



# Chapter 1 - An Introduction to Geometry

## HW #1


- Read Ch 1
- Ch 1 Review Problems pp. 36-38 **#1-30**
- Start working on Geometry badge on Khan Academy; make sure you've added me as a coach using code listed on your syllabus!

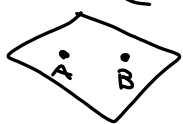
1.1

line segment 

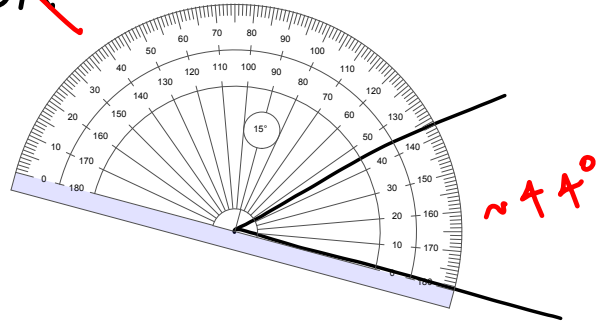
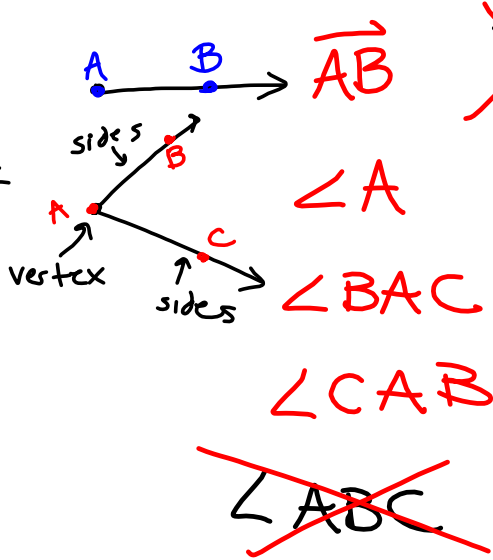
line 

2 points determine a line  
 ⇒ any 2 points in space are collinear

plane - flat surface extendy infinitely  


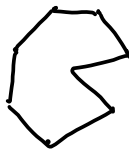
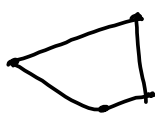
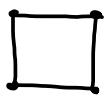
3 points define a plane  
 ⇒ any 3 points in space are coplanar  


1.2  
ray  
angle

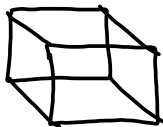


1.3

- point is 0-dimensional
- line / line segment 1-dimensional

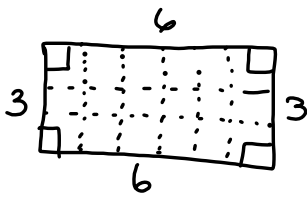


polygons are 2-dimensional



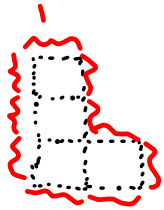
polyhedron/polyhedra 3-dimensional

perimeter, area, & volume



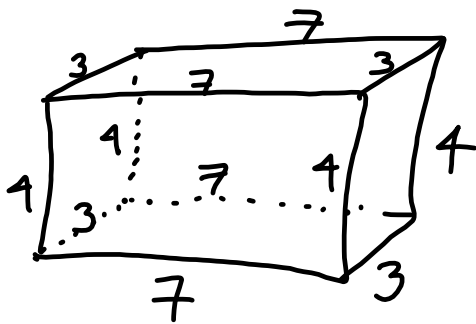
perimeter = sum of side lengths  
 $6 + 3 + 6 + 3 = 18$

area = product of 2 perpendicular dimensions  
 (length x width) (base x height)  
 $6 \times 3 = 18$



perimeter = 10

area = 4



Volume =  
 product of 3 linear  
 dimensions

$= 3 \times 7 \times 4 = 84$

Surface Area =  
 sum of areas of  
 surfaces

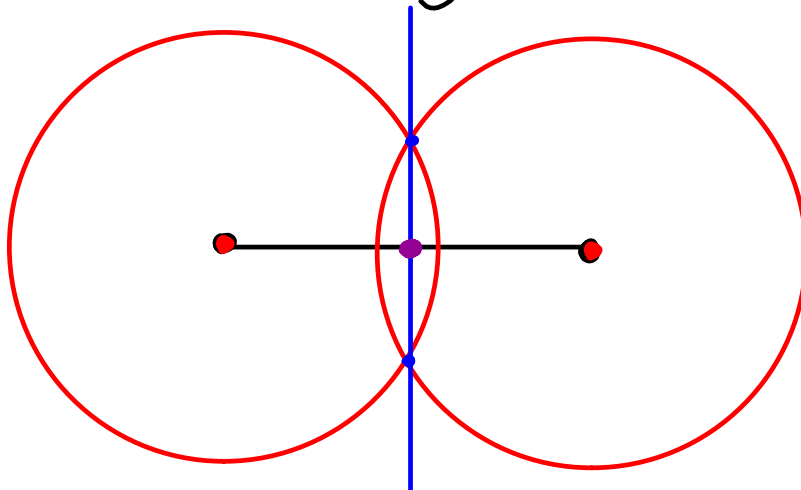
$2(3)(4) + 2(3)(7) + 2(4)(7)$   
 $= 24 + 42 + 56 = 122$

