

Lessons 1.8 & 1.9 – Space Geometry and Applications

Space - Space is the set of all points. Space is three-dimensional.



Cylinder - A cylinder has two parallel bases that are circular and a curved surface that connects the bases (i.e. a can of soup).



Cylinder

Cone - A cone has a base that is circular and a curved surface (i.e. an ice cream cone).



Cone

Prism - A prism has two parallel bases and the bases are connected with rectangles. Prisms are named by the base polygon (i.e. pentagonal prism).



Prism

Pyramid - A pyramid has one base and triangular sides that come to a point. Pyramids are named by the base polygon (i.e. hexagonal pyramid).



Pyramid

Sphere - A sphere is a circular solid (i.e. a globe).



Sphere

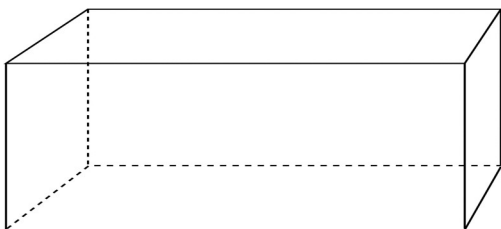
Hemisphere - A hemisphere is half of a sphere.



Hemisphere

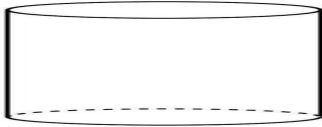
Example 1: Sketch the figure

A prism with a rectangular base.

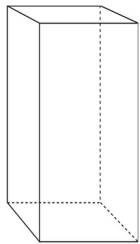
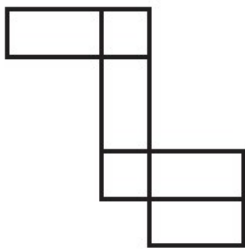


Example 2: Sketch the figure

A cylinder with base diameter greater than height.

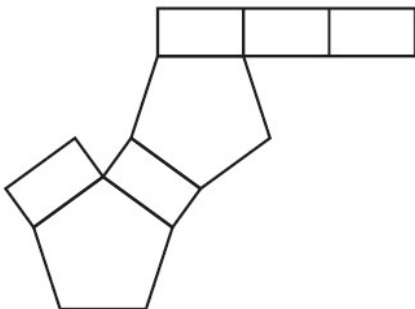


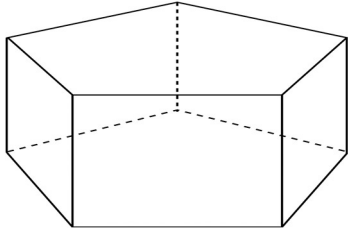
Example 3: Sketch and name the 3-D figure formed by folding the net into a solid



Rectangular Prism

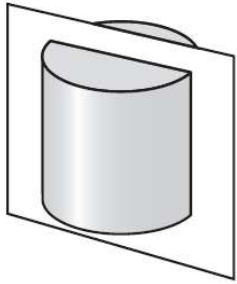
Example 4: Sketch and name the 3-D figure formed by folding the net into a solid



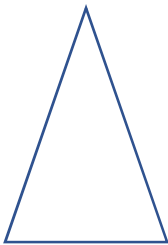
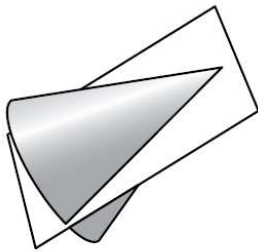


Pentagonal Prism

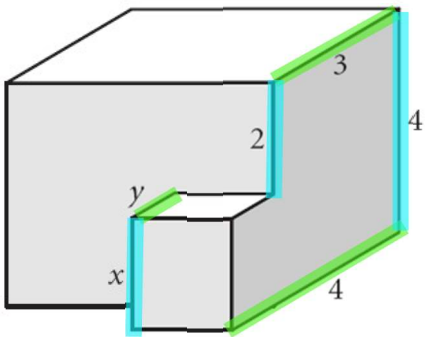
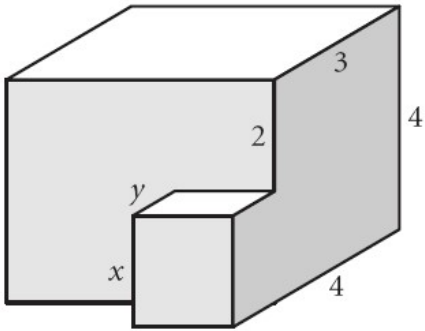
Example 5: Sketch the section formed when each solid is sliced by a plane as shown



Example 6: Sketch the section formed when each solid is sliced by a plane as shown



