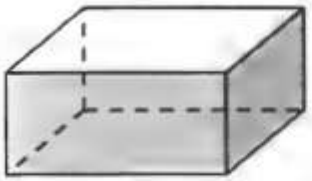
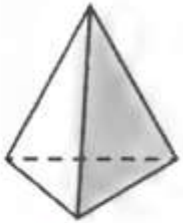
Name Answers Date

11.1 – Exploring Solids

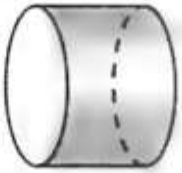
Tell whether the solid is a polyhedron. Name the type of solid.

1) 

Yes.
Rectangular Prism

2) 

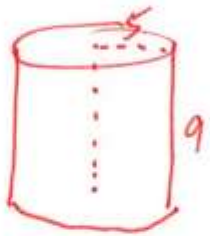
Yes.
Triangular Pyramid

3) 

No.
Cylinder

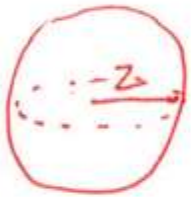
Sketch the solid produced by rotating the figure around the given axis. Then identify and describe the solid.

4) 

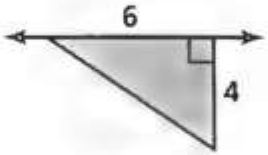


Cylinder

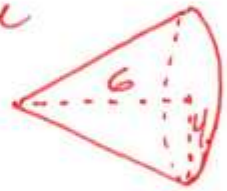
5) 

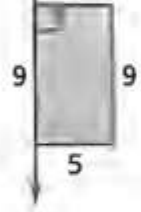


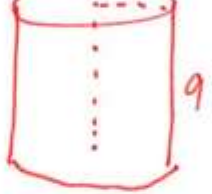
Sphere

6) 

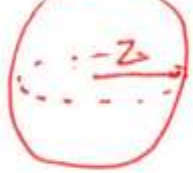
Cone





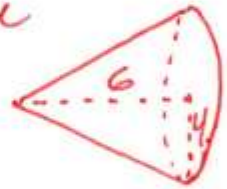


Cylinder



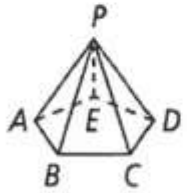
Sphere

Cone



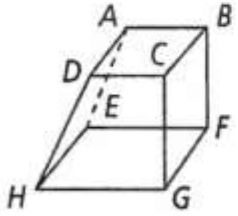
For each polyhedron, how many vertices, edges, and faces are there?

7)



Vertices - 6
Edges - 10
Faces - 6

8)



Vertices - 8
Edges - 12
Faces - 6

For each polyhedron, use Euler's Formula to find the missing number.

9) Faces: 6 Edges: 12 Vertices: 8

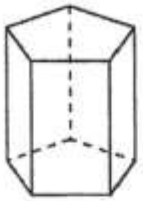
10) Faces: 10 Edges: 18 Vertices: 10

11) Faces: 8 Edges: 12 Vertices: 6

For each polyhedron:

a) Find the number of vertices, edges, and faces for each.
b) Does each follow Euler's formula?
c) Draw a net for the figure.

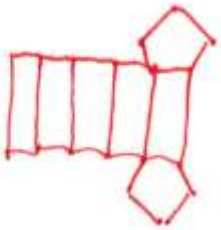
12)



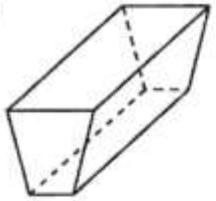
a) Vertices - 10
Edges - 15
Faces - 7

b) Yes

c)



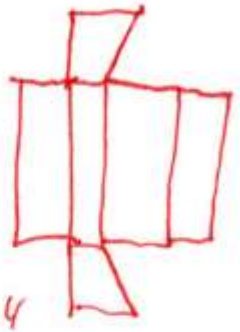
13)



