

Student Name

Mathematics Stage 4

VOLUME

Book 1 Describe the different views of prisms and solids that have been formed from prism combinations

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OVERVIEW

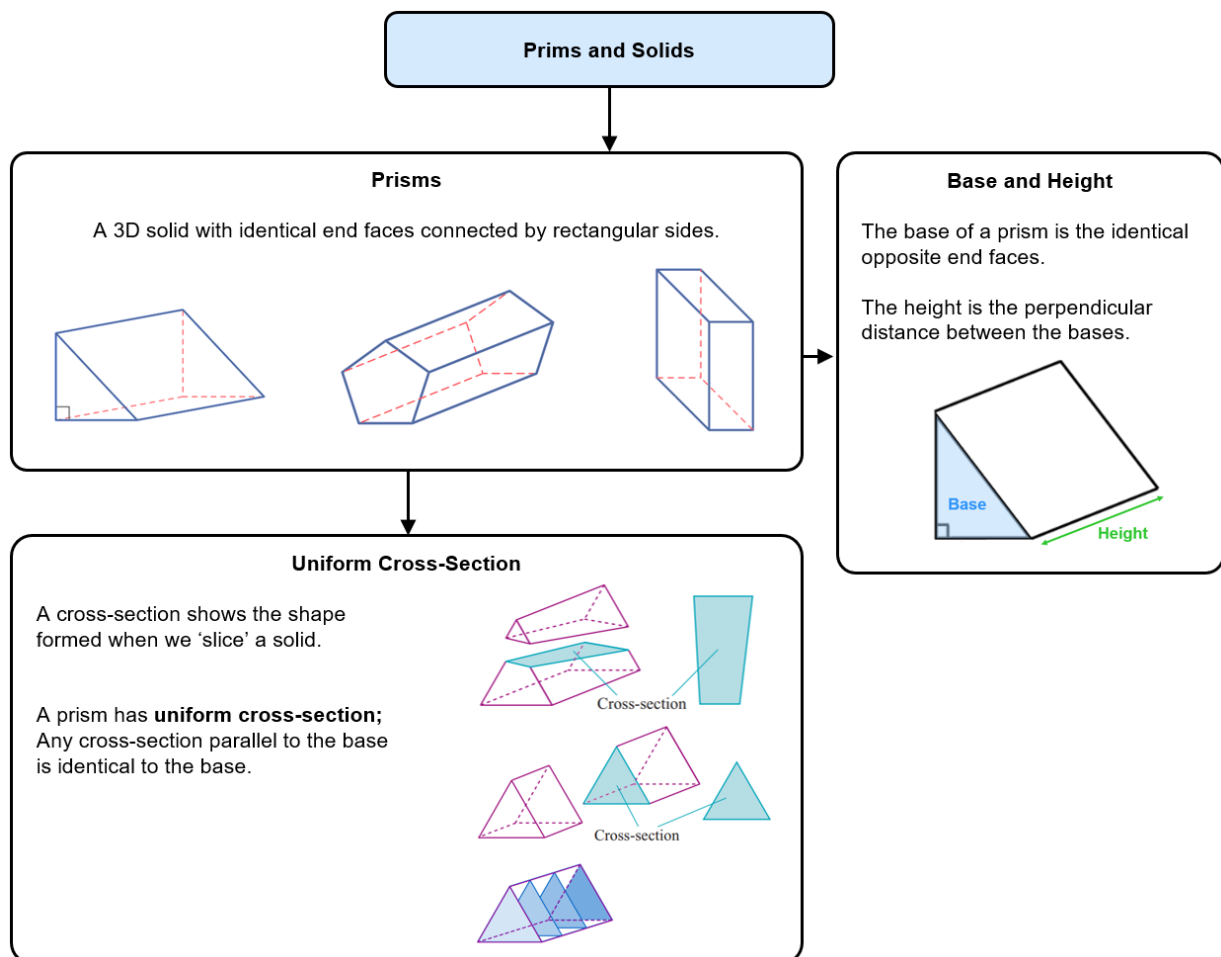
SYLLABUS CONTENT

MA4-VOL-C-01 applies knowledge of volume and capacity to solve problems involving right prisms and cylinders

Describe the different views of prisms and solids that have been formed from prism combinations

