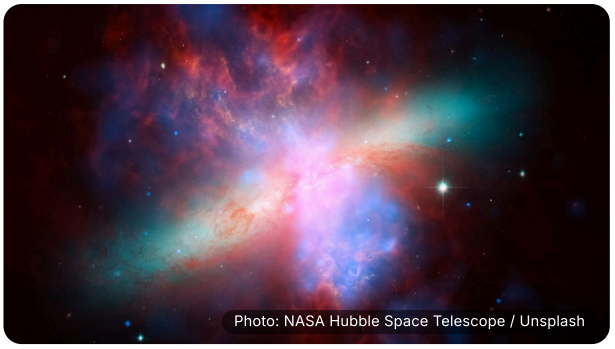
Euclid maps 900m galaxies and rare lenses

LEVEL B2


Photo: NASA Hubble Space Telescope / Unsplash

I. WARM-UP

1. What part of space would you like to see up close?
2. How do big numbers in science affect your curiosity?
3. What tools do astronomers use to study the sky?

II. KEY VOCABULARY

mission
an organised project with a clear goal, often in science or space

reveal
to show something that was not known before

galaxy
a large system of stars, gas and dust held together by gravity

quasar
a very bright object at a galaxy's centre, powered by a black hole

phenomenon
an event or fact that can be seen and studied

gravitational
related to gravity, the force that pulls objects together

lensing
the bending of light by gravity, making objects look stretched or doubled

distort
to change the shape or appearance of something

III. READING

The European Space Agency's Euclid mission, launched in July 2023, aims to create the largest 3D map of the universe, covering about a third of the sky and more than 10 billion years of cosmic history. Its first major data release revealed more than 900 million galaxies and over 60 million potential quasars.

The new material represents roughly 14% of the area Euclid plans to map. Researchers say Euclid keeps high resolution while mapping huge volumes. The release also lists about 15,000 probable cases of a phenomenon called strong gravitational lensing.

When a foreground galaxy, often in a cluster, sits in front of a distant one, its gravity distorts space-time and bends the light, making bright arcs or rings. Dark matter boosts this effect, so studying lensing can help rule out theories about what dark matter is and how it is distributed.

Experts previously knew of about 1,000 cases, and the mission expects around 170,000 by its end. Another data release is planned, including results on galaxy distribution and weak gravitational lensing.

Reading text adapted from reporting by **The Guardian***: "European survey reveals 900m galaxies – and...". Original article linked at theenglishwire.com.*

IV. COMPREHENSION QUESTIONS

1. What is the main goal of the Euclid mission?
2. How many galaxies and potential quasars did the first release include?
3. What share of the sky does Euclid plan to map?
4. How many strong lensing cases are listed now, and how many are expected?
5. Why can strong gravitational lensing help scientists study dark matter?

V. DISCUSSION

1. Which number in the release impressed you most? Why?
2. Should space agencies focus on dark matter or nearby planets first?
3. How can a 3D map of space help everyday technology on Earth?
4. What skills do teams need to manage such huge data sets?

VI. GRAMMAR FOCUS

Used to / would

used to + base verb: past states or habits that are not true now. would + base verb: repeated past actions (not states). Time cues like “before..., in the 1990s, as a child” show the past habit.

“Before digital surveys, astronomers **used to map** *smaller areas.”*

“In earlier decades, teams **would search** *plates for bright arcs.”*

VII. GRAMMAR EXERCISE

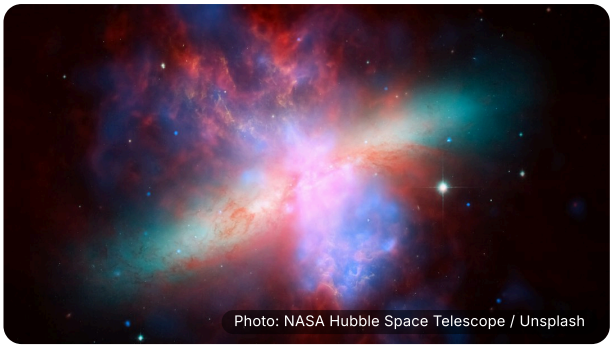
Complete each gap with used to or would (as appropriate).