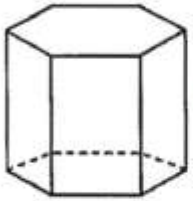
a) Vertices - 8
Edges - 12
Faces - 6

b) Yes

c)



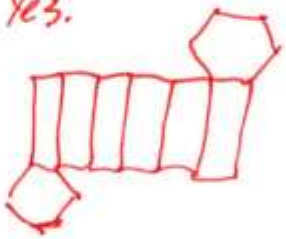
14)



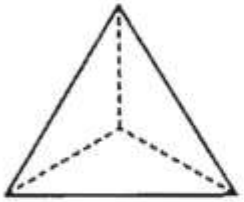
a) Vertices - 12
Edges - 18
Faces - 8

b) Yes.

c)



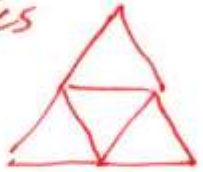
15)



a) Vertices - 4
Edges - 6
Faces - 4

b) Yes

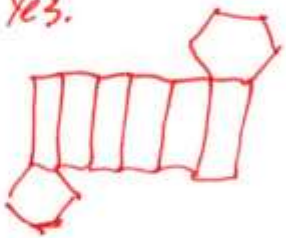
c)



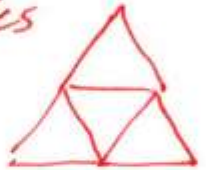
Describe each cross section that the plane would make with the three-dimensional figure.

Faces - 8

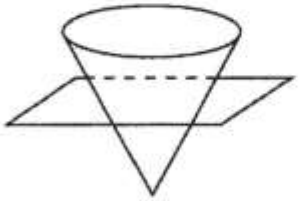
b) Yes.

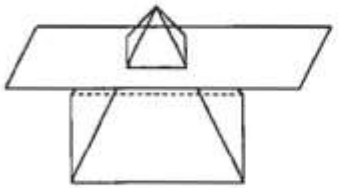
c) 

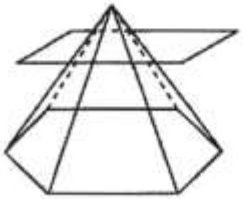
b) Yes

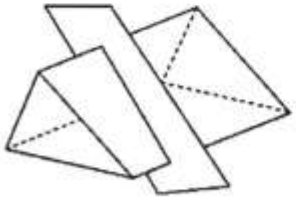
c) 

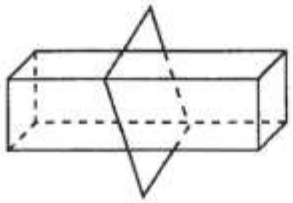
Describe each cross section that the plane would make with the three-dimensional figure.

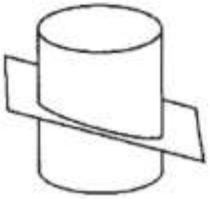
16)  Circle

17)  Square / Rectangle

18)  Hexagon

19)  Triangle

20)  Parallelogram

21)  Oval

22) What is the cross section formed by a plane containing a vertical line of symmetry for the figure at the right?

Triangle

23) Can a polyhedron have 19 faces, 34 edges, and 18 vertices? Explain.

$F + V = E + 2$

$19 + 18 = 34 + 2$

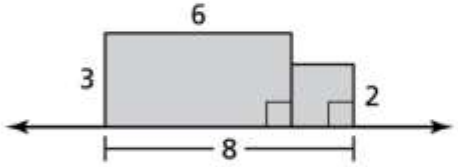
$37 \neq 36$

It doesn't follow Euler's formula

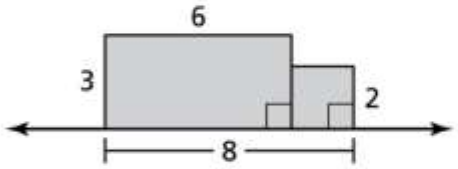
24) Is a cone a polyhedron? Explain.

No. It has a curved surface.

