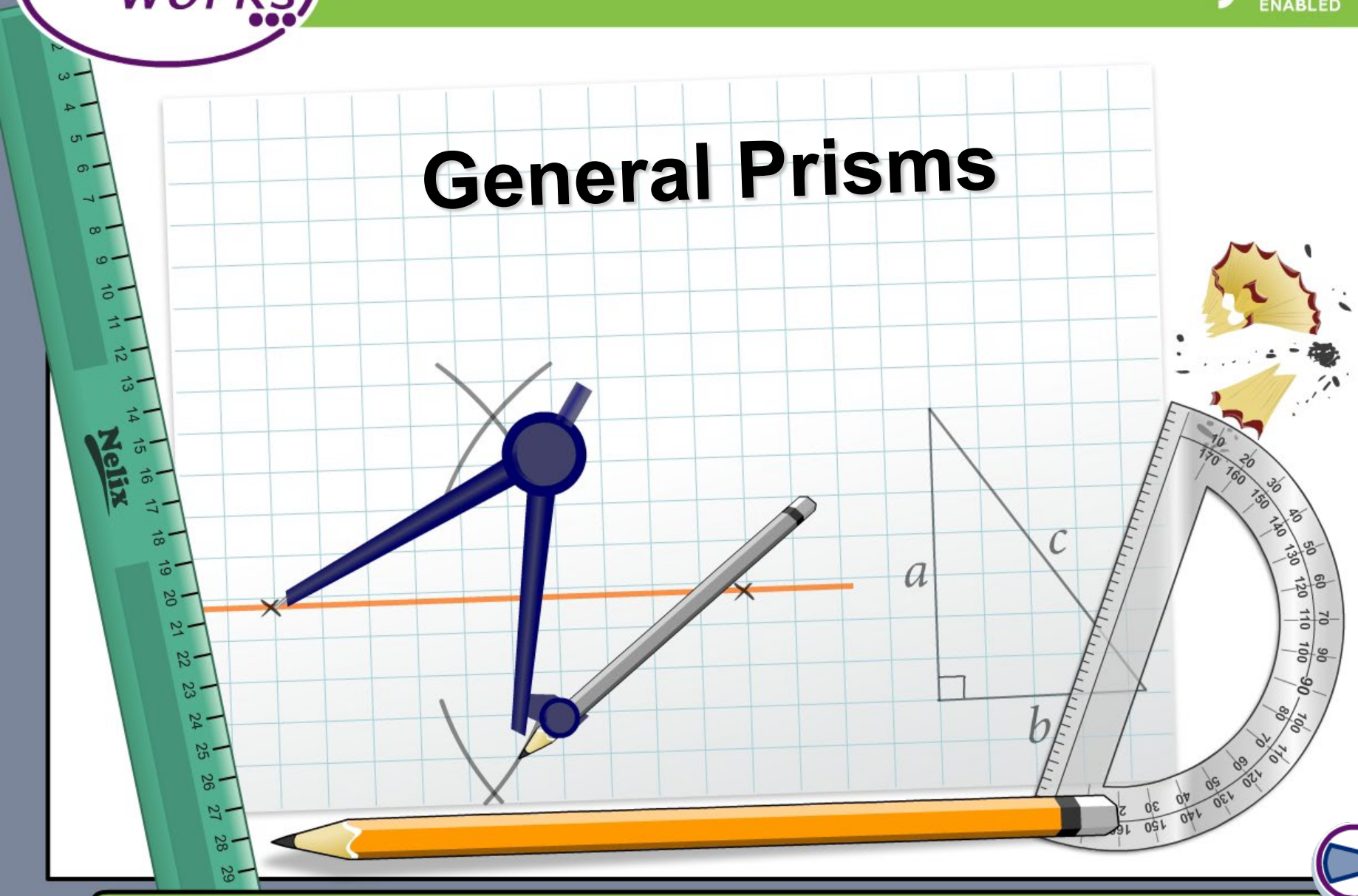
General Prisms



Information

Common core icons

This icon indicates a slide where the Standards for Mathematical Practice are being developed. Details of these are given in the Notes field.

