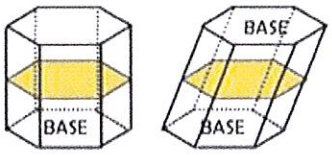
Name _____ Date _____

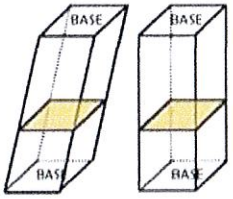
Day 7 – Cavalieri's Principle

Cavalieri's Principle states that if two three dimensional figures have the same height and the same cross sectional area at every level, they have the same volume. In other words, if two figures have the same dimensions (height, radii, base, etc), but are just slanted or oblique, they will have the same volume. Each of the figures above would have the same volume because they have the same height and cross section, even though they are slanted.

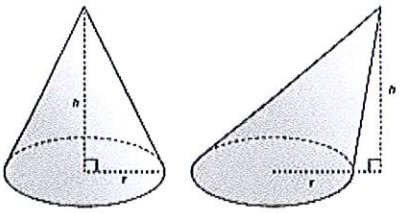
Examples of two figures with the same volume:

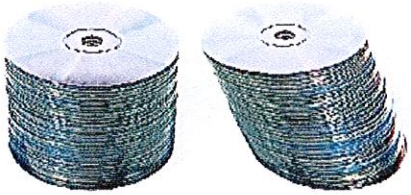


Volumes are equal.

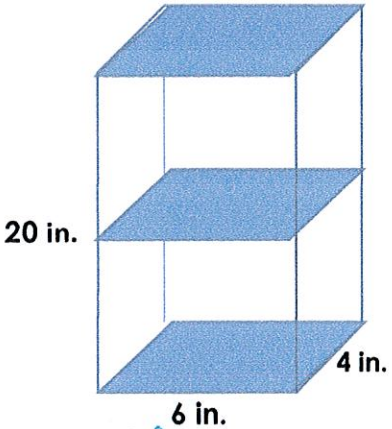


Volumes are equal.



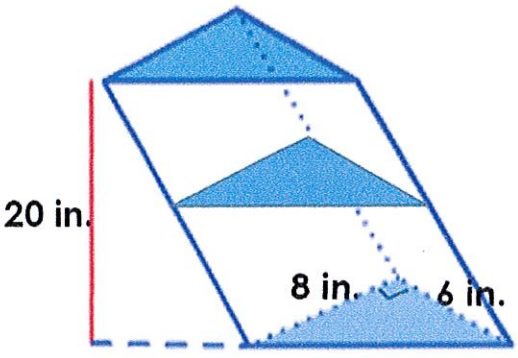


Practice: Use Cavalieri's Principle to determine which solid has more volume.



Height: 20in

Area of Cross Section: $6 \cdot 4 = 24 in^2$



Height: 20in

Area of Cross Section: $\frac{1}{2}(6)(8) = 24 in^2$

Based on this information, what can you conclude?

We can conclude that the volumes are equal.