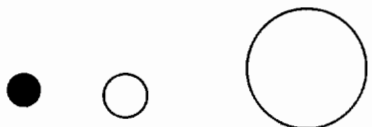
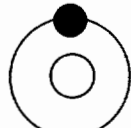
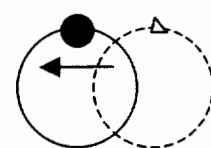


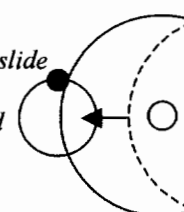
PowerPoint Universe Models

1. open up PowerPoint
2. start with a *blank* presentation
3. make small circles with different fill colors for sun and planet(s) 
4. make circles with *no fill* color for orbits/epicycles (hold down *shift* as you create a circle to make for perfect circles)
5. line up object (sun/planet) on proper orbit/circle 

Planetary Orbits

6. go to the *Slide Show* tab and select *Custom Animation* (this opens up a side tool bar)
7. click on the object (the planet) from your page that you wish to animate
8. select *Add Effect* from the animation side tool bar
9. choose *Motion Path*
10. choose *More Motion Paths*
11. select *Circle* for circular motion 
12. align dotted line circle with the path you wish it to follow
13. right click on the green triangle on the motion path to reverse the path direction
14. change the timings of each motion in the animation toolbar to correct the speeds for the planets.
15. remove the checks from the *smooth start* and *smooth end* boxes
16. select *repeat until end of slide*

Planetary Epicycles (start after step 5 above)

6. hold down shift and click on both the planet and the epicycle/circle to select both objects
7. right click on the objects and select *Grouping* to group the objects into a single object
8. draw a larger circle (*no fill*) around your sun (deferent) for the planet-epicycle to “orbit”
9. select your planet-epicycle and go to *custom animation*
10. select *spin*, reverse the direction of spin, adjust the speed, and select *repeat until end of slide* 
11. while still having your planet-epicycle selected, in the *animation side tool bar* select *add*
12. select *motion path* and *circle*
13. adjust the motion path to fit over the orbit (deferent), reverse the direction, deselect *smooth start and end*
14. select *repeat until end of slide* AND select *Start With Previous* (timing menu)

** Make models for Copernicus' (heliocentric), Ptolemy's (geocentric), and Tycho Brahe's (helio-geo-hybrid) universe models.