1. Before Euclid, experts (know) ___ of about 1,000 lensing cases. _____
2. In the 1990s, students (spend) ___ nights processing images. _____
3. As a child, I (be) ___ fascinated by galaxy photos. _____
4. Before online archives, teams (store) ___ photos on plates. _____
5. Before automation, volunteers (check) ___ arcs by eye. _____

Teacher's Notes

TEACHERS ONLY

These notes are designed to help you get the most out of this lesson. Please do not share this page with students.


Photo: NASA Hubble Space Telescope / Unsplash

I. LESSON GUIDE

- Timing: 8–10 minutes warm-up, 10 minutes vocabulary, 12–15 minutes reading, 10 minutes comprehension, 10 minutes discussion. Fold grammar into reading/comprehension time if needed.
- Pre-teach: galaxy, quasar, phenomenon, gravitational lensing, reveal. Elicit what students know about telescopes and space surveys.
- Run the reading in two passes: first for main idea, second to underline key figures (900m, 60m, 14%, 15,000, 170,000). Pair-check answers before class feedback. The topic is abstract science, so allow students to answer about the news rather than about themselves.
- Differentiation: stronger students summarise how lensing works in 2–3 sentences; others match vocabulary to definitions first, then re-read and find the numbers in the text.

II. DISCUSSION FACILITATION TIPS

1. Have students pick one figure, explain it to a partner, then swap and justify their choice.
2. Take a quick vote, then pair students from different sides to list two reasons for each focus.
3. Prompt examples: GPS, imaging, materials. Push for a short explanation of the link.
4. Brainstorm roles (data analyst, coder, astronomer). Ask each pair to match skills to roles.

III. EXTENSION ACTIVITIES

Writing: In pairs, write a 90-word press note summarising Euclid's first data release for the public.

Presentation: Create a 2-minute slide explaining strong gravitational lensing with one clear diagram.

IV. ANSWER KEY OVERVIEW

Comprehension questions: short factual answers from the text.

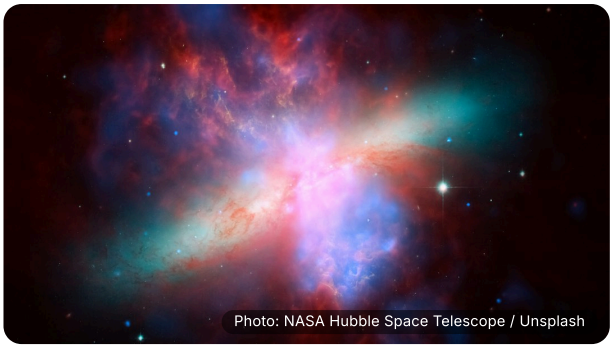
Grammar exercise: Used to / would

Discussion: open-ended. Accept any reasonable ideas supported by examples and reasoning.

Answer Key

TEACHERS ONLY

These answers are for teachers only. Please do not share this page with students.


Photo: NASA Hubble Space Telescope / Unsplash

IV. COMPREHENSION QUESTIONS

1. What is the main goal of the Euclid mission?
   To create the largest 3D map of the universe and study the cosmos.
2. How many galaxies and potential quasars did the first release include?
   More than 900 million galaxies and over 60 million potential quasars.
3. What share of the sky does Euclid plan to map?
   About a third of the sky.
4. How many strong lensing cases are listed now, and how many are expected?
   About 15,000 now, with around 170,000 expected by the end.
5. Why can strong gravitational lensing help scientists study dark matter?
   Because dark matter boosts the effect and its distribution changes the lensing.

V. DISCUSSION

Open answers. Accept any reasonable ideas supported by examples and reasoning.

VII. GRAMMAR EXERCISE

Complete each gap with used to or would (as appropriate).

1. Before Euclid, experts ___ of about 1,000 lensing cases. **used to know**
2. In the 1990s, students ___ nights processing images. **used to/would spend**
3. As a child, I ___ fascinated by galaxy photos. **used to be**
4. Before online archives, teams ___ photos on plates. **used to/would store**
5. Before automation, volunteers ___ arcs by eye. **used to/would check**

VI. GRAMMAR FOCUS

Key point: used to + base verb: past states or habits that are not true now. would + base verb: repeated past actions (not states). Time cues like “before..., in the 1990s, as a child” show the past habit. (Examples constructed.)

“Before digital surveys, astronomers **used to map** *smaller areas.”*

“In earlier decades, teams **would search** *plates for bright arcs.”*