- Represent prisms from different views in 2 dimensions, including top, side, front and back views
- Describe and illustrate solids formed from prism combinations from different views in 2 dimensions, including top, side, front and back views
- Identify and illustrate the cross-sections of different prisms
- Examine the idea that prisms have a uniform cross-section that is equal to the base area
- Determine if a particular solid has a uniform cross-section

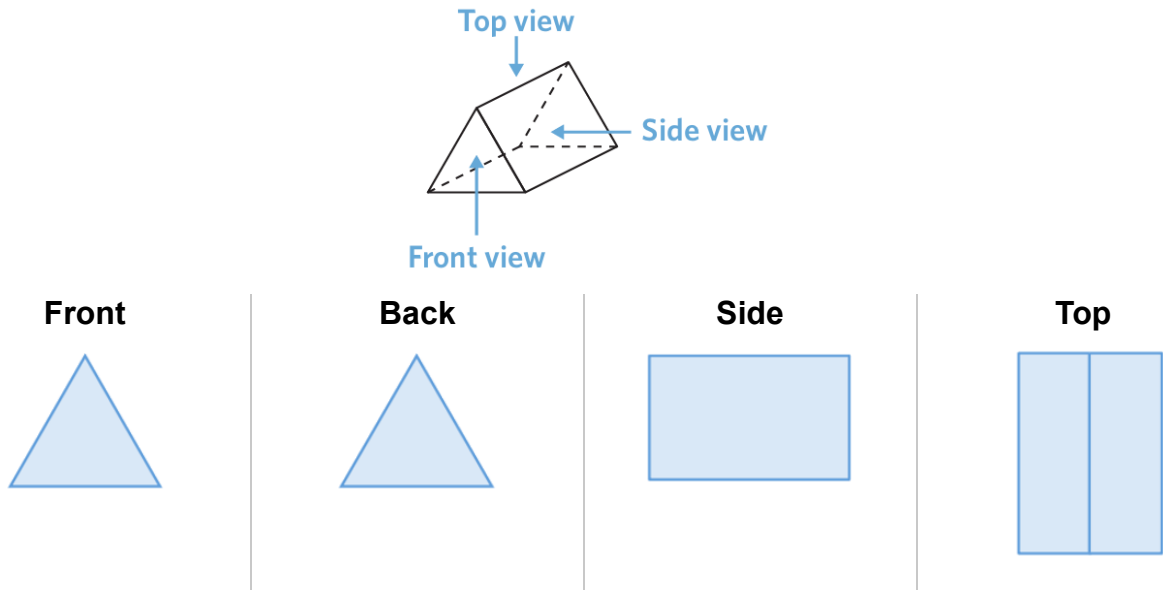
SUMMARY



DRAWING PRISMS

Example Draw the top, side, front, and back view of a simple prism.

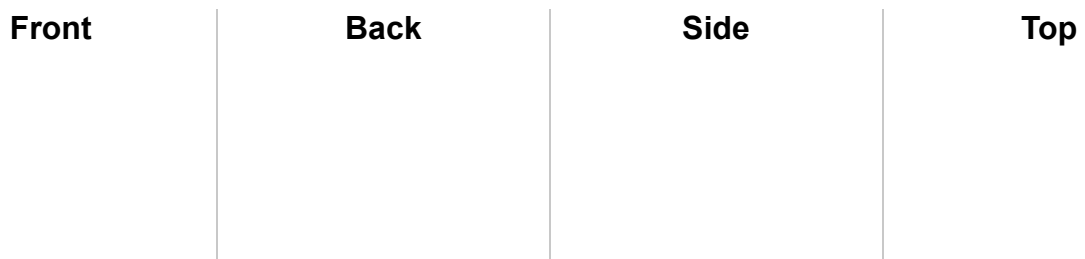
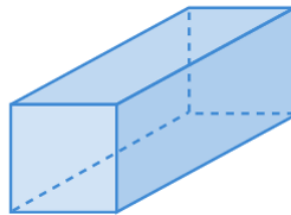
Sketch the top, side, front, and back view of this prism.



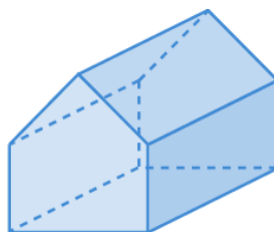
For a prism, should the front and back views be the same?