Slides containing examples of mathematical modeling are marked with this stamp.

This icon indicates an opportunity for discussion or group work.

The **Standards for Mathematical Practice** outlined in the Common Core State Standards for Mathematics describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.

These are:

1) Make sense of problems and persevere in solving them.

2) Reason abstractly and quantitatively.

3) Construct viable arguments and critique the reasoning of others.

4) Model with mathematics.

5) Use appropriate tools strategically.

6) Attend to precision.

7) Look for and make use of structure.

8) Look for and express regularity in repeated reasoning.

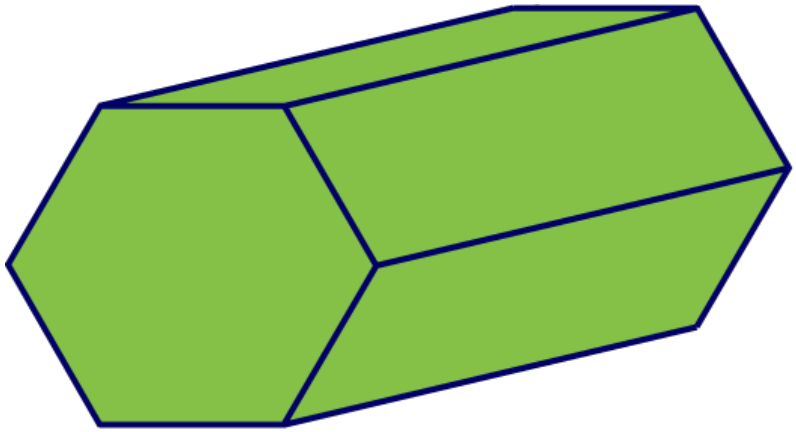
This icon indicates that the slide contains activities created in Flash. These activities are not editable.

This icon indicates teacher's notes in the Notes field.

Prisms

A **prism** is a polyhedron with two congruent faces, called **bases**, that lie in parallel planes. The other faces, called lateral faces, are rectangles formed by connecting the corresponding vertices of the bases.

This is called a hexagonal prism because its cross-section is a hexagon.

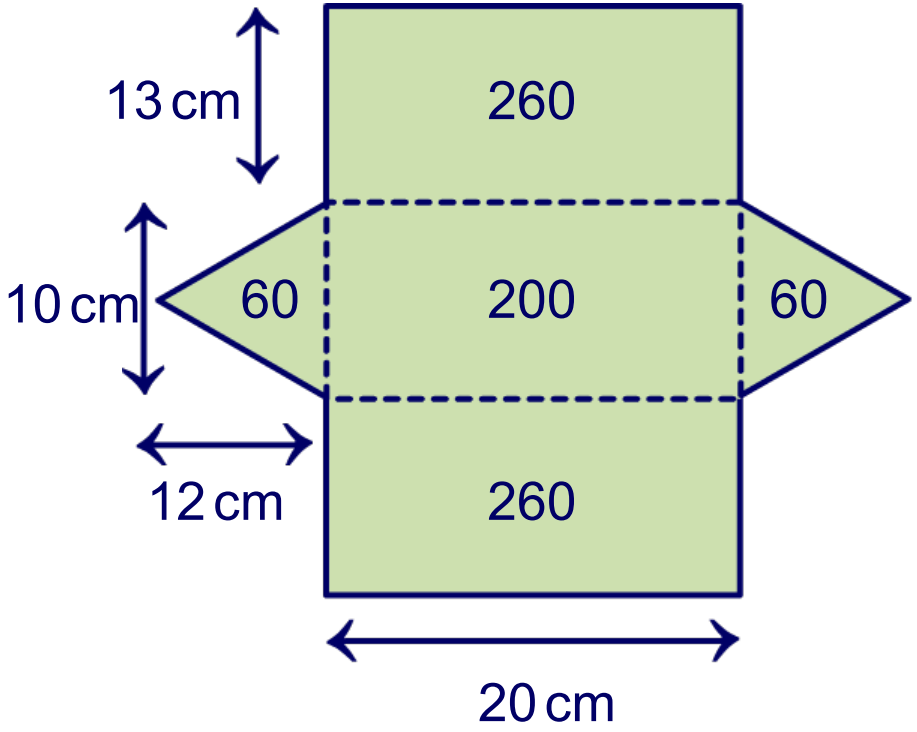


A prism has the same cross-section throughout its length.