## 1.4 Compass constructions

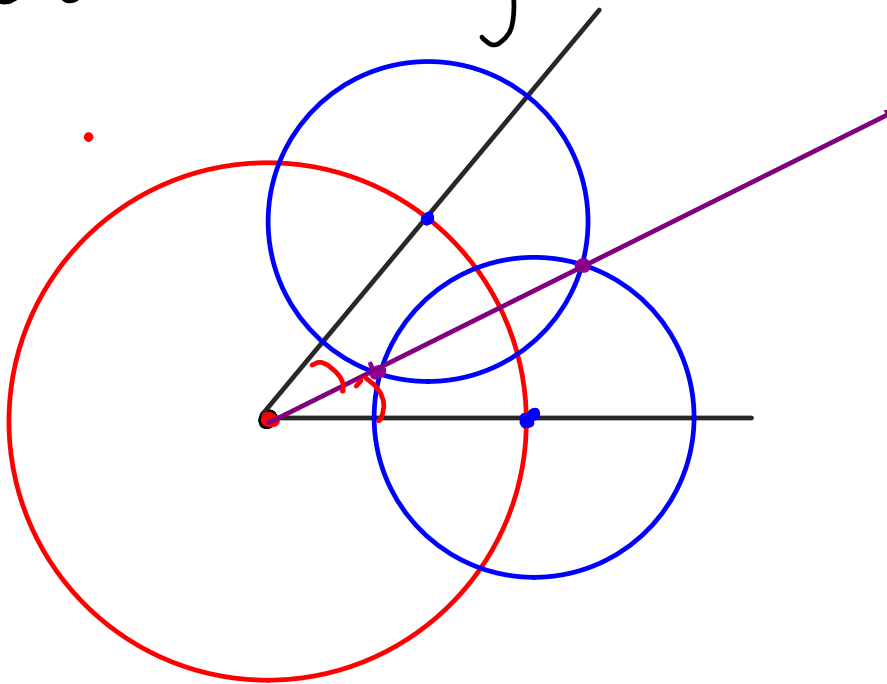
compass — draw circles & arcs

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

bisect a line segment



bisect an angle



**2.1 – Conditional Statements**

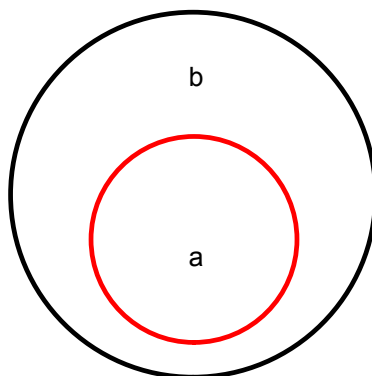
Conditional Statement: “If a, then b.” or “a implies b.”

a = hypothesis

b = conclusion

$a \rightarrow b$

Euler diagram



2.1 #7-11

"If it is snowing, then it is cold outside."

"If it is cold outside, then it is snowing."

7. Do both statements have the same hypothesis? **no**

8. Are they both true? Why or why not?

**1st true, 2nd not**

9. Do they mean the same thing? **no**

10. Rewrite the first statement so that the conclusion is stated before the hypothesis.

**It is cold outside if it is snowing**

11. Is the statement that you wrote true?

**yes**

**Rewrite the sentences in "if-then" form.**

16. "Smokey Bear wouldn't have to do commercials for a living if money grew on trees."

**If money...trees, then Smokey .. living**

17. "All architects use geometry."

**If someone is an architect then he or she uses geometry.**

19. "Use the stairs instead of the elevator in case of fire."

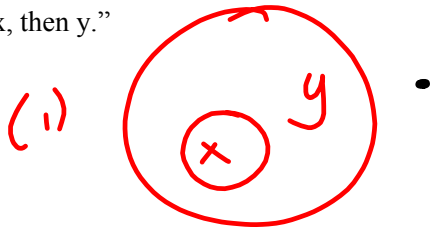
**If there's a fire, then use the stairs.**

20. "No vampire casts a shadow."

**If one is a vampire, then one does not cast a shadow.**

27. Draw Euler diagrams to represent the statements.

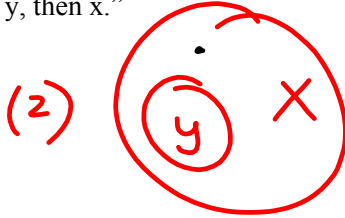
"If x, then y."



$$x \rightarrow y$$

original  
conditional  
statement

"If y, then x."



$$y \rightarrow x$$

converse

$$\sim y \rightarrow \sim x$$

1<sup>st</sup> contrapositive  
(logically equivalent  
to original)

29. Which diagram also illustrates the statement "If not y, then not x"?