Sketch the front, back, side, and top views of these prisms.

a

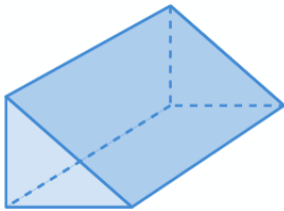


b



1 Sketch the front, back, side, and top views of these prisms.

a



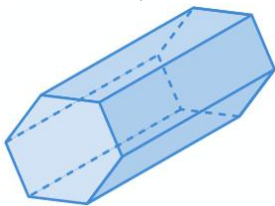
Front

Back

Side

Top

b



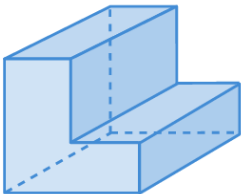
Front

Back

Side

Top

c



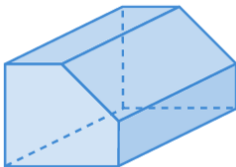
Front

Back

Side

Top

d



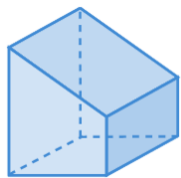
Front

Back

Side

Top

e



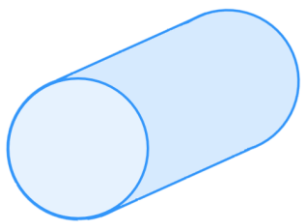
Front

Back

Side

Top

f



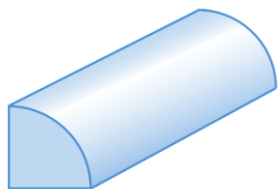
Front

Back

Side

Top

g



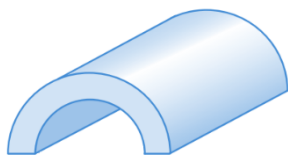
Front

Back

Side

Top

h



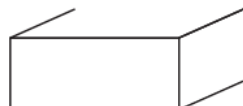
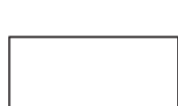
Front

Back

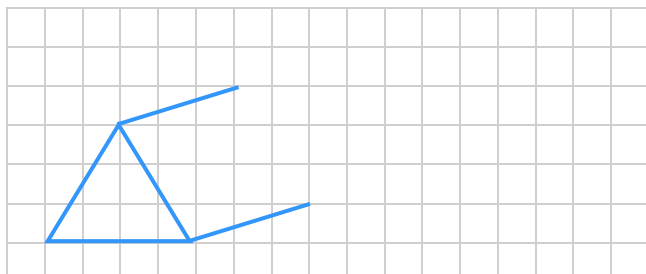
Side

Top

- 2 Consider the example of how to sketch a rectangular prism and sketch these prisms.



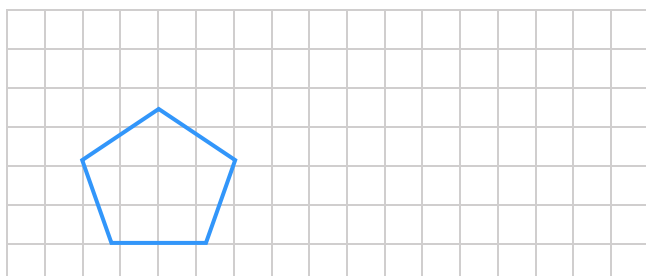
a Triangular Prism



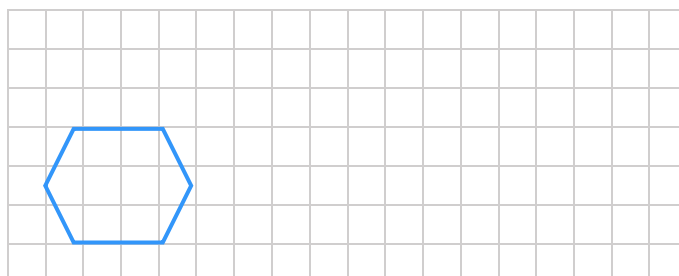
b Cube



c Pentagonal Prism

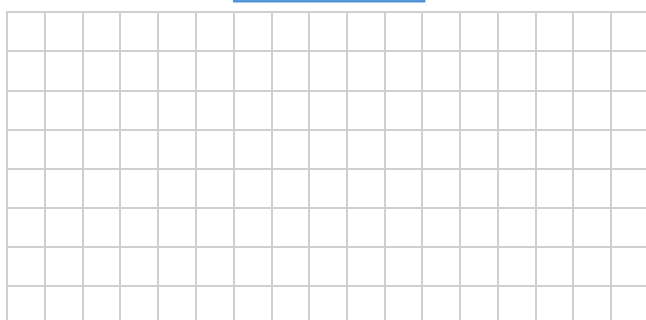
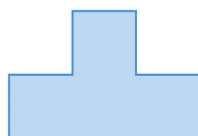


