Hispanic/Latino Curriculum - Fifth Grade Science/Math Lesson Plan
Hispanic/Latino Astronauts

Concept/Theme: Contributions of Hispanic Astronauts/Planetary Characteristics

Grade: Fifth

Primary Benchmark:

- S.C.5.E.5.2 Recognize the major common characteristics of all planets and compare/contrast the properties of inner and outer planets.

Time: 1-2 Class Periods

Objectives:

1. The student will understand that Hispanics/Latinos have made major contributions to the astronaut and space program in the United States.
2. The student will identify qualities of nine different Hispanic/Latino astronauts.
3. The students will identify characteristics of the planets of our solar system.

Differentiated Instruction Activities: Teachers may choose to do one or many of the student-centered activities. Activities cover elements of Bloom's taxonomy.

Teacher Preparation/Materials: Reading Passages, Reference books, Science text, Chart Paper or Poster Board, Colored Markers, Colored Crayons, or Colored Pencils, Quiz, Writing Handouts, Concept Map, Video, I Want To Be An Astronaut –movie is available through ITV, 561-738-2920, Television Set, VCR or DVD Player,

1. Pre-reading activities:
    - After reading about the planets in the science text/reference books, ask students to review the names of each planet. Place each planet on a separate piece of chart paper or poster board and place around the room. Tell students you will come back to the planets later.
    - Next, place the following questions on the board and ask students to **pair and share**, and question each other. Have students write down their possible answers and report back to the class. Write student responses on the board.
        - What are the names of some astronauts in the U.S. Space Program? *John Glenn, Neil Armstrong.*
        - What are the names of some Hispanic/Latino astronauts in the U.S. Space Program? *Carlos Noriega, Christopher Loria, Sidney Gutierrez, Fernando Caldeiro, Michael Lopez-Alegria, Marco Pontes, George Zamka, Pedro Duque, John Olivas, Franklin Chang-Díaz, Joe Acaba, and Jose Hernandez.*
        - What are the names of some female astronauts in the U.S. Space Program? *Christa McAuliffe, or Dr. Ellen Ochoa (who is also Hispanic)*

- Tell students they will be learning about **nine** different Hispanic/Latino astronauts today. Each group will be assigned an astronaut and a planet. The groups will be responsible for learning about the astronauts and reviewing the characteristics of their assigned planet from their textbooks. After everyone is finished, groups will present three facts about each astronaut and three facts about their assigned planet in a "carousel walk" around the room. Review rubric for grading with students or have the class create their own rubric.

2. During reading activities: Divide students into nine groups. Have each group decide on a reader, a recorder, and a spokesperson. Distribute the Reading Passage with individual astronaut biographies fact sheets to students (one astronaut per group).
    - Write these directions on the board for active reading:
      Underline words that are new to you.
      Circle three facts about your specific astronaut.

3. After reading activities:
    - Students should write the words that were new to them on the back of the individual astronaut fact sheets. Students should look to the context of the passage to try to define the words or look in the dictionary for the definitions.
    - Students should look in their textbooks in order to complete the fact sheet for characteristics of the individual planet and also write three interesting facts about the astronaut in the space provided.
    - The teacher should circulate and approve each fact sheet. Teacher may want to review FACT AND OPINION to help students pick only the facts from the biographies. When ready, the recorder of the group will go to the poster board or chart paper that has the name of their planet on it and copy the information on the practice reporting sheet on the poster board or chart paper.
    - **"Carousel Walk:** The spokesperson of each group will stand by their poster and wait until a group arrives. The spokesperson has two minutes to pretend (role play) to be the particular astronaut and tell the visiting students facts about "themselves" and also characteristics of their assigned planet. After two minutes, each group moves to the next astronaut and the two minutes repeat.
    - **Student Quiz:** Students may take this quiz individually or as a group. Quiz Answers: 1. C, 2. G, 3. A, 4. G, 5. A, 6. I, 7. C, 8. H, 9. B, 10. H. Writing Response: Student should take examples from the reading passage to write how astronauts are good role models.
    - **Video Activity:** Show the movie I WANT TO BE AN ASTRONAUT to students. While viewing or after the movie, have the student fill out concept map about how astronauts are role models or use the map as a transparency and model it with the students. Video available from ITV/T.E.N., Palm Beach County School District offices at 561-738-2920.

