Reading Comprehension

DIRECTIONS  Read these selections and answer the questions that follow.

from Why Go Back to the Moon?  
Michael D. Lemonick

Using the moon as a launching pad for Mars, as President Bush suggested last week, may not be the most sensible route to the Red Planet. But that doesn't mean a return to the moon shouldn't be part of a reinvigorated human spaceflight program. There are plenty of reasons to go back to the world we abandoned 30 years ago—some fanciful and futuristic, others quite practical.

At the more practical end, the moon offers unique opportunities for scientific research. Going there is the only way to figure out where the moon came from, for example. Current theory says it was blasted from Earth in a collision with a planet-size object billions of years ago, but the moon rocks we have in hand from the Apollo missions don't offer enough mineralogical clues to prove or refute the idea.

The moon would also be a terrific place to build astronomical observatories. With no atmosphere to interfere with precision optics, it offers both the clarity of outer space and a surface solid enough to support enormous structures.

Another good reason to go is the one disdained by straight-to-Mars boosters: learning how to live off the land—manufacturing some of what we need from soil that contains oxygen, silicon, aluminum, iron, calcium, magnesium and titanium, plus a dusting of helium, hydrogen, nitrogen and carbon deposited by solar winds.

To some dreamers, the presence of silicon, especially, suggests a way to make a return to the moon pay—and maybe even save the environment back home. If you could set up automated lunar factories to extract the silicon and turn it into solar cells, says David Criswell, director of the Institute for Space Systems Operations at the University of Houston, the moon could become a solar power station, beaming clean energy via microwaves back to Earth.

The fact that solar power isn't yet cost effective on Earth makes this high-tech scenario seem a bit farfetched. The same goes for another energy-producing idea: extracting helium-3, an isotope rare on Earth but relatively abundant on the lunar surface, and shipping it back to fuel nuclear-fusion power plants. First, though, somebody would have to demonstrate that fusion reactors actually work.
from In Defense of Space Exploration

Matt Silver

While many in the Massachusetts Institute of Technology community are likely thrilled by President Bush’s newly announced initiative to return men to the moon, others remain more skeptical. Let’s take a moment to review both the plan and benefits of space exploration in general.

Regarding cost, let’s put some things in perspective. NASA’s FY03 budget was roughly $15.5 billion. The Bush initiative calls for $1 billion in new funds spread over the next five years, and $11 billion re-allocated from existing NASA programs, resulting in an increase of $200 million a year. For comparison, the U.S. will spend roughly $400 billion on defense in 2004—more than the next fifteen countries combined.

Those opposed to space programs will here point out that federal over-spending in one area does not justify it in another. There are many reasons, however, why that increase and the plan that goes with it constitute wise resource allocation. First, the initiative opens the possibility for much needed change at NASA. The Columbia tragedy threw light on major internal and organizational problems at the agency. The Columbia Accident Investigation Board report describes the tragedy not as an isolated incident, but as symptomatic of a broken safety and management culture in which innovation and safety often take a back seat to bureaucracy and political infighting. The bold mandate for an $11 billion internal re-organization coming from the highest levels of government will finally give NASA headquarters the authority to cancel unnecessary programs, streamline operations not consistent with the stated goal, and override political pressure that otherwise stifled change.

Some, of course, maintain that the U.S. should simply not be involved in human space flight to begin with. This brings us to the classic argument of whether human space exploration in general is a good thing, worth reviewing in light of the current plans.

First, money spent on space research and development does not disappear into thin air. It goes toward creating knowledge, jobs, new businesses, and technologies, many of which have direct application to other activities.

---

There will also be important scientific returns. The NASA Hubble Space Telescope has literally changed our understanding of the universe. A telescope on the moon, shielded from both solar and earth radiation, has the potential to see further into the universe than anything previously built. During the Apollo moon landings, we arguably learned more about lunar geology and the solar system in general than we could have in many decades of robotic probes. This kind of science merits government funding.

An often-ignored benefit of space activities involves its capacity to increase international cooperation and generate goodwill. A return to the moon will bring the international community together in an activity that pits man against the cosmos. An international effort will not only lower costs through the pooling of resources, it will create concrete links between the U.S., Russia, Japan, Europe, even China; and this will have tremendous symbolic overtones.

**Comprehension**

**DIRECTIONS** *Answer these questions about the excerpt from “Why Go Back to the Moon?”*

1. In lines 1–11, what claim does the author make about the value of moon exploration?
   - A The president supports moon exploration.
   - B Travel to the moon is the best route to Mars.
   - C Good reasons exist for exploring the moon.
   - D A return to the moon is an outdated idea.

2. Which statement is a fact that supports setting up a solar power station on the moon?
   - A It is the best way to provide clean energy through microwaves.
   - B Silicon, which is available on the moon, is useful in producing power.
   - C The moon has a surface that is solid enough to support enormous structures.
   - D Someone needs to show that nuclear fusion reactors can produce power.
3. Which argument is used to counter the “straight-to-Mars boosters” (lines 15–16)?
   A. People could use the moon’s element-rich soil to manufacture necessities.
   B. People who want to use solar power and make money from the moon are dreamers.
   C. Nuclear fusion power plants would be a better source of energy than solar power.
   D. Solar power isn’t cost-effective on Earth.

DIRECTIONS Answer these questions about the excerpt from “In Defense of Space Exploration.”