d Hexagonal Prism



- 3 Sketch a prism with the following front and back faces:

a



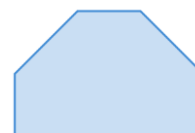
b



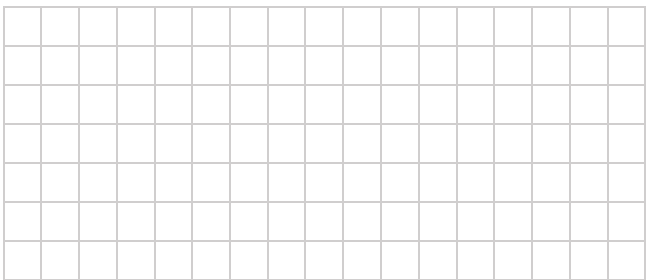
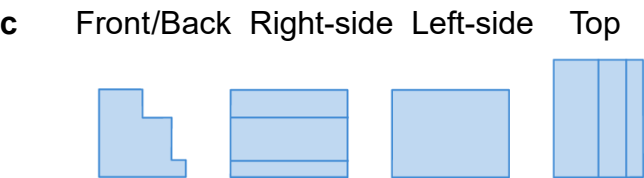
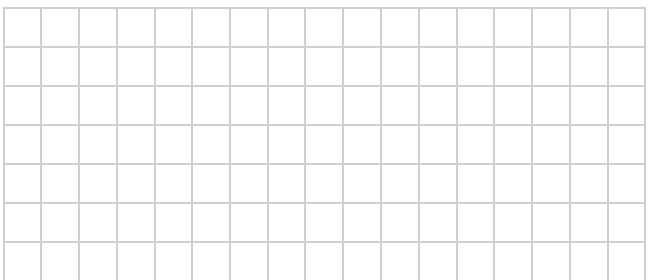
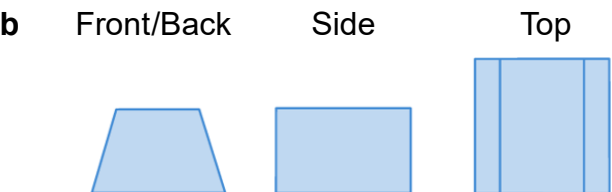
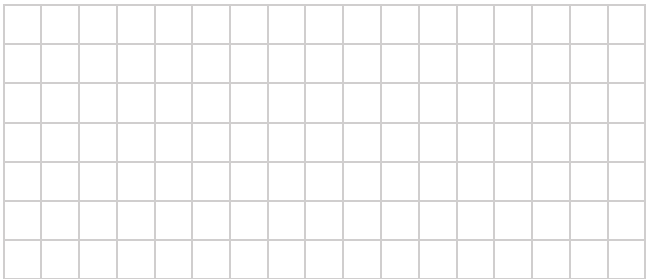
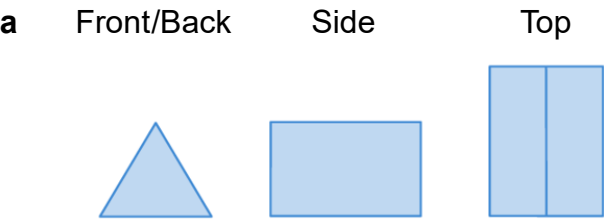
c



