

Chapter 1 - An Introduction to Geometry

HW #1 due Friday, 11/7

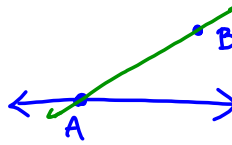
- Read Ch 1 & Ch 2
- Ch 1 Review Problems pp. 36-38
- Start working on Geometry badge on Khan Academy; make sure you've added me as a coach using code listed on brewermath.com!

1.1

line segment



line



2 points determine a line

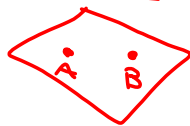
⇒ any 2 points in space are collinear

plane - flat surface extending infinitely

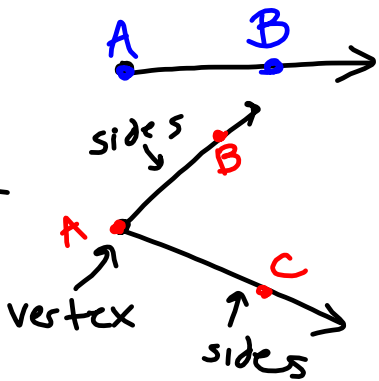


3 points define a plane

⇒ any 3 points in space are coplanar



1.2  
ray  
angle

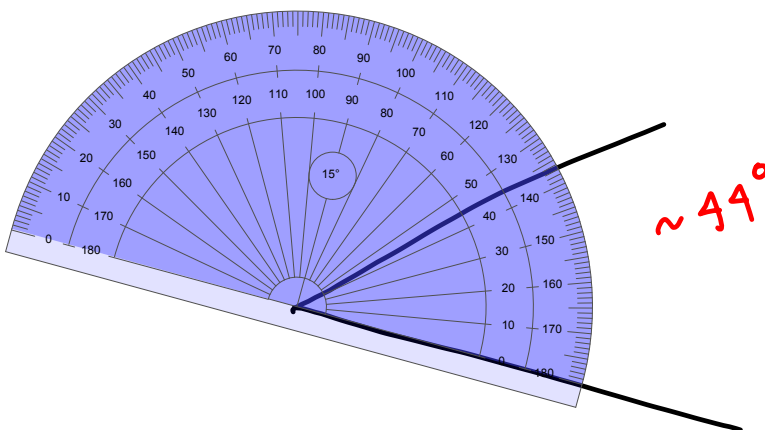


$\vec{AB}$

$\angle BAC$

$\angle CAB$

$\angle A$

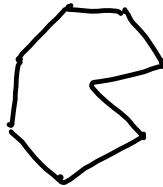
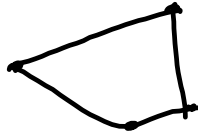
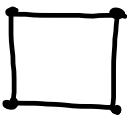


1.3

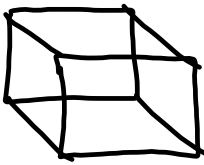
point is

- 0-dimensional

line / line segment  
1-dimensional

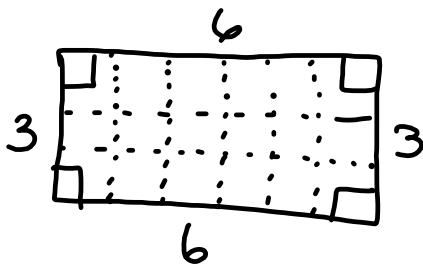


polygons are  
2-dimensional



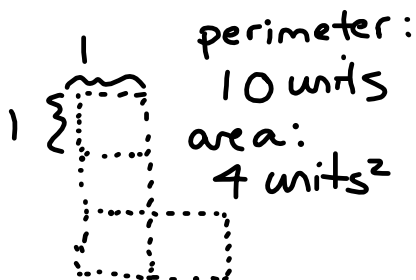
polyhedron/polyhedra  
3-dimensional

perimeter, area, & volume  
(surface area)



perimeter = sum of lengths  
of sides

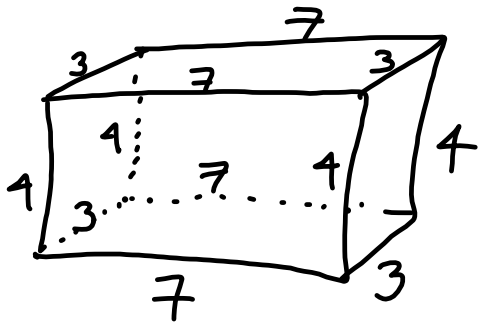
$$6 + 3 + 6 + 3 = 18 \text{ units}$$



perimeter:  
10 units  
area:  
4 units<sup>2</sup>

area = base x height  
(product of linear dimensions)

$$6 \times 3 = 18 \text{ units}^2$$



Volume =  
 product of 3 linear  
 dimensions  
 length x width x height  
 $7 \times 3 \times 4 = 84 \text{ units}^3$

