

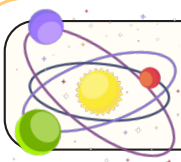


# Our Solar System – Discovering Distance

## ANSWERS



Planet	Diameter (km)	Distance from Sun (km)
Earth	<p>Let's start with Earth...</p> <p>Tennis balls have a diameter of approximately 65 mm so this will be our starting point and first scale diameter.</p>	<p>Using this formula we can calculate the distance of earth from the sun using the same scale.</p> $\frac{\text{Scale Diameter}}{\text{Scale Distance}} = \frac{\text{Actual Diameter}}{\text{Actual Distance}}$ <p><b>Substitute the values</b></p> $\frac{65}{\text{Scale Distance}} = \frac{12756}{149600000}$ <p><b>Rearrange to find the scale distance</b></p> $\frac{65 \times 149600000}{12756} = \text{Scale Distance}$ <p><b>Scale distance</b> = 762307.9335 mm = 762 m to the nearest m</p> <p>Can you imagine what 762m looks like? It's a lot of tennis balls!!</p>
Mercury	<p>We will use the size of Earth and its distance from the sun in order to calculate the size of the rest of the planets and their distance from the sun to the same scale.</p> $\frac{\text{Scale Planet Diameter}}{\text{Scale Earth Diameter}} = \frac{\text{Actual Planet Diameter}}{\text{Actual Earth Diameter}}$ <p><b>Substitute the values</b></p> $\frac{\text{Scale Planet Diameter}}{65} = \frac{4879}{12756}$ <p><b>Rearrange to find the scale diameter in mm</b></p> <p><b>Scale Planet Diameter</b> = <b>24.86</b> mm</p>	<p>Use the examples of Earth and Mercury to find the scale diameter and then the scale distance from the sun of each of the planets in our solar system. <b>Remember all scale sizes will be given in mm</b>, you may want to convert to a more appropriate unit.</p> <p><b>Scale distance</b> = <b>279732.3222 mm</b> <b>= 280 m</b></p>
Venus	<p><b>Scale diameter</b> = <b>61.68 mm</b></p>	<p><b>Scale diameter</b> = <b>551369.4646 mm</b> <b>= 551 m</b></p>
Mars	<p><b>Scale diameter</b> = <b>34.6 mm</b></p>	<p><b>Scale diameter</b> = <b>1160974.676 mm</b> <b>= 1.16 km</b></p>



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Planet	Diameter (km)	Distance from Sun (km)
Jupiter	Scale diameter = 728.595 mm	Scale diameter = 3967465.36 mm = 3.97 km
Saturn	Scale diameter = 614.208 mm	Scale diameter = 7302125.506 mm = 7.3 km
Uranus	Scale diameter = 260.479 mm	Scale diameter = 14178622.35 mm = 14.2 km
Neptune	Scale diameter = 252.377 mm	Scale diameter = 22905424.26 mm = 22.91 km