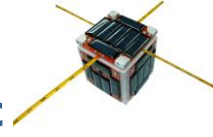


# CubeSat Hyperdoc



Questions are on the left.

Your answers go on the right.

**A. How do satellites communicate? Watch the video at <https://tinyurl.com/satcommvid>**

1. What type of electromagnetic waves do satellites use to communicate?

2. Giving a general overview, explain how satellites communicate with Earth.

**B. Read this short article about CubeSats. <https://tinyurl.com/littlesat>**

3. When was the first CubeSat launched?

4. How did CubeSats begin?

5. How big is a CubeSat?

6. How did the original CubeSats communicate with Earth?

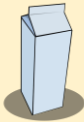
7. About how much do CubeSats cost to build and launch?

8. The article lists many uses of CubeSats. Describe 2 uses.

**C. Check out NASA's Educational Launch of Nanosatellites (ELaNa) <https://www.nasa.gov/content/about-elana>**

9. Look at About ELaNa. What is NASA trying to do?

10. Click on the map to the left. What are 2 of the colleges picked for this mission?

|  |   |
|--|---|
| 11. Choose one of these colleges and describe its CubeSat mission.   |   |
| 12. What is the volume of the smallest CubeSat?  |  |
| 13. Back on the main page, click on NASA Kennedy (menu on left). What is the CubeSat CLICK trying to do?   |   |
| <b>D. Now check out <a href="https://tinyurl.com/marcojpl">Mars Cube One (MarCO)</a> (<a href="https://tinyurl.com/marcojpl">https://tinyurl.com/marcojpl</a>)</b>   |   |
| 14. Who launched MarCO?  |   |
| 15. What is MarCO's mission?   |   |
| 16. When were they launched?   |   |
| 17. How far away from Mars were they when they took the picture posted at this source?   |   |
| <b>E. Next, let's look at some statistics <a href="https://www.nanosats.eu/">here</a> (<a href="https://www.nanosats.eu/">https://www.nanosats.eu/</a>).<br/>CubeSats fit into a category of small satellites called nanosatellites.</b> |   |
| 18. Find the Organization Types graph (3rd row to the right). Who are the top 3 launchers of nanosatellites?   |   |
| 19. Find the World Map (top row, right side).<br><br>Which 3 countries launch the most nanosatellites?<br><br>Hint: See country names <a href="#">here</a> .   |   |
| 20. Click on Launches by Deployers (bottom row, right side).<br><br>What questions do you have about these launches? Can you answer them with a Google Search?   |   |
| <b>F. Now read about these middle or high school student CubeSat launches.</b>   |   |
| 21. Oak Ridge ( <a href="https://tinyurl.com/oakridgelaunch">https://tinyurl.com/oakridgelaunch</a> )<br>What is the mission of this CubeSat and how   |   |

|  |  |
|--|--|
| will they know what information it gathers?  |  |
| 22. Weiss School<br>( <a href="https://digitalcommons.usu.edu/smallsat/2018/all2018/477/">https://digitalcommons.usu.edu/smallsat/2018/all2018/477/</a> )<br>What was the WeissSat-I designed to do?             |  |
| 14. Irvine High Schools ( <a href="https://ipsf.net/irvine-cubesat/#irvine-cubesat">https://ipsf.net/irvine-cubesat/#irvine-cubesat</a> )<br>Choose 1 of the launches. What are the key features of this launch? |  |
| <b>G. Now that you've learned about CubeSats...</b>  |  |
| Why would you want to launch a CubeSat? What might it do and what might you learn?   |  |
| Check out <a href="https://tinyurl.com/pumpkinshop">https://tinyurl.com/pumpkinshop</a> . What would you buy and why? How much would your total cost be?   |  |
| What you pack onto your CubeSat is called a <u>payload</u> . There are some options at <a href="https://tinyurl.com/cubepayload">https://tinyurl.com/cubepayload</a> . What would you include and why?           |  |