Surface Area =  
 sum of areas of  
 surfaces

$$2(3 \times 4) + 2(7 \times 4) + 2(3 \times 7)$$

$$24 + 56 + 42$$

$$= 122 \text{ units}^2$$

### 1.4 Compass constructions

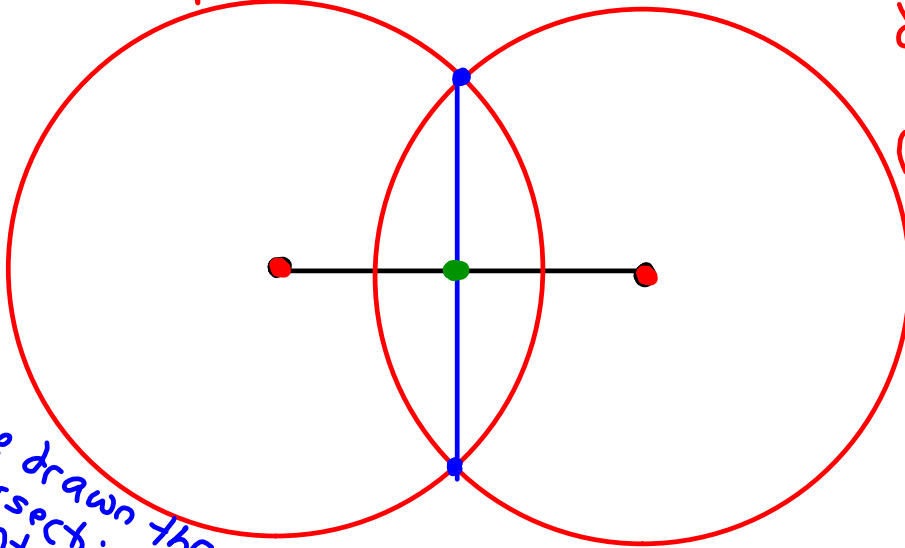
compass — draw circles & arcs

straightedge — ruler w/o ability to  
 measure distance  
 — draw lines through points

# bisect a line segment

↳ divide into 2 equal pieces  
(find midpoint)

draw 2 circles  
of same radius  
( $\rightarrow$  half length  
of line segment)  
centered  
@ each  
endpoint

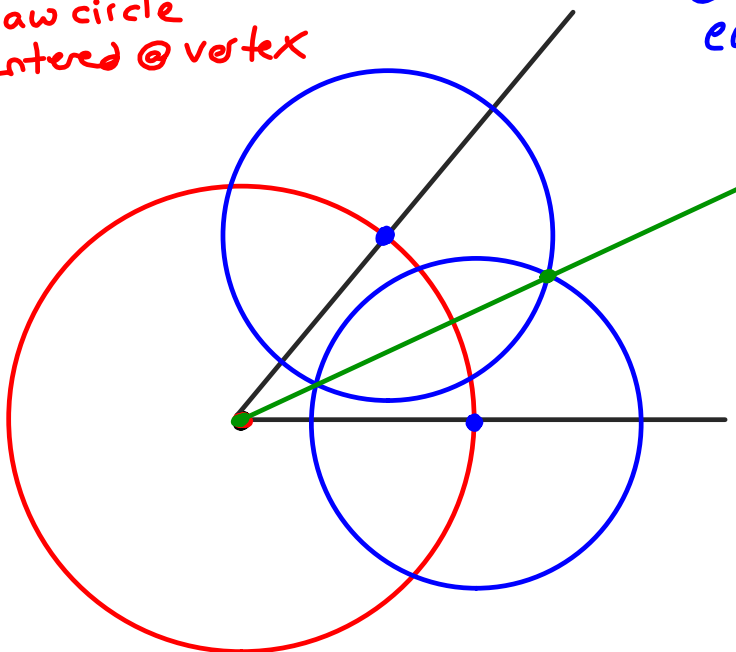


line drawn through  
intersection points of circles  
determines  
midpoint

# bisect an angle

draw circle  
centered @ vertex

draw 2 circles of  
same radius @  
each intersection  
point



line defined  
by original  
vertex &  
one intersection  
point is  
angle bisector