ESOL Strategies: Alternative Assessment, Modeling, Read Alouds, Graphic Organizers

Assessment:

- Student Participation
- Poster Board Assignment, Presentations, Student Quiz
- Graphic Organizers

Resources:
http://oeop.larc.nasa.gov/hep/hep-astronauts.html - individual biographies

PRESENTATION RUBRIC
TOTAL 100 POINTS

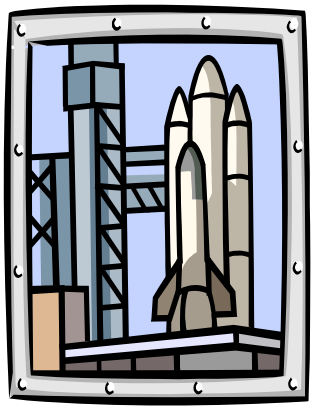
1. STUDENTS GAVE THREE FACTS ABOUT THEIR ASSIGNED PLANET. _____ 25 points

2. STUDENTS GAVE THREE FACTS ABOUT THEIR ASSIGNED ASTRONAUT. _____ 25 points

3. STUDENTS WROTE ALL OF THE INFORMATION NEATLY ON THE PAPER WITH ILLUSTRATIONS. _____25 points

4. STUDENTS WERE LOUD AND UNDERSTANDABLE IN THEIR ORAL PRESENTATION. _____25 points

_____FINAL GRADE



Hispanic/Latino Astronauts

The United States Space Program began in 1959. Because of this amazing program, we have learned more about our planets, the solar system, and how the universe affects life on earth. Astronauts and scientists have worked hard to study the life of the universe. They have risked their lives in order to travel into outer space.

At the beginning of the program, there were only seven astronauts. They were all white men who came from the Armed Forces or had been in the Armed Forces. Today, astronauts consist of men and women who are representative of many different cultures in America. America is made up of men, women, and children from all over the world. NASA (National Aeronautical Space Association) chooses its astronauts from a diverse pool of applicants that look like the make-up of America. Thousands of people apply to be an astronaut. Each year approximately 100 men and women are chosen for NASA's intense two-year program. It is a serious and demanding job that requires extreme physical and mental ability.

Hispanic/Latinos make up the largest ethnic group in the United States. Now, Hispanics are well represented in NASA. Approximately 2,000 Hispanics work for NASA. Many of these employees work in electronic, aeronautical, space engineering programs. Today, NASA has 109 astronauts and 13 are of Hispanic descent. In 1990, the first Hispanic woman, Dr. Ochoa, was selected as an astronaut. Astronauts are inventors, physicists, engineers, and space walkers. They are leaders and pioneers in our country. Their leadership and involvement in NASA's astronaut program makes them good role models for all children.

Hispanics proudly join the NASA ranks of highly qualified astronauts. Because Hispanics make up a large part of the population of the United States, the numbers of Hispanic astronauts increase each year. It is important for Hispanics to enter the physical science fields. It is necessary to actively recruit and educate people of all cultures, especially women, for the sciences, including space science. The physical sciences are becoming as popular as the medical sciences. With more education and positive role models, the physical sciences may grow to be the most popular science field.

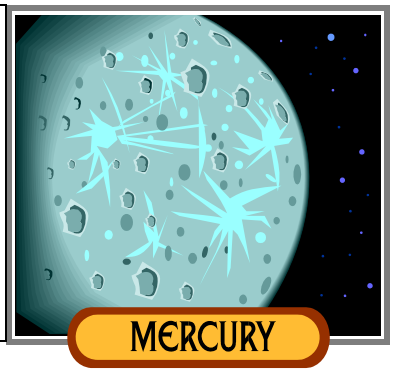
Each astronaut highlighted in this packet shares one thing. Education has been a key role in each of their lives. Each astronaut in this packet has studied, worked hard, achieved goals, and succeeded in his or her careers. These astronauts represent the results of working hard and getting a good education. They are so important that they are even responsible for information and knowledge that has led to discoveries and inventions. They show how science has influenced all areas of life. Overall, these astronauts show that having a good education leads to success in life.

LOOK IN YOUR TEXTBOOK AND WRITE DOWN THREE CHARACTERISTICS OF THIS PLANET:

1._____

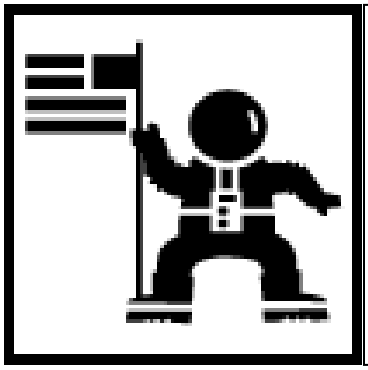
2._____

3._____



NASA ASTRONAUT #1

Fernando (Frank) Caldeiro is a NASA astronaut. He was born on June 12, 1958, in Buenos Aires, Argentina. He is a proud father of two daughters. He received a good education in public schools in Long Island, New York. For higher education, Caldeiro went to New York State University in Farmingdale. He worked very hard in school and graduated with an Associate degree in applied science in Aerospace Technology. Next, he went to the University of Arizona and graduated with a Bachelor's degree in mechanical engineering. Caldeiro sure did love education! Next, he enrolled in the University of Central Florida and graduated with a Master's degree in engineering management. In 1991, NASA hired him as a cryogenics and propulsion systems expert for the safety and mission assurance office. NASA selected Caldeiro as an astronaut candidate in 1996. He completed two years of training and evaluation. He is qualified for flight assignment as a mission specialist. He served as a lead astronaut for the European-built Shuttle Avionics Integration Laboratory. Astronaut Caldeiro has received many awards. He is especially proud of the appointment by President G.W. Bush to serve on the President's Advisory Commission on Educational Excellence for Hispanic Americans.



