

## Solar system, released item #2 (CMA123Q02)

PISA 2022

**Solar System**  
Question 2 / 2

Refer to "Solar System" on the right. Click on a choice to answer the question.

On average, approximately how many million kilometres from the Sun is the planet Neptune?

5 million km  
 30 million km  
 180 million km  
 4500 million km

**SOLAR SYSTEM**

The table below shows the average distance from the Sun to the primary planets in Astronomical Units (au).

1 au is approximately 150 million kilometres.

| Planet  | Average distance from Sun in au |
|---------|---------------------------------|
| Mercury | 0.39                            |
| Venus   | 0.72                            |
| Earth   | 1.00                            |
| Mars    | 1.52                            |
| Jupiter | 5.20                            |
| Saturn  | 9.58                            |
| Uranus  | 19.20                           |
| Neptune | 30.05                           |

For the second item in this unit, students have to determine approximately how many million kilometres the planet Neptune is from the Sun, a process that requires converting Astronomical Units to millions of kilometres. From the stimulus, students are given the conversion that 1 au is approximately 150 million kilometres, and they can read from the table that Neptune has an average distance from the sun of 30.05 au. To determine Neptune's approximate distance in million kilometres, students need to multiply 30.05 times 150. This gives a result of 4,507.5, which rounds to 4500 (million km). This is a Level 2 (easier) item for students that only requires employing a process for converting units based on the given information.

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| <b>Unit Name – Item #</b> | Solar System – CMA123Q02                 |
| <b>Content Area</b>       | Quantity                                 |
| <b>Process</b>            | Employ                                   |
| <b>Context</b>            | Scientific                               |
| <b>Item Format</b>        | Simple Multiple Choice - Computer Scored |
| <b>Answer</b>             | 4500 million km                          |
| <b>Proficiency Level</b>  | 2  |