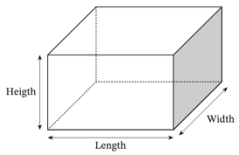
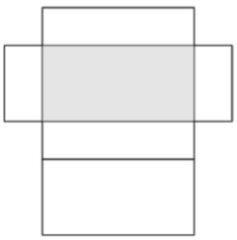
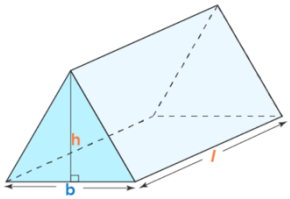
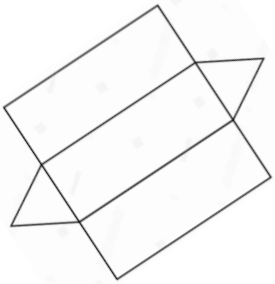
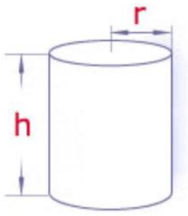
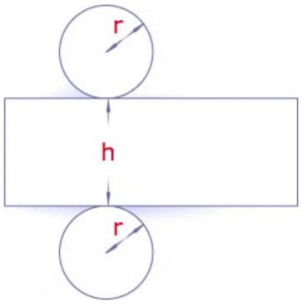
Math 9 Adapted LG 5 – Nets & Area of 3D objects

Expectation 1 – Drawing Nets of 3D Objects

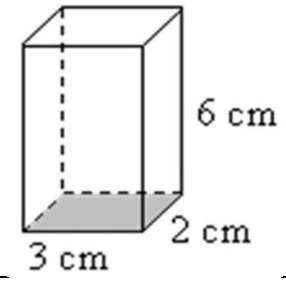
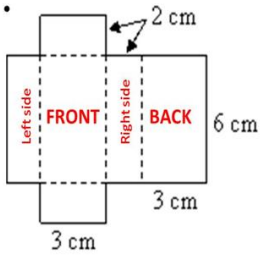
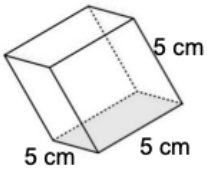
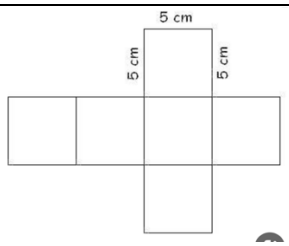
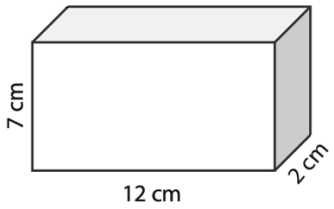
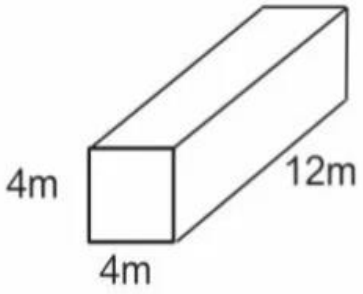
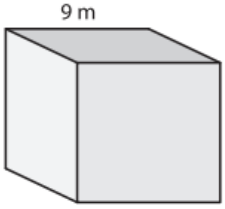
Nets are 2D versions of 3D objects. Imagine if you had a box and you cut it at the edges so that it could lie flat. The squished box would be a net.

Object	3D	Net	Real life examples
Rectangular Prism			
Triangular Prism			
Cylinder			

Complete the chart below

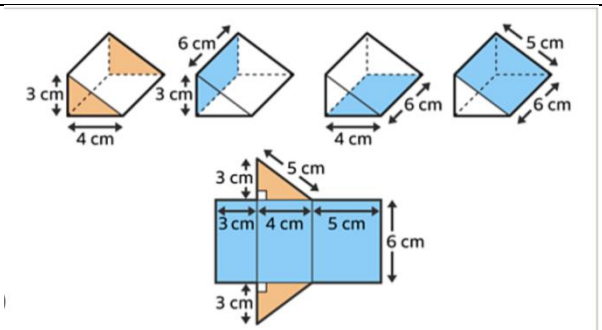
Object	Number and type (rectangle/triangle/circle) of faces
Rectangular Prism	
Triangular Prism	
Cylinder	