Surface area of a prism

Below is the net of a triangular prism.

What is its surface area?



Find the area of each face, then write it in the diagram of the net.

area of triangles:

$$\text{triangles} = \frac{1}{2} \times 10 \times 12$$

$$\text{triangles} = 60$$

area of rectangles:

$$\text{sides} = 13 \times 20$$

$$\text{sides} = 260$$

$$\text{base} = 10 \times 20$$

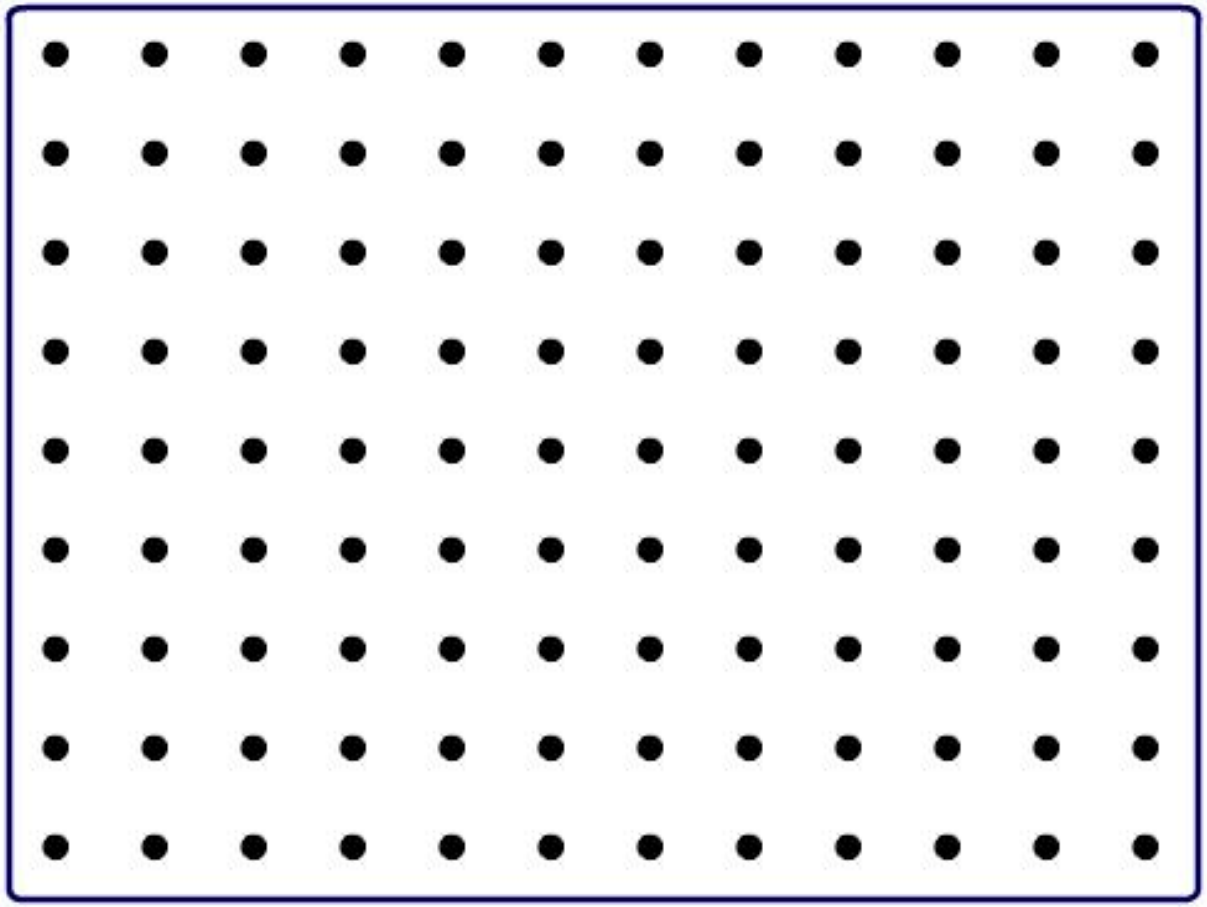
$$\text{base} = 200$$

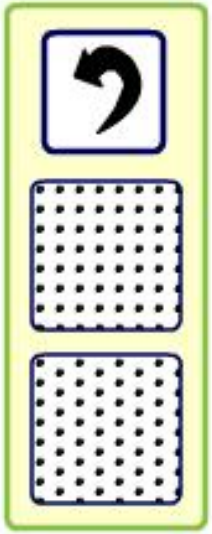
add surface area of each face:

$$60 + 60 + 200 + 260 + 260$$

840 cm²

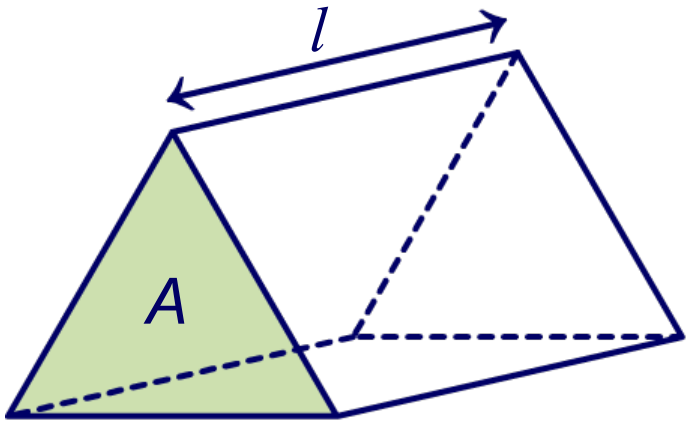
Finding surface area from a net

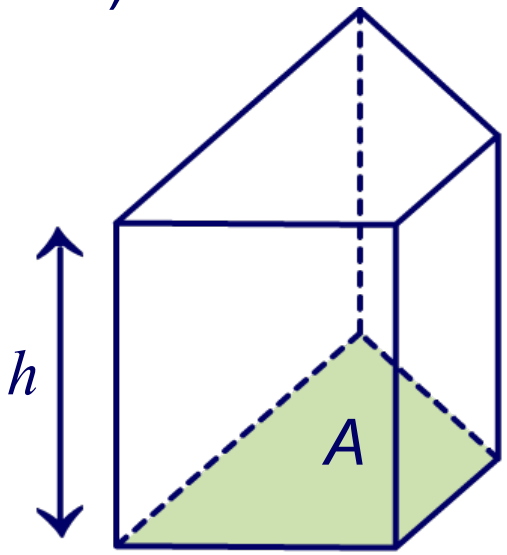




Volume of a prism

The volume of a prism is found by multiplying the area of its cross-section A by the length l of its lateral face (or by its height if it is standing on its cross-section).





$V = Al$

$V = Ah$

Volume of a prism

What are the volumes of these prisms?

