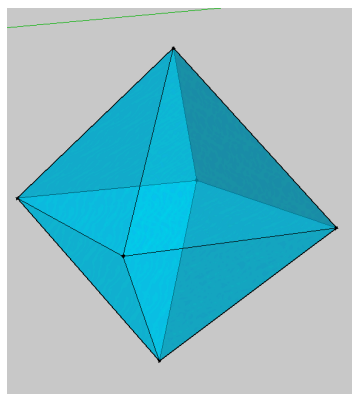


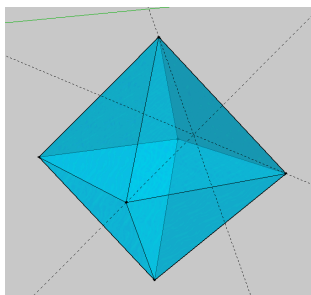
**For this assignment, you’re going to construct a Hexahedron by creating vertices at the center of each face of an Octahedron.**

- Start by downloading the file called “SketchUp Hexahedron Construction” from the homepage of [model.nychscl.org](http://model.nychscl.org).
- Open the file. You will see a large translucent octahedron at the center of the workplane.



To construct the hexahedron:

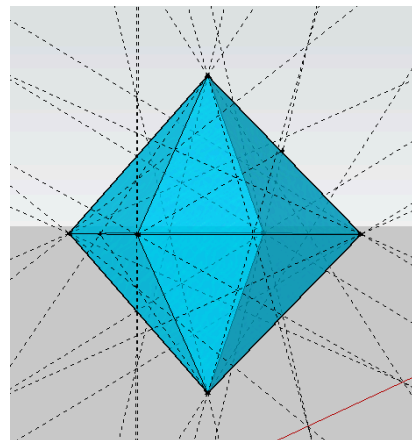
1. First you must identify the center of each face of the octahedron. One way to do this is by constructing medians along each face with the tape measure.



To draw a median, start at one vertex of a triangle and drag the tape measure to the midpoint of the opposite side of the triangle.

Does this for all three vertices of the triangle. See how they call intersect at a single point? That’s the centroid! And it’s the center of the triangle!

- Do the same on the other 7 faces. Eventually, your cube will look like this.
- That’s a lot of guidelines. If you’re having trouble making out which guidelines go with which face, remember: orbit, zoom, and pan are your friends!

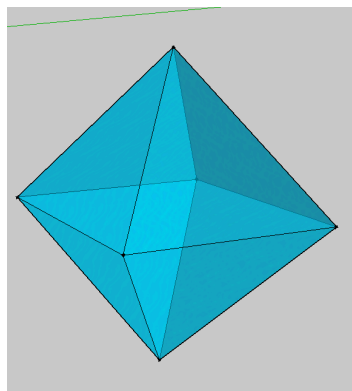


## Platonic Solids – Construct the Hexahedron

Name(s): \_\_\_\_\_

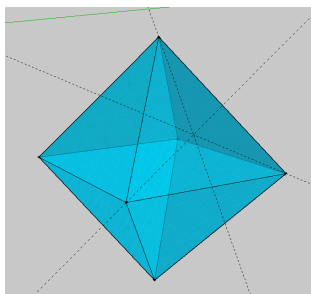
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To construct the hexahedron:

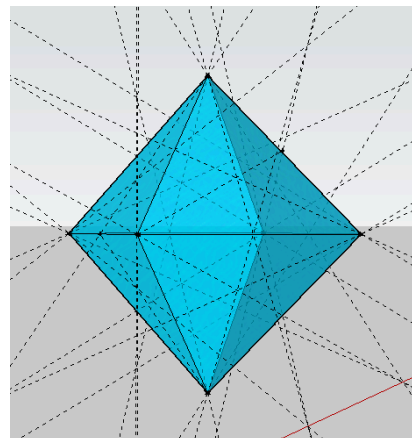
1. First you must identify the center of each face of the octahedron. One way to do this is by constructing medians along each face with the tape measure.



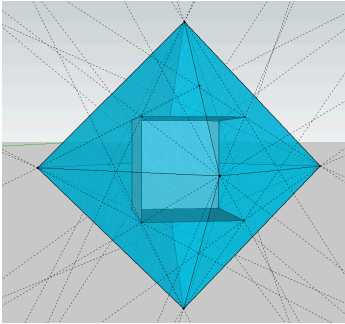
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Does this for all three vertices of the triangle. See how they all intersect at a single point? That's the centroid! And it's the center of the triangle!