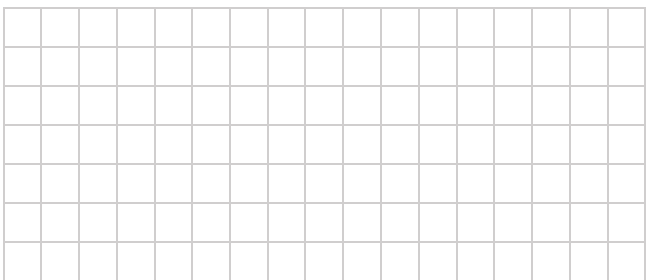
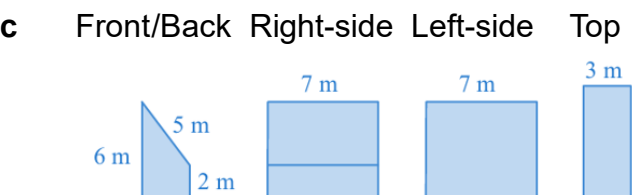
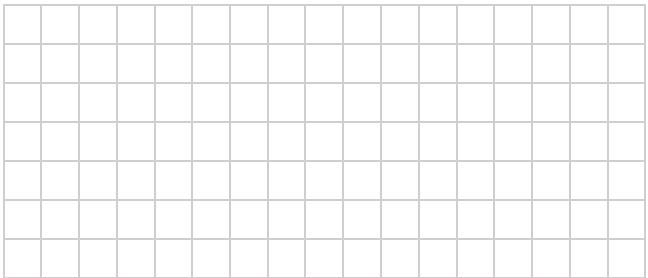
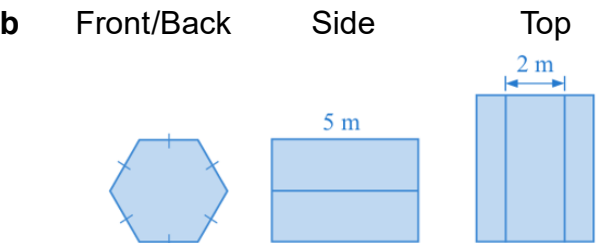
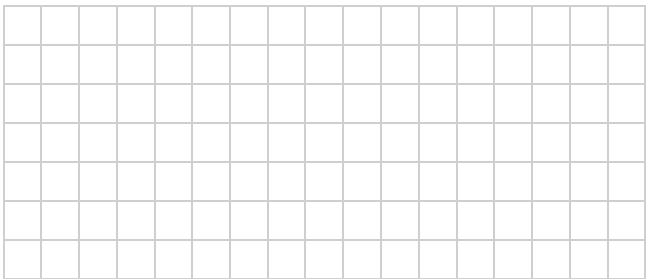
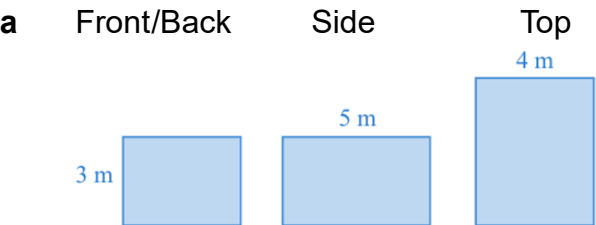
d



4 Sketch these prisms using the given faces.



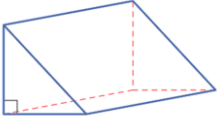
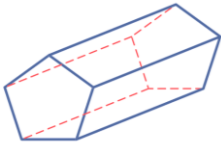
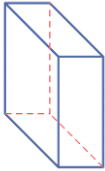
5 Sketch these prisms using the given faces and label the dimensions.



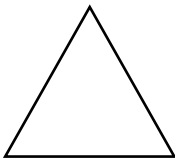
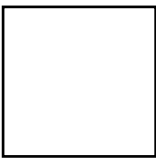
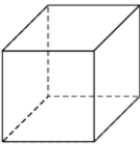
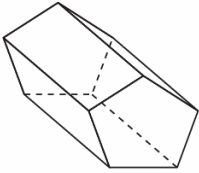
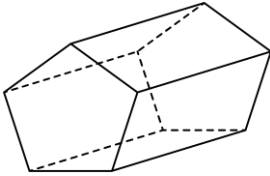
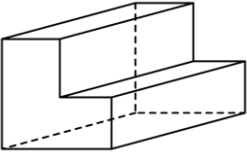
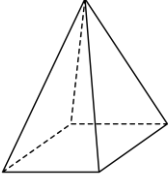
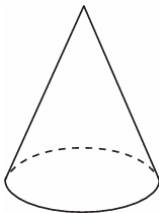
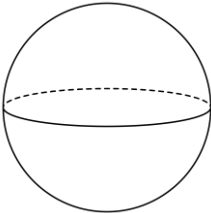
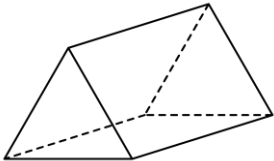
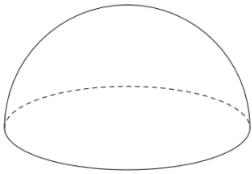
CROSS-SECTION OF A PRISM

PRISMS

- A **prism** is a type of 3D solid with identical opposite end faces connected by rectangular sides.
- The **base of a prism** is the identical opposite end faces.
- The **height of a prism** is the perpendicular distance between the bases.
- We name prisms based on the shape of their base.