4. Which one of the following statements is an opinion?
   A. NASA’s budget for 2003 was roughly $15.5 billion. (lines 5–6)
   B. We arguably learned more about space from the moon landings than we could have from robotic probes. (lines 34–35)
   C. Money spent on space research and development provides jobs. (lines 28–30)
   D. The Hubble telescope has provided scientific information. (lines 31–32)

5. Which argument does the author counter in lines 25–36?
   A. More money should be given to NASA.
   B. Many countries do not agree with the United States about space programs.
   C. Human space exploration is not a good enterprise.
   D. NASA needs the authority to cancel unnecessary programs.

6. Which words and images in lines 31–41 make the strongest appeal to your emotions?
   A. solar system, moon landings, lunar geology
   B. earth radiation, potential, robotic probes
   C. goodwill, man against the cosmos, tremendous
   D. capacity, return to the moon, effort

DIRECTIONS Answer this question about both selections.

7. Which idea is presented by both authors in support of space exploration?
   A. reorganizing NASA
   B. pooling resources among nations
   C. setting up a space observatory on the moon
   D. turning silicon into solar cells

DIRECTIONS Answer this question about the advertisement.

8. Which feeling does the ad try to convey by showing a smiling child looking up at the space lab?
   A. optimism        C. patriotism
   B. reverence        D. playfulness

Written Response

SHORT RESPONSE Write three or four sentences to answer this question.

9. Is the following sentence from “Why Go Back to the Moon?” a statement of fact or opinion? Briefly explain your reasoning.
   “The moon would also be a terrific place to build astronomical observatories.” (line 12)

EXTENDED RESPONSE Write two or three paragraphs to answer this question.

10. Which selection in favor of space exploration do you think is more persuasive? Identify the reasons, evidence, and persuasive techniques that you think make it more effective.
Vocabulary

DIRECTIONS Use context clues to answer the following questions about specialized vocabulary words.

1. Which expression in lines 8–10 of “Why Go Back to the Moon?” gives the best clue to the meaning of *mineralogical*?
   A blasted from Earth
   B planet-size object
   C moon rocks
   D Apollo missions

2. In line 12 of “Why Go Back to the Moon?” the word *astronomical* refers to
   A outer space
   B enormous size
   C microwaves
   D optics

3. Which word in lines 34–35 of “In Defense of Space Exploration” gives the best clue to the meaning of *lunar*?
   A moon
   B geology
   C solar
   D robotic

DIRECTIONS Read the thesaurus entries and answer the questions.

farfetched adjective
bizarre, grotesque, fantastic, remote, distant, imaginary, antic, strained

4. Which word could be substituted for the word *farfetched* as it is used in line 27 of “Why Go Back to the Moon?”
   A strained
   B grotesque
   C fantastic
   D antic

bold adjective
rude, pushy, noticeable, adventurous, conspicuous, obvious, shameless

5. Which word could be substituted for the word *bold* as it is used in line 20 of “In Defense of Space Exploration”?
   A rude
   B pushy
   C obvious
   D adventurous

consistent adjective
compatible, unchanging, constant, unfailing, even, loyal, valid

6. Which word could be substituted for the word *consistent* as it is used in line 22 of “In Defense of Space Exploration”?
   A compatible
   B unchanging
   C constant
   D unfailing
Writing & Grammar

DIRECTIONS: Read the passage and answer the questions that follow.

(1) Space tourism is a lucrative business. (2) One company found two willing candidates. (3) The candidates wanted to fly to the International Space Station. (4) Each was ready to pay $20 million. (5) In the future, the company will offer more-affordable trips. (6) People will be able to take suborbital flights for just $100,000. (7) Civilian spaceships need to be built first. (8) Some people might want the experience without going to space. (9) To meet this need, the company will offer a training-only session. (10) Others might be interested in a short flight. (11) They’ll have the option to fly just 15 miles high.

1. Choose the correct way to rewrite sentences 2, 3, and 4 as one compound-complex sentence.
   A One company found two willing candidates wanting to fly to the International Space Station, and each was ready to pay $20 million.
   B One company found two willing candidates who wanted to fly to the International Space Station, and each was ready to pay $20 million.
   C When one company found two willing candidates wanting to fly to the International Space Station, they discovered that each was ready to pay $20 million.
   D One company found two willing candidates wanting to fly to the International Space Station, with each ready to pay $20 million.

2. Choose the correct way to rewrite sentences 5, 6, and 7 as one compound-complex sentence.
   A In the future, the company will offer more-affordable trips to people who will be able to take suborbital flights for just $100,000 when civilian spaceships are built.
   B In the future, when civilian spaceships are built, the company will offer more-affordable trips to people who will be able to take suborbital flights for just $100,000.
   C In the future, when civilian spaceships are built, the company will offer more-affordable trips, and people will be able to take suborbital flights for just $100,000.
   D In the future, civilian spaceships will be built, and the company will offer more-affordable flights to people for just $100,000.

3. Choose the correct way to rewrite sentences 9, 10, and 11 as one compound-complex sentence.
   A To meet this need, the company will offer a training-only session, or if people are interested in a short flight, they’ll have the option to fly just 15 miles high.
   B To meet this need, the company will offer a training-only session, or people will have the option to fly just 15 miles high for a short flight.
   C To meet this need, the company will offer a training-only session to interested people who also will have the option to fly just 15 miles high.
   D To meet this need, the company will offer a training-only session; people also will have the option to fly just 15 miles high.