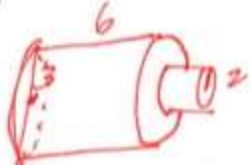
25) Sketch the composite solid produced by rotating the composite figure around the given axis. Then identify and describe the composite solid.



25) Sketch the composite solid produced by rotating the composite figure around the given axis. Then identify and describe the composite solid.

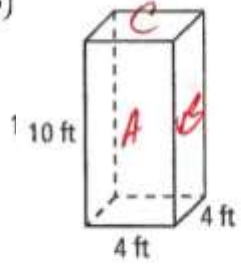


Two conjoining cylinders.



Find the surface area of each prism. Round to the nearest 0.1 if necessary.

26)



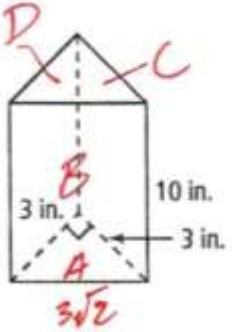
$A = 4 \times 10 = 40 \times 2 = 80$

$B = 4 \times 10 = 40 \times 2 = 80$

$C = 4 \times 4 = 16 \times 2 = 32$

$192\ ft^2$

27)



$A = 4.5 \times 2 = 9$

$B \approx 4.2 \times 10 = 42$

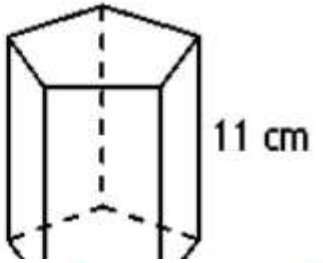
$C = 30$

$D = 30$

$111 in^2$

28) a) Classify the prism at the right.

Pentagonal Prism



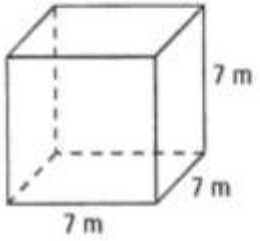
b) Find the lateral area of the prism.

$5(5\times11) = 275\text{ cm}^2$

$6(7\times7) = 294\text{ m}^2$

c) The bases are regular pentagons. The ar
of their areas.

$2\times43 =$

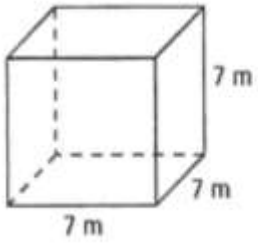


d) Find the total surface area of the prism

$$\begin{array}{r} 275 \\ +\ 86 \\ \hline 361\text{ cm}^2 \end{array}$$

Find the surface area of each prism. Round to the nearest 0.1 if necessary.

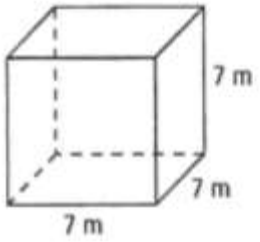
29)



$6(7\times7) = 294\text{ m}^2$

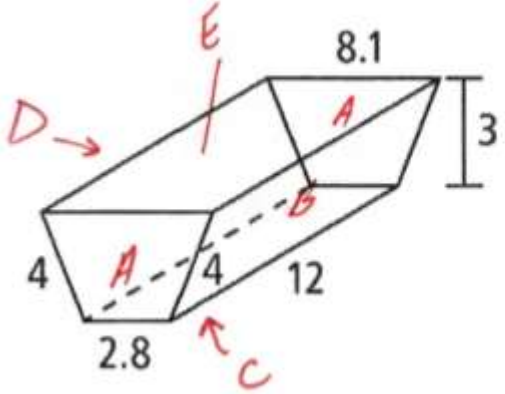
Find the surface area of each prism. Round to the nearest 0.1 if necessary.

29)



$6(7\times7) = 294\ m^2$

30)



$A = \frac{1}{2}(8.1+2.8)3 = 16.35 \times 2 = 32.7$

$B = 4\times12 = 48$

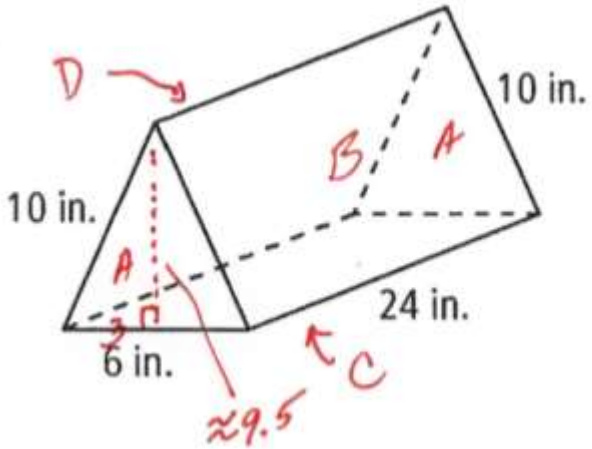
$C = 2.8\times12 = 33.6$

$D = 4\times12 = 48$

$E = 8.1\times12 = 97.2$

$259.5\ cm^2$

31)



$A = \frac{1}{2}\times6\times9.5 \approx 28.5\times2 \approx 57$

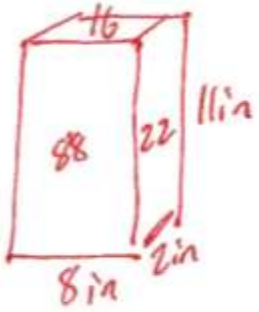
$B = 10\times24 = 240$

$C = 6\times24 = 144$

$D = 10\times24 = 240$

$681\ in^2$

32) A box of cereal measures 8 in. wide, 11 in. high, and 2 in. deep. If all surfaces are made of cardboard and the total amount of overlapping cardboard in the box is 7 in^2, how much cardboard is used to make the cereal box?



Total = Surface Area + Overlapping Area

$= 2(88+22+16) + 7$

$= 252 + 7$

$= 259\ in^2$

33) An artist creates a right prism whose bases are regular decagons. He wants to paint the lateral surfaces of the prism. One can of paint can cover 32 square feet. How many cans of paint must he buy if the height of the prism is 11 ft and the length of each side of the decagon is 2.4 ft? The area of a base is approximately 89 ft^2.

L.A. $= 10 \times$

$= 264\ ft^2$

S.A. $= 2(89) + 264$

$= 442\ ft^2$

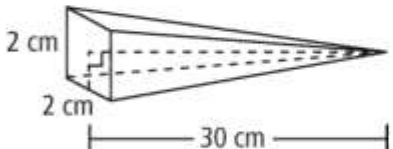
$442 \div 32 \approx 13.8125$

≈ 14 cans

Find the surface area of each pyramid to the nearest 0.1.

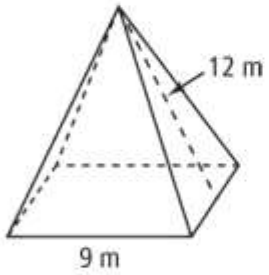
34)

35)



Find the surface area of each pyramid to the nearest 0.1.

34)



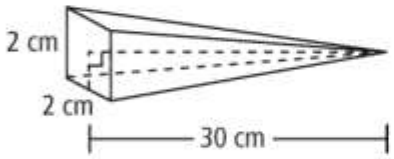
$SA = \square + 4\triangle$

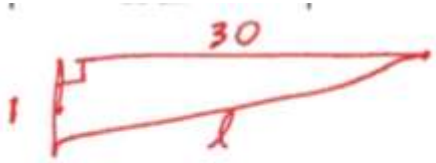
$= 9^2 + 4\left(\frac{1}{2} \times 9 \times 12\right)$

$= 81 + 216$

$= 297\ m^2$

35)





$1^2 + 30^2 = l^2$

$l \approx 30$

$SA = \square + 4\triangle$

$= 2^2 + 4\left(\frac{1}{2} \times 2 \times 30\right)$

$= 4 + 120$

$= 124\ cm^2$