Example 7: Find the lengths of x and y



$$4 = x + 2$$

$$x = 2$$

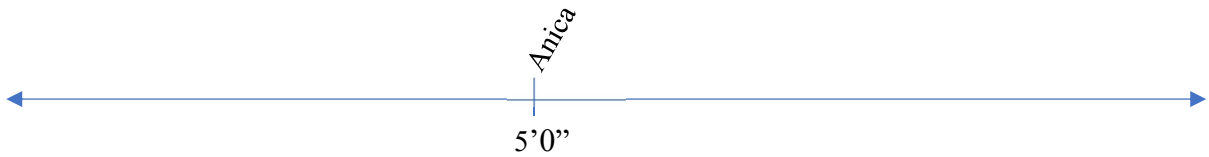
$$4 = 3 + y$$

$$y = 1$$

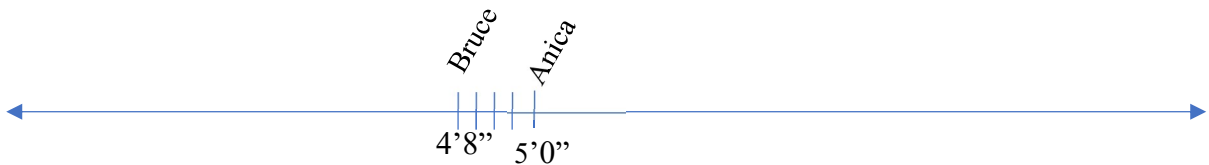
Example 8: Complete

The six members of the Senica High School math club are having a group photo taken for the yearbook. The photographer has asked the club to submit the height of each member so that he can quickly arrange them in order. The math club sent him the following information. Anica is 4 inches taller than Bruce. Charles is the same height as Ellen but an inch taller than Anica. Fred is midway between Bruce and Dora. Dora is 2 inches taller than Anica. Help out the photographer by arranging the club members in order from tallest to shortest.

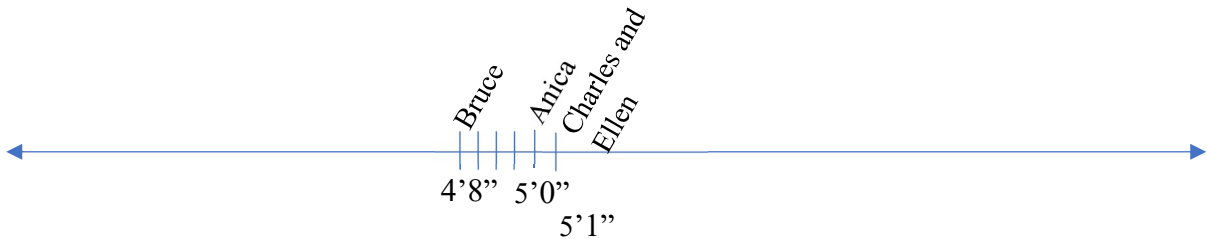
The most efficient way to complete a problem like this is to assign a person a random height and place them on a number line and work from there. So, since Anica is the first name in the problem, let's assign her a random height of 5'0".



Now, we will start working through the sentences in this problem. Anica is 4 inches taller than Bruce. If Anica is 5'0", then 4" less than 5'0" is 4'8".

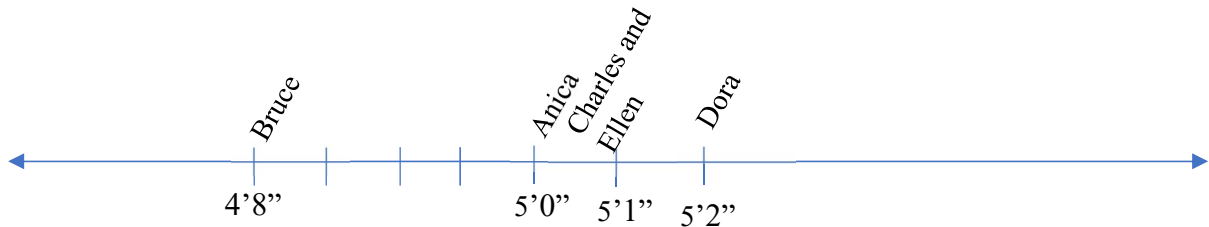


Charles is the same height as Ellen but an inch taller than Anica. If Anica is 5'0", then 1" more than 5'0" is 5'1" which is the random height we have assigned to both Charles and Ellen.

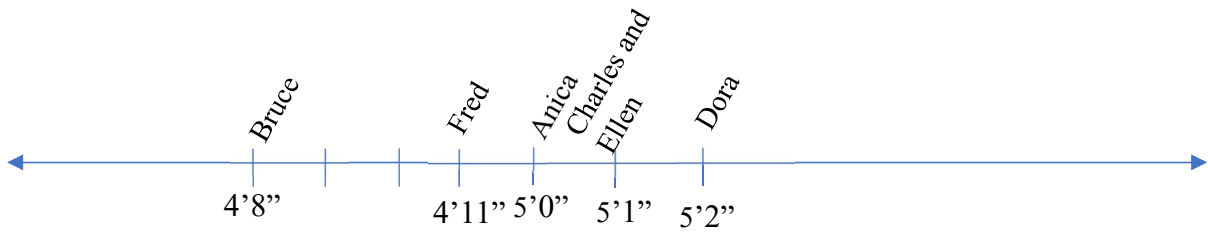


Fred is midway between Bruce and Dora. We haven't placed Dora yet, so let's go to the next sentence and then come back to this one.

Dora is 2 inches taller than Anica. If Anica is 5'0", then 2" more than 5'0" is 5'2".



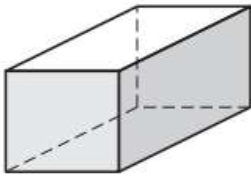
Let's go back to Fred is midway between Bruce and Dora. If Dora is 5'2" and Bruce is 4'8", then the difference in their heights is 6". Midway between the heights would be 3" from each height which is 4'11".



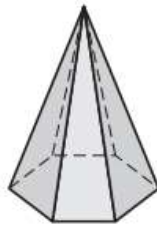
From tallest to shortest, the students are Dora, Charles and Ellen, Anica, Fred, and Bruce.

Example 9: Sketch a possible net for each solid

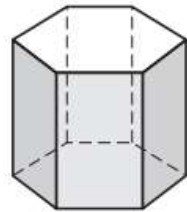
a.



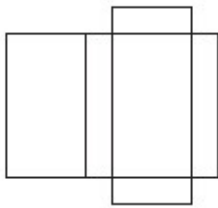
b.



c.



a.



b.



c.