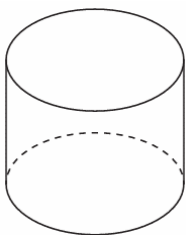
Triangular Prism	Pentagonal Prism	Rectangular Prism
		

Example Identify prisms.

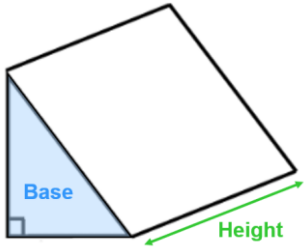
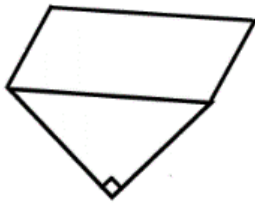
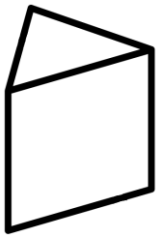
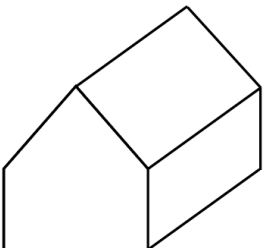
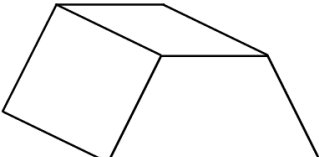
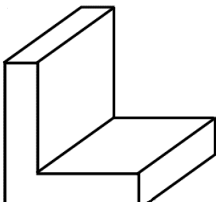
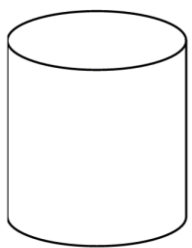
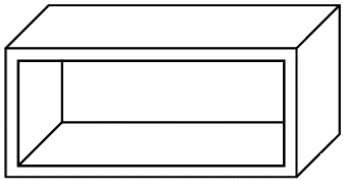
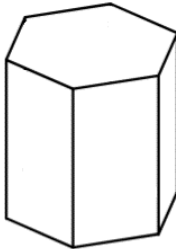
Identify whether these are prisms or not.			
a 	b 	c 	d 
e 	f 	g 	h 
i 	j 	k 	l 

The base a prism must be a polygon; a polygon has straight sides.

Explain why a cylinder is **not** a prism.

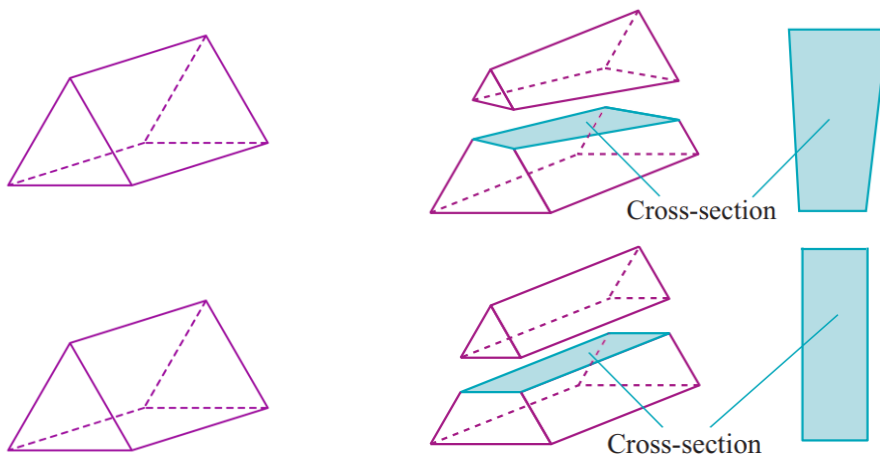


Example Label the base and height of solids with uniform cross-section.