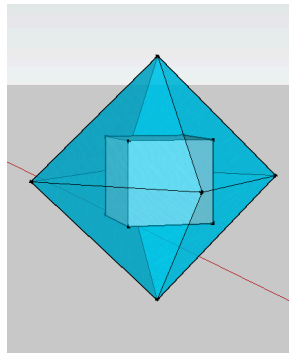
- 
- Do the same on the other 7 faces. Eventually, your cube will look like this.
- That's a lot of guidelines. If you're having trouble making out which guidelines go with which face, remember: orbit, zoom, and pan are your friends!



2. Select the line tool. Connect the center of one face *to the center of all adjacent faces*.
- When you've done this for all faces, you will see an inscribed Hexahedron inside the Octahedron.



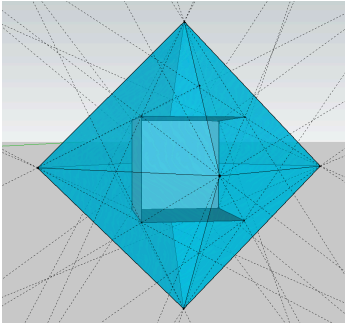
3. You can delete all of the tape measure guidelines by clicking Edit > Delete Guidelines.



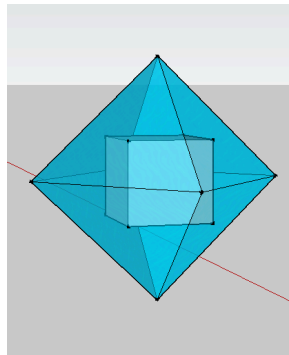
4. You can remove the cube from the octahedron by selecting all faces of the Octahedron and making them into a component (right click, then choose “Make Component” and name your component). Then use the Move Tool to pull the Octahedron apart from the Hexahedron.
5. You might need to cleanup your cube by erasing or deleting some faces. If you happen to delete a face you didn't mean to, use Cmd Z to undo.

When you're done, save as <Name>\_<Name>SketchUp Hexahedron Construction\_r1\_vA and submit it via the Google form at [model.nychscl.org](http://model.nychscl.org)

2. Select the line tool. Connect the center of one face *to the center of all adjacent faces*.
- When you've done this for all faces, you will see an inscribed Hexahedron inside the Octahedron.



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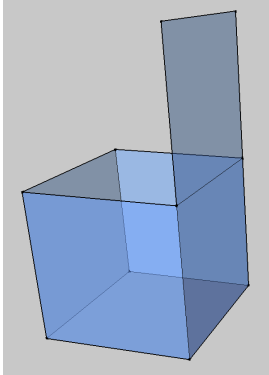
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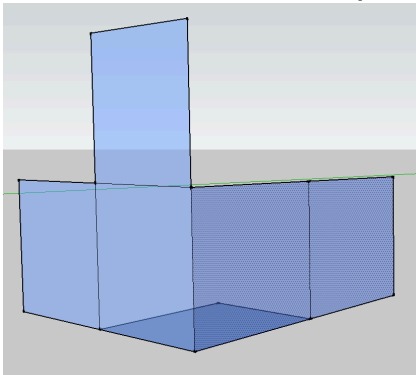
Unfold the hexahedron:

1. You will learn how to unfold hexahedron using unfold tool.

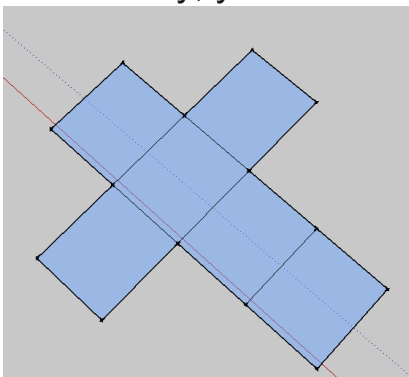
- Select the face you want to unfold, go to plugin on top on menu bar, click unfold tool, then select the adjacent face



- You can select multiple faces at once to use unfold tool



- Eventually, your cube will look like this.



When you're done, save as <Name>\_<Name>SketchUp  
Hexahedron Construction\_r1\_vA and submit it via the Google  
form at [model.nychscl.org](http://model.nychscl.org)