

Cosmic Economics: Basic Principles in Space

Basic Economics · Answer Key · 10 Questions

1. Which celestial body, besides Earth, is the most studied for potential resource extraction and economic opportunities due to its rich mineral deposits?

- A) Mars
- B) The Moon**
- C) Venus
- D) Jupiter

2. The vastness of space and the theoretical abundance of certain resources, like Helium-3 on the Moon, suggest potential implications for which economic concept regarding scarcity?

- A) Opportunity cost
- B) Diminishing marginal utility
- C) Absolute advantage
- D) Relative scarcity**

3. The significant upfront investment required for space missions, such as the International Space Station, primarily relates to which fundamental economic factor of production?

- A) Labor
- B) Land
- C) Capital**
- D) Entrepreneurship

4. If a space agency decides to allocate its budget to developing lunar mining technology instead of Mars exploration, what economic principle is most evident in this decision?

- A) Comparative advantage
- B) Opportunity cost**
- C) Externalities
- D) Moral hazard

5. The concept of 'space debris' poses an increasing economic challenge by potentially hindering future launches and satellite operations. This is an example of which type of economic problem?

- A) Information asymmetry
- B) Public good
- C) Tragedy of the commons**
- D) Market failure

6. The development of reusable rocket technology, pioneered by companies like SpaceX, aims to reduce the marginal cost of launching payloads into orbit. This directly impacts which economic goal?

- A) Economic equality
- B) Economic efficiency**
- C) Economic stability
- D) Economic freedom

7. When considering the economic viability of asteroid mining, the potential return on investment is heavily influenced by the predicted value and accessibility of specific elements like platinum group metals, illustrating the principle of:

- A) Inflation
- B) Supply and demand**
- C) Interest rates
- D) Fiscal policy

8. The establishment of a space economy, where goods and services are traded between Earth and celestial bodies, would require significant international cooperation and the development of standardized regulations, addressing the need for:

- A) Monopolies
- B) Property rights**
- C) Price controls
- D) Subsidies

9. The discovery of water ice on Mars and other celestial bodies has significant economic implications, primarily due to its potential use for life support and as a propellant, thus reducing the need for expensive resupply missions from Earth. This relates to:

- A) Technological obsolescence
- B) Resource substitution**
- C) Technological unemployment
- D) Rent-seeking

10. The economic concept of 'network effects' could apply to the future development of a space-based internet infrastructure, where the value of the service increases with the number of users and connected satellites. This is an example of:

- A) Diseconomies of scale
- B) Positive externalities**
- C) Negative externalities
- D) Perfect competition