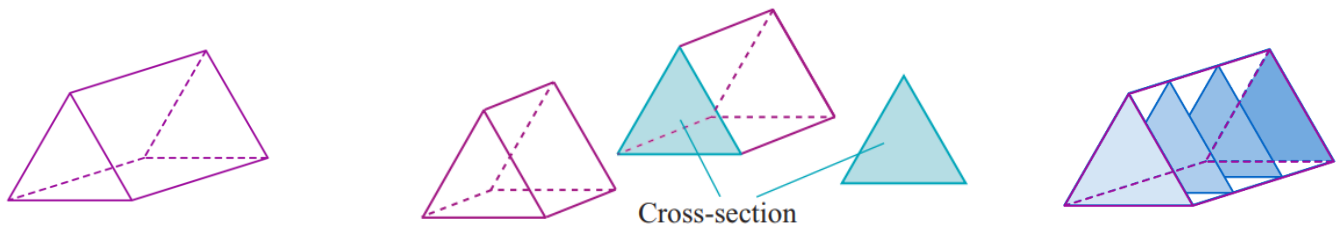
a 	b 	c 
d 	e 	f 
g <i>cylinders are not prisms.</i> 	h 	i 

CROSS-SECTION OF A PRISM

- A **cross-section** shows the shape formed when we 'slice' a solid.

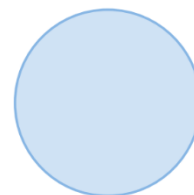
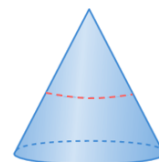
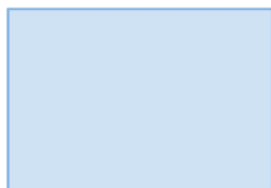


- A prism has **uniform cross section**;
any cross section **parallel** to the base is identical to the base.



Example Draw the cross section of a solid.

Draw the cross section parallel to the base.



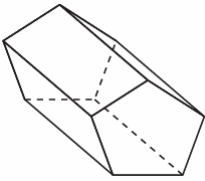
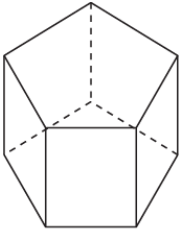
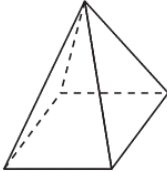
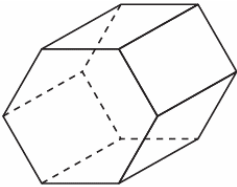
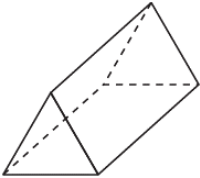
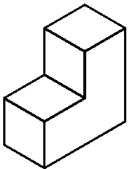
By referring to uniform cross sections, explain why the left solid is a prism.

.....

Explain why the right solid is not a prism.

.....

Draw the cross section parallel to the base, then determine whether these are prisms.

	Solid	Cross-section parallel to base	Prism?
a			
b			
c			
d			
e			
f			
g			

Key ideas

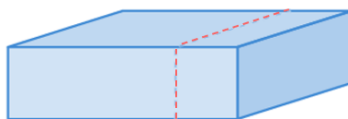
1. A prism is a-dimensional solid with identical faces connected by sides.
2. A - of a solid is the shape formed from “.....” the object.
3. A prism has cross-section; slices to the base are identical to the base.

1 Draw the cross-section along the dotted line.

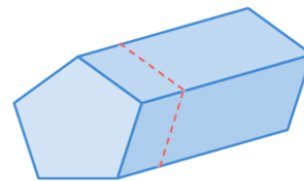
a



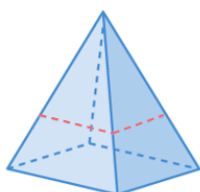
b



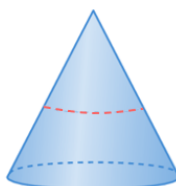
c



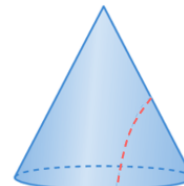
d



e

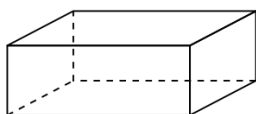


f



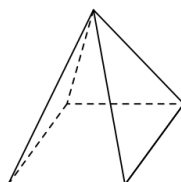
2 Decide whether these solids have uniform cross-section parallel to the base.

a



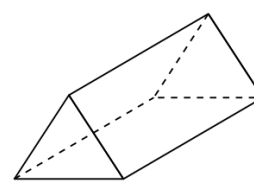
yes

b



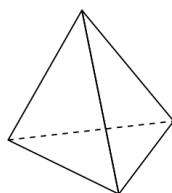
no

c



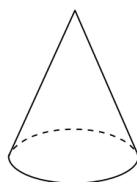
yes

d



no

e



no

f



yes

g



no

h



no

i



yes

j



yes

k



yes

l



no