

Annex C. Released items from the PISA 2022 computer-based mathematics assessment

Four new mathematics units were released from the main survey of the PISA 2022 assessment; the ten items from these four units are presented in this annex.

Screenshots of the interface used in PISA 2022 are shown to give readers an understanding of how students interacted with the assessment and its items. Interactive versions of all of these units are also available at www.oecd.org/pisa.

Unit CMA123 – Solar System

Solar system, released item #1 (CMA123Q01)

PISA 2022

Solar System
Question 1 / 2

Refer to "Solar System" on the right. Use drag and drop to answer the question.

The following model shows the average distances between three planets. (Planets and model not drawn to scale.)

Based on the distances given, which planets belong in the model? Drag the correct three planets in the correct order. To change an answer, first drag the previous planet out.

Mercury

Venus

Earth

Mars

Jupiter

Saturn

Uranus

Neptune

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 |

This is the first item in the unit *Solar System*. There is no introduction screen for this unit. For this task, students need to determine which three planets have the average distances, in Astronomical Units (au), between them that are

shown in the model. To do this, students need to use the table in the stimulus that gives each planet's average distance from the Sun, in au. The correct answer, from left to right, is Jupiter, Saturn, Uranus.

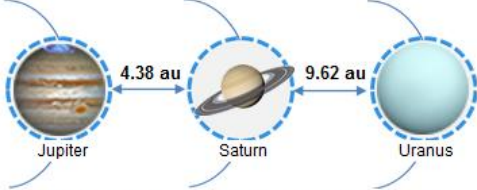
To respond to the question, students have to drag-and-drop the planets into the model (see below for an image of the planets placed in the model). There is no introduction or practice screen before this item but instructions for how to respond and change a response are given explicitly in the question stem. A full-credit response was given for correctly placing all three planets, and partial credit was given for correctly placing any two planets. This is a moderately difficult item with both full and partial credit being at Level 3 on the proficiency scale.

Below is an image of what the question stem and response area look like after the student has dragged-and-dropped the planets into their respective locations in the model.


Solar System
Question 1 / 2


Refer to "Solar System" on the right. Use drag and drop to answer the question.


The following model shows the average distances between three planets. (Planets and model not drawn to scale.)





Based on the distances given, which planets belong in the model? Drag the correct three planets in the correct order. To change an answer, first drag the previous planet out.


Mercury


Venus


Earth


Mars


Neptune

| | |
|---------------------------|--|
| Unit Name – Item # | Solar System – CMA123Q01 |
| Content Area | Quantity |
| Process | Interpret/Evaluate |
| Context | Scientific |
| Item Format | Complex Multiple Choice - Computer Scored |
| Answers | Full Credit: All three planets are correctly placed (from left to right: Jupiter, Saturn, Uranus) Partial Credit: Any two planets are correctly placed (other planet is incorrect or missing) |
| Proficiency Levels | 3 (full credit) 3 (partial credit) |