



Unit 11 • The Earth and Universe: the universe

Name _____ Class _____ Roll no. _____ Date _____ Marks _____ / 35

1 Key words

[4]

Fill in the blanks with words from the box. Two words in the box are not needed. Each blank carries 0.5 mark.

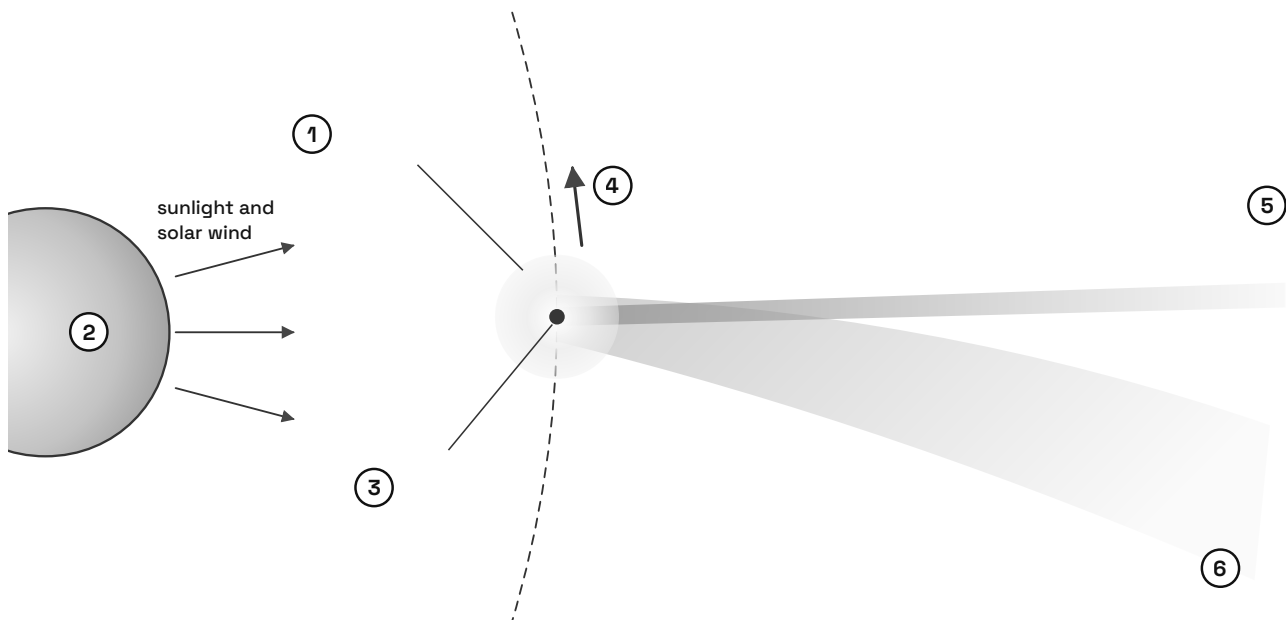
asteroid belt Big Bang coma constellation galaxy Kuiper belt light-year meteor
meteorite universe

Everything that exists, all of space and time and all the matter and energy in them, is the _____. The distance light travels in a vacuum in one year is a _____. The universe began expanding from a tiny, hot, dense state about 13.8 billion years ago, in the _____. Most asteroids go round the Sun in the _____, between the orbits of Mars and Jupiter. The glowing cloud of gas and dust around the nucleus of a comet is its _____. The streak of light made by a meteoroid burning up in the air is a _____. A huge collection of stars, gas and dust held together by gravity is a _____. A group of stars that seems to make a pattern in the sky is a _____.

2 Label the diagram

[3]

The diagram shows a comet near the Sun. Write the names of the parts numbered 1 to 6. Each carries 0.5 mark.



- | | |
|----------|----------|
| 1. _____ | 2. _____ |
| 3. _____ | 4. _____ |
| 5. _____ | 6. _____ |



[5]

Choose the correct option for each of the following questions.

- i. Who put forward the idea of the expanding universe? [1]
 - a. Einstein
 - b. Lemaître
 - c. Halley
 - d. Pythagoras
- ii. Which comet was destroyed by crashing into Jupiter? [1]
 - a. Shoemaker-Levy 9
 - b. Bennett
 - c. Tempel-Tuttle
 - d. Halley
- iii. A photograph of deep space shows hundreds of glowing smudges; one, labeled A, is a spiral galaxy. What is A made of? [1]
 - a. rock, metal and dust particles
 - b. ice, gas and dust particles
 - c. stars, ice and dark matter
 - d. stars, nebular dust and gas clouds
- iv. Which way does a comet's tail point? [1]
 - a. always behind the comet, like smoke from a bus
 - b. always away from the Sun
 - c. always towards the Sun
 - d. always towards the Earth
- v. Why does the Pole Star (Dhruva Tara) help us find north? [1]
 - a. It is the brightest star in the sky.
 - b. It lies almost exactly above the Earth's North Pole, so it stays nearly still in the north while other stars turn around it.
 - c. It moves from east to west fastest.
 - d. It can be seen in the daytime.

[3]

Write very short answers to the following questions.

- a. Into how many constellations have astronomers divided the whole sky? [1]
-
-
- b. In which galaxy is our Solar System? [1]
-
-
- c. Meteoroids hit the Earth's air all day and all night. Why do we see meteors only at night? [1]



5 Short answers

[8]

Write short answers to the following questions.

- a. Write any two differences between meteors and meteorites.

[2]

- b. Write any two differences between asteroids and comets.

[2]

- c. Give a reason: near-Earth asteroids are dangerous for our planet.

[2]

- d. Give a reason: most meteors are completely destroyed before they reach the ground.

[2]

6 Long answers

[8]

Write long answers to the following questions.

- a. Describe the Big Bang theory in brief.

[4]

- b. Mention the characteristics of asteroids.

[4]



7 Numerical problem

[2]

A light-year is about 9.46×10^{12} km. The nearest star after the Sun, Proxima Centauri, is about 4.2 light-years away. How far is it in kilometers? How many years does its light take to reach us?

[illegible]

Answer:

8 Think

[2]

The Moon is covered with round craters, but the Earth has very few, though both are hit by meteoroids. Why?

9 Activity: Your own sky watch (Activity 11.5)

(not marked)

With your parents, watch the sky on a clear, dark night, away from lights. Give your eyes 20 minutes to get used to the dark. Fill in the table.

What to look for	Did you find it?	Where in the sky, and at what time?	What did it look like?
the Milky Way			
the Saptarishi (Ursa Major)			
the Pole Star (Dhruva Tara)			
Orion or Scorpius			
a planet			
a meteor			