Area of cross-section

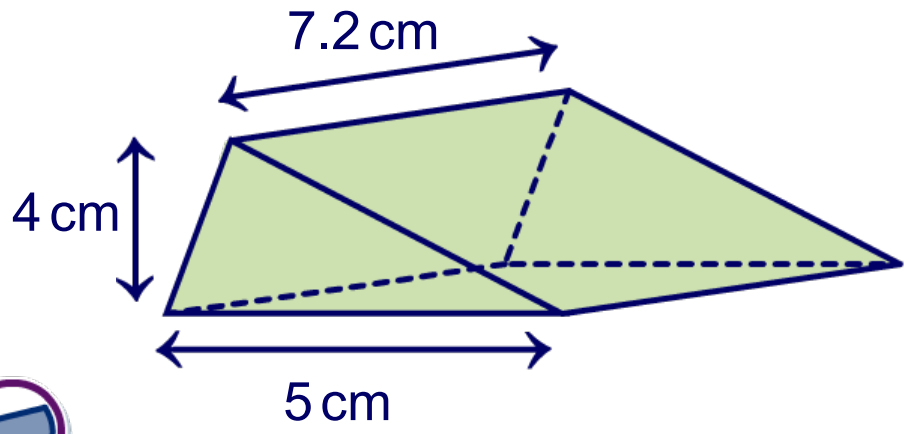
$= 0.5 \times 5 \times 4$

$= 10\,\text{cm}^2$

Volume of prism

$= 10 \times 7.2$

$= \mathbf{72\,cm^3}$



Area of cross-section

$= (7 \times 12) - (4 \times 3)$

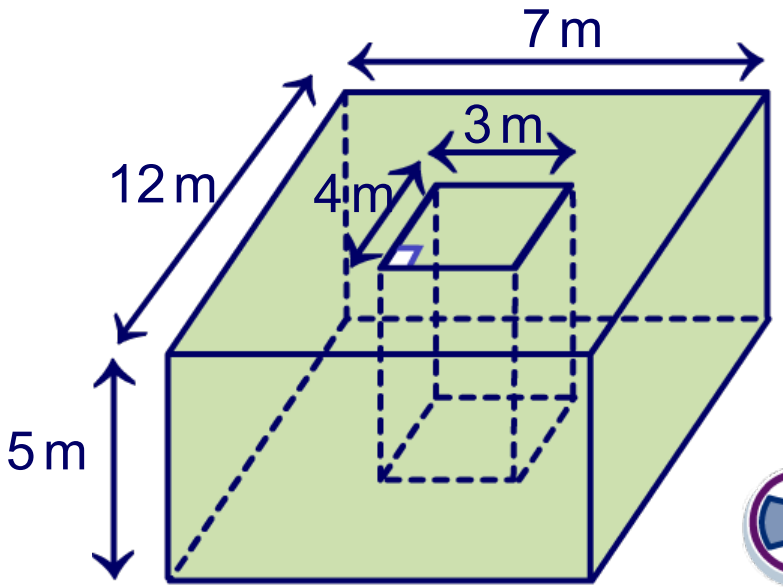
$= 84 - 12$

$= 72\,\text{m}^2$

Volume

$= 72 \times 5$

$= \mathbf{360\,m^3}$

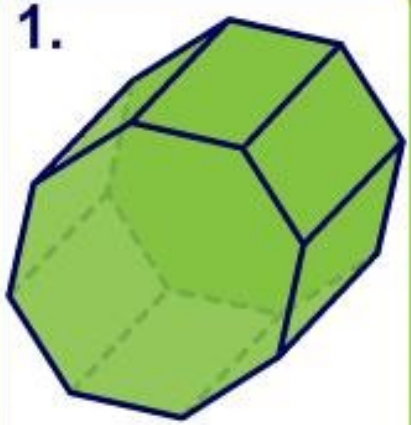


Naming prisms

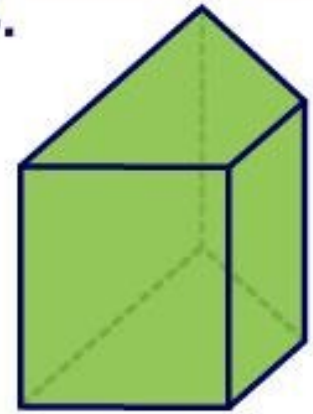
Match the prism with its image

octagonal prism	pentagonal prism	triangular prism	irregular rectangular prism

1.



4.



3.

2.