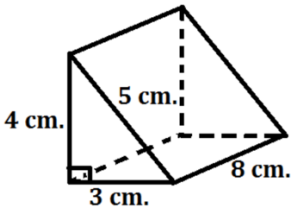
Complete the chart: Draw and label the net for the 3D images shown

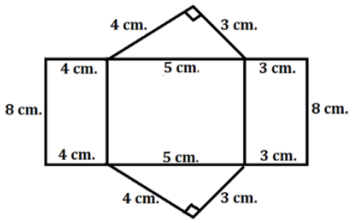
	
	
	
	
	

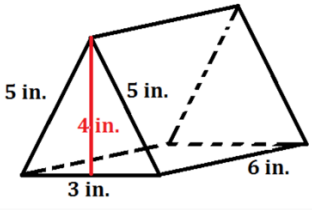
TRIANGULAR PRISMS

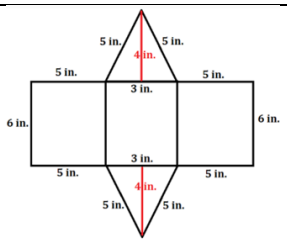
Creating nets from 3D images

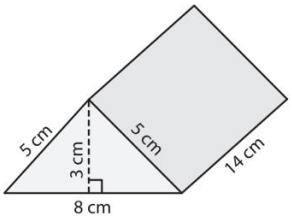


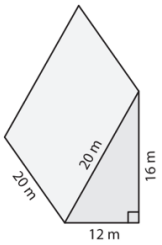


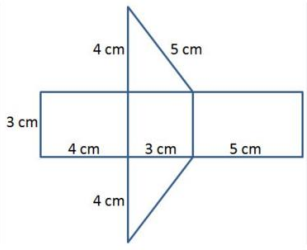






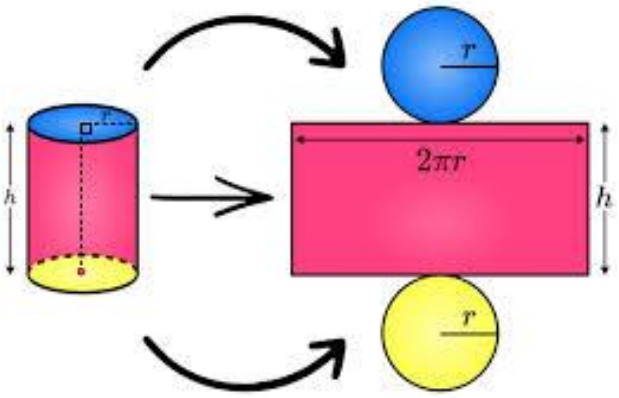


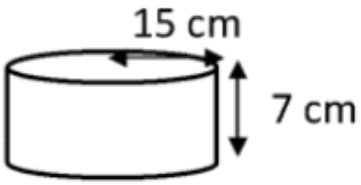


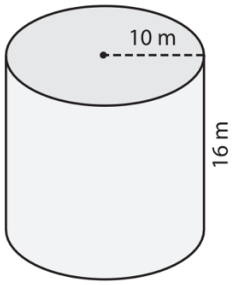


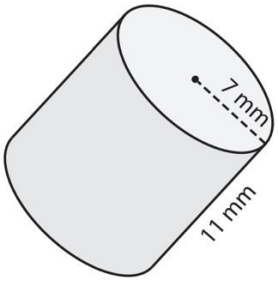
CYLINDERS

Creating nets from 3D images









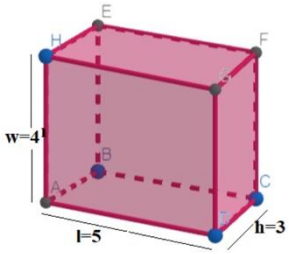
The width of the rectangle is the same as the circumference of the circle for each cylinder.

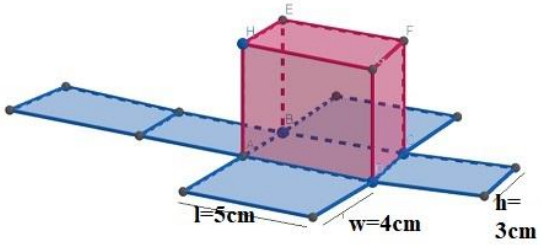
Circumference of a circle = 2πr

Calculate the width of the rectangles above and add to your diagram:

2 x π x _15_ = 2 x π x _____ = 2 x π x _____ =

Expectation 2 – Calculating the Area of 3D Objects



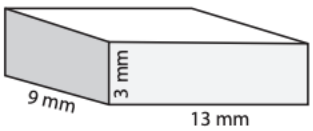


Front & back (LxWx2)	
Side & side	
Top & Bottom	
Total	

Practice:

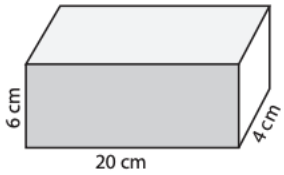
Find the surface area of each rectangular prism.

1)



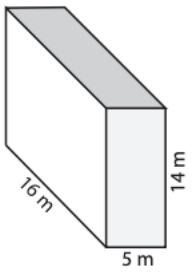
Front & back (LxWx2)	
Side & side	
Top & Bottom	
Total	

2)



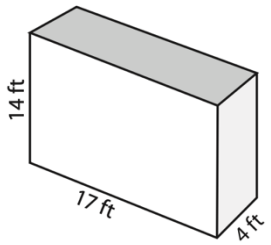
Front & back (LxWx2)	
Side & side	
Top & Bottom	
Total	

3)



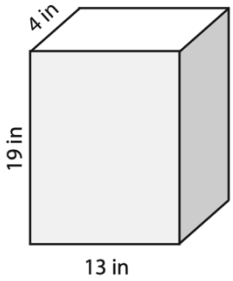
Front & back (LxWx2)	
Side & side	
Top & Bottom	
Total	

4)



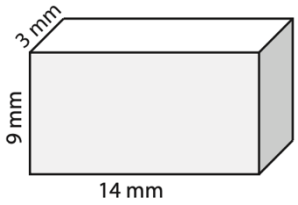
Front & back (LxWx2)	
Side & side	
Top & Bottom	
Total	

5)



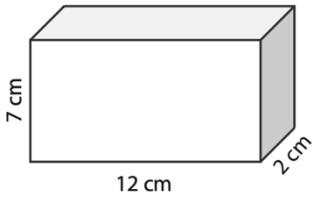
Front & back (LxWx2)	
Side & side	
Top & Bottom	
Total	

6)



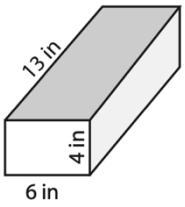
Front & back (LxWx2)	
Side & side	
Top & Bottom	
Total	

7)



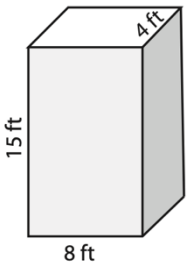
Front & back (LxWx2)	
Side & side	
Top & Bottom	
Total	

8)



Front & back (LxWx2)	
Side & side	
Top & Bottom	
Total	

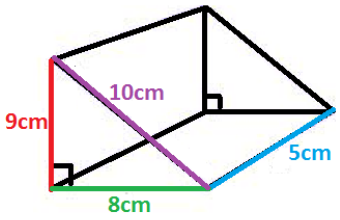
9)



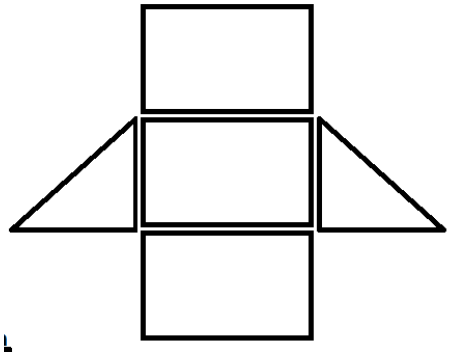
Front & back (LxWx2)	
Side & side	
Top & Bottom	
Total	

Expectation 3 - Calculating the Area of a Triangular Prism

Shape:

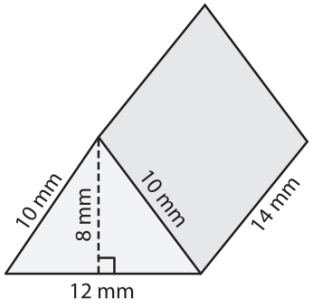


Net:



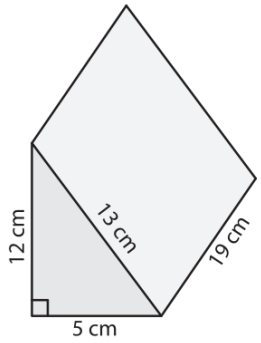
Triangle base x height ÷ 2	
Triangle	
Rectangle length x width	
Rectangle	
Rectangle	
Total	

1)



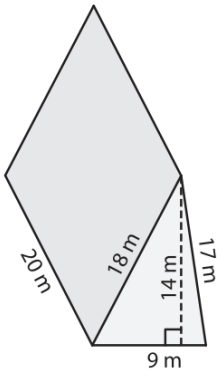
Triangle base x height ÷ 2	
Triangle	
Rectangle length x width	
Rectangle	
Rectangle	
Total	

2)



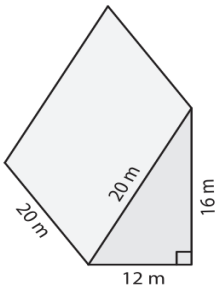
Triangle base x height ÷ 2	
Triangle	
Rectangle length x width	
Rectangle	
Rectangle	
Total	

3)



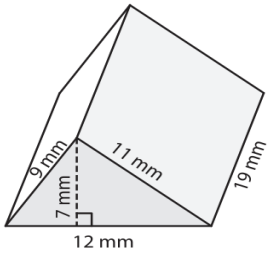
Triangle base x height ÷ 2	
Triangle	
Rectangle length x width	
Rectangle	
Rectangle	
Total	

4)



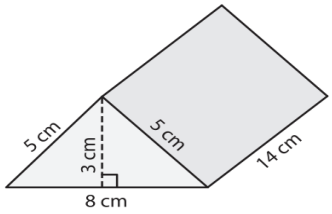
Triangle base x height ÷ 2	
Triangle	
Rectangle length x width	
Rectangle	
Rectangle	
Total	

5)



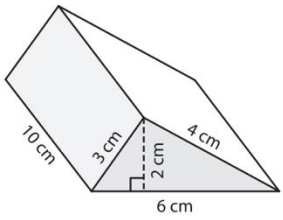
Triangle base x height ÷ 2	
Triangle	
Rectangle length x width	
Rectangle	
Rectangle	
Total	

6)



Triangle base x height ÷ 2	
Triangle	
Rectangle length x width	
Rectangle	
Rectangle	
Total	

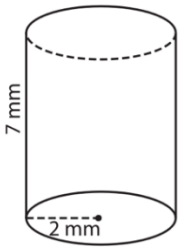
7)



Triangle base x height ÷ 2	
Triangle	
Rectangle length x width	
Rectangle	
Rectangle	
Total	

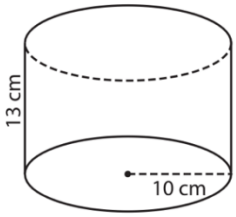
Expectation 4 - Calculating the Area of a Cylinder

1)



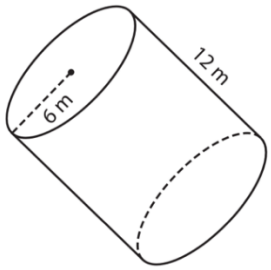
r = d = circumference $2\pi r$ =	
Circle $\pi \times r \times r$	
Circle	
Sleeve $\pi \times d \times h$	
Total	

2)



r = d = circumference $2\pi r$ =	
Circle $\pi \times r \times r$	
Circle	
Sleeve $\pi \times d \times h$	
Total	

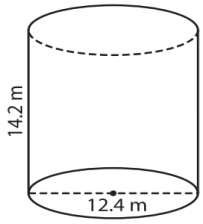
3)



r = d = circumference $2\pi r$ =	
Circle $\pi \times r \times r$	
Circle	
Sleeve $\pi \times d \times h$	
Total	

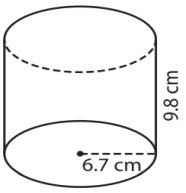
4)

Calculate radius first →



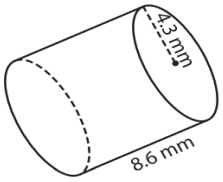
r = d = circumference $2\pi r$ =	
Circle $\pi \times r \times r$	
Circle	
Sleeve $\pi \times d \times h$	
Total	

5)



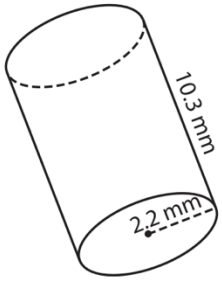
r = d = circumference $2\pi r$ =	
Circle $\pi \times r \times r$	
Circle	
Sleeve $\pi \times d \times h$	
Total	

6)



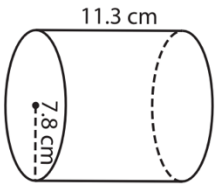
r = d = circumference $2\pi r$ =	
Circle $\pi \times r \times r$	
Circle	
Sleeve $\pi \times d \times h$	
Total	

7)



r = d = circumference $2\pi r$ =	
Circle $\pi \times r \times r$	
Circle	
Sleeve $\pi \times d \times h$	
Total	

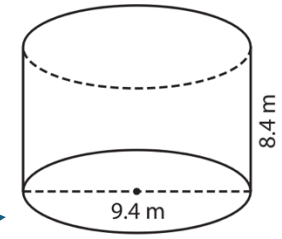
8)



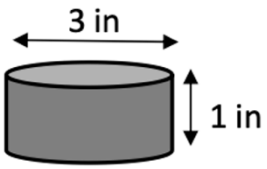
r = d = circumference $2\pi r$ =	
Circle $\pi \times r \times r$	
Circle	
Sleeve $\pi \times d \times h$	
Total	

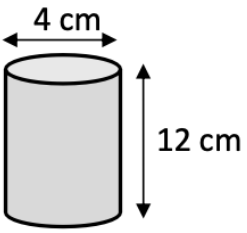
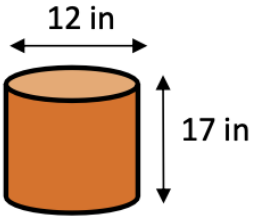
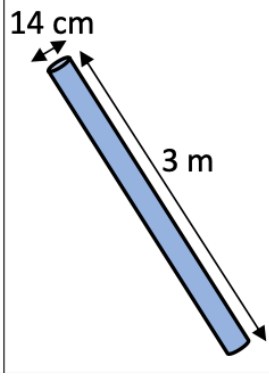
9)

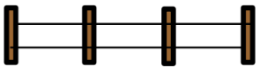
Calculate radius first



r = d = circumference $2\pi r$ =	
Circle $\pi \times r \times r$	
Circle	
Sleeve $\pi \times d \times h$	
Total	

	PROBLEM	CYLINDER	WORKING OUT
1)	A hockey puck is a disc which is 1 inch thick and has a diameter of 3 inches. What is the surface area? _____ in^2		

2)	A cardboard tube has a height of 11 cm and a diameter of 4 cm. What is the surface area? _____ cm^2		
3)	A cylinder-shaped plant pot (with no lid) has a diameter of 12 inches and a height of 17 inches. What is the surface area? _____ in^2		
4)	A plastic pipe has a diameter of 14 cm and a length of 3 m. What is the surface area? _____ cm^2		

1)	Captain is building a rectangular rabbit enclosure for his pet rabbit. The enclosure measures 8m by 6m. How much fence does he need for the enclosure? *Area* *Perimeter* 	2)	Captain now build the enclosure for his pet rabbit. How much space will the rabbit have to run around in? *Area* *Perimeter* 

Expectation 5 – Real-life Problems

1. Your parents are away so you decide that now is the time to paint your walls electric blue. To make it more fun, you use spray paint (note – this is a terrible idea). You need to know how much to buy. The length of one wall is 4 meters, the other is 5 meters and the walls are 3 meters tall. Oh ya, and because you are wild, you paint the ceiling as well. Each spray can paint 10 m^2 of wall. How many do you need?

2. You decide to make a bike ramp so that you can try to jump a sibling (Johny Knox style). You need to figure out how many square feet of plywood you'll need for your project. You want these dimensions:
base - 4 ft, ramp 5 ft and height – 3 ft
Width is 2 ft.

   Draw the ramp based on the dimensions above (it's a triangular prism)

   Find the total surface area.