

**Geometry – Fractal Video Listening Guide**  
**Hunting the Hidden Dimension**  
<http://www.pbs.org/wgbh/nova/physics/hunting-hidden-dimension.html>

Name: \_\_\_\_\_ Pd: \_\_\_\_\_

1. One of nature's biggest design secrets has finally been \_\_\_\_\_.
  
2. Fractals are in our lungs, kidneys, and \_\_\_\_\_ vessels, flowers, plants, weather systems.
  
3. Carpenter didn't want to create just any mountains, he wanted to create a \_\_\_\_\_ that planes could fly through, but there was no way to do that with existing computer techniques.
  
4. Mandelbrot said that many forms in nature can be designed as \_\_\_\_\_. A word he created to define shapes that are jagged and broken.
  
5. Endless repetition is what Mathematicians call \_\_\_\_\_.
  
6. Carpenter created a whole new planet for Star Trek 2: The Wrath of Khan. It was the first ever completely \_\_\_\_\_ generated sequence in a feature film made possible by the new mathematics of fractal geometry.
  
7. Mandelbrot said, "Think not of what you see, but of what it took to \_\_\_\_\_ what you see."
  
8. One of the most familiar examples of self-similarity is a \_\_\_\_\_.
  
9. You see self-similarity in everything from a stalk of broccoli to the surface of the \_\_\_\_\_.

10. There is an order to the seeming \_\_\_\_\_.
11. Art is actually really close to Mathematics. It's just a different \_\_\_\_\_.
12. The German Mathematician Gayord Cantor created the first of the monsters in \_\_\_\_\_.
13. With this mysterious image, Mandlebrot was issuing a bold challenge to long standing ideas about the \_\_\_\_\_ of Mathematics.
14. The same kinds of fractal design principles have completely transformed the \_\_\_\_\_ of special effects.
15. Using a fractal design not only made antennas smaller, but enabled them to receive a much wider range of \_\_\_\_\_.
16. The tests show that the \_\_\_\_\_ does not always look at things in an orderly or smooth way.
17. If you have a Mathematical way of analyzing a structure, you can make a \_\_\_\_\_. What fractals do is they give you some simple \_\_\_\_\_ by which you can create models.
18. All of life in some way is sustained by these underlying networks that are transporting oxygen, \_\_\_\_\_, metabolites that are feeding cells.
19. As soon as you know the height of that tree, we can actually figure out the approximate \_\_\_\_\_ we need to take it down.
20. If you look at the tree, you see the same pattern amongst the branches as you see amongst the \_\_\_\_\_ in the forest.