LOOK IN THE PASSAGE AND WRITE DOWN THREE INTERESTING FACTS ABOUT THE ASTRONAUT:

1._____

2._____

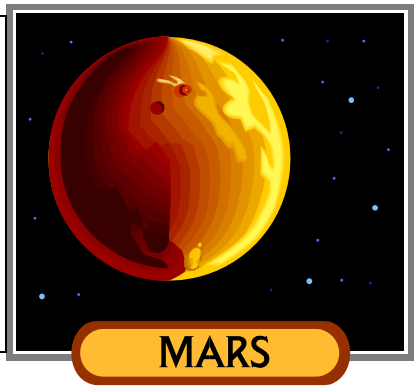
3._____

LOOK IN YOUR TEXTBOOK AND WRITE DOWN THREE CHARACTERISTICS OF THIS PLANET:

1._____

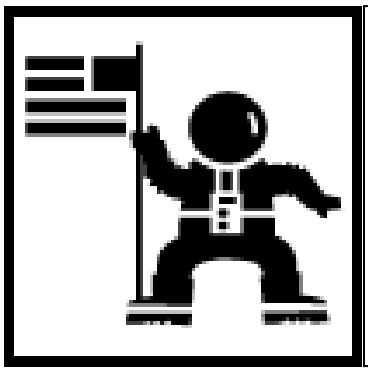
2._____

3._____



NASA ASTRONAUT #2

Franklin R. Chang-Díaz was born on April 4, 1950 in San Josè, Costa Rica. He is the proud father of four children. He graduated from the University of Connecticut in 1973, with a Bachelor's degree in mechanical engineering. Next, he went to Massachusetts Institute of Technology (MIT) and graduated with a Doctorate degree in applied plasma physics in 1997. He became an astronaut in 1981, and has been on seven space flights. He has logged more than 1,601 hours in space. He even got to take three space walks! Today, he is the director of the Advanced Space Propulsion Laboratory at the Johnson Space Center. He has earned many awards, such as: The Liberty Medal from President Reagan, the Medal of Excellence from the Congressional Hispanic Caucus, and the Cross of the Venezuelan Air Force from the President of Venezuela. In 1995, the government of Costa Rica honored him with the title of "Honorary Citizen." This is the highest honor Costa Rica gives to a foreign citizen. Franklin R. Chang-Díaz is the first honoree that was actually born there to receive this honor. In addition to all of his work in science and engineering, Dr. Chang-Diaz has other interests in the mental health field. He has worked as an instructor/advisor with a rehabilitation program for Hispanic drug abusers in Massachusetts.



LOOK IN THE PASSAGE AND WRITE DOWN THREE INTERESTING FACTS ABOUT THE ASTRONAUT:

1._____

2._____

3._____

LOOK IN YOUR TEXTBOOK AND WRITE DOWN THREE CHARACTERISTICS OF THIS PLANET:

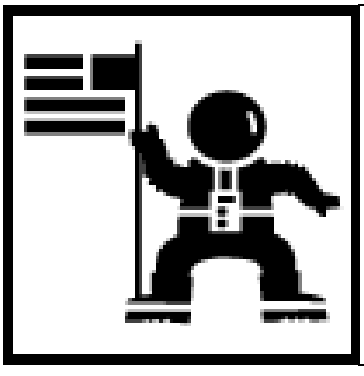
1._____

2._____

3._____

NASA ASTRONAUT #3

Pedro Duque was born March 14, 1963, in Madrid, Spain. He is the proud father of three children. He went to college in Madrid, Spain, at the Escuela Técnia Superior de Ingenieros Aeronáaiticos, Universidad Politécnica. He worked hard and graduated with a degree in Aeronautical Engineering. Then, Duque moved to the U.S. He knew he wanted to work for NASA In 1995, Duque got to fly when he was selected by NASA as an Alternate Payload Specialist for the Space Shuttle Life and Micro Gravity Space lab (LMS) mission flown in 1996. The next year, Duque entered the Mission Specialist Class at the NASA Johnson Space Center in Houston, Texas. He was trained as a Mission Specialist. In 2001, he was assigned to the first advanced training class to prepare for one of the first European long-term flