**The solar system**

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**Photo:** [**http://insertmedia.office.microsoft.com**](http://insertmedia.office.microsoft.com)

**Make the students guess what is on the photo (5 min)**

**Show the film:** [**https://www.youtube.com/watch?v=GoW8Tf7hTGA**](https://www.youtube.com/watch?v=GoW8Tf7hTGA) **(10 min)**

**Students discusses in groups: (5min)**

**What is a star?**

**What is a planet?**

**What is a moon?**

**In plenum a common view of the above (5min)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | |  |  |  |  |  |  |  | |  | **Sizes and distances in our solar system: ( 30 min)** | | | | | |  | |  |  |  |  |  |  |  |  | |  |  |  | **Size** |  | **Distance from sun** |  |  | |  | **Sun** |  | 1.400.000.000 | m | - |  |  | |  |  |  |  |  |  |  |  | |  | Mercury |  | 5.000.000 | m | 58.000.000.000 | m |  | |  |  |  |  |  |  |  |  | |  | Venus |  | 12.000.000 | m | 108.000.000.000 | m |  | |  |  |  |  |  |  |  |  | |  | Earth |  | 12.500.000 | m | 150.000.000.000 | m |  | |  |  |  |  |  |  |  |  | |  | Mars |  | 6.800.000 | m | 228.000.000.000 | m |  | |  |  |  |  |  |  |  |  | |  | Jupiter |  | 143.000.000 | m | 780.000.000.000 | m |  | |  |  |  |  |  |  |  |  | |  | Saturn |  | 120.500.000 | m | 1.430.000.000.000 | m |  | |  |  |  |  |  |  |  |  | |  | Uranus |  | 51.000.000 | m | 2.870.000.000.000 | m |  | |  |  |  |  |  |  |  |  | |  | Neptune |  | 50.000.000 | m | 4.500.000.000.000 | m |  | |  |  |  |  |  |  |  |  | |  |  |  |  |  |  |  |  |

If we want to minimize the sun into a football we have to figure out the right scale - therefore this equation:

*Ligningen løses for x vha. CAS-værktøjet WordMat.*

That means, if we want the sun to shrink into a size of a football (25cm) - we have to divide its real size with 5,6\*109

Therefore we also have to divide all the other sizes above:

**The students might do the calculation themselves to get the results in the scale scheme belove**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | | |  | |  |  |  |
|  | **Scale size** | | | |  |  | **Scale distance from Sun** | | |
| Sun | 0,25 | | | m | |  | - |  |
|  |  | | |  | |  |  |  |
| Mercury | | | 0,000893 | m | |  | 10,35714 | m |
|  |  | | |  | |  |  |  |
| Venus | 0,002143 | | | m | |  | 19,28571 | m |
|  |  | | |  | |  |  |  |
| Earth | 0,002232 | | | m | |  | 26,78571 | m |
|  |  | | |  | |  |  |  |
| Mars | 0,001214 | | | m | |  | 40,71429 | m |
|  |  | | |  | |  |  |  |
| Jupiter | 0,025536 | | | m | |  | 139,2857 | m |
|  |  | | |  | |  |  |  |
| Saturn | 0,021518 | | | m | |  | 255,3571 | m |
|  |  | | |  | |  |  |  |
| Uranus | 0,009107 | | | m | |  | 512,5 | m |
|  |  | | |  | |  |  |  |
| Neptune | | 0,008929 | | m | |  | 803,5714 | m |
|  |  | | |  | |  |  |  |

**Now it is time for the groups to make a model of their planet/star and put on a sign with the name: (10 min)**

**You can use a balloon for the Sun, a pinhead for the Earth and so on.**

**After making all the models the whole class goes outside to put up “The Planet Path”**

**As you see above is the path around 800 m long so you need a straight line of that distance. (30 min)**

**Group 1 (The Sun) Is located at the start of “The Planet Path”**

**Group 2 (Mercury) Take a stand in a distance of 10 m from the Sun (10 steps)**

**Group 3 (Venus) Take a stand in a distance of 19 m from the Sun (19 steps)**

**…..and so on.**

**Each group takes a photo of their planet with the prior planet in the background.**

**The teacher takes a photo of the whole system.**

**To lead to part 2 in this astronomy project we will look at the distance between Earth and Mars:**

**From above we have the distances from Sun to Earth and from Sun to Mars.**

**If we subtract these two figures we have the distance between Earth and Mars:**

**228.000.000.000 m - 150.000.000.000 m = 78.000.000.000 m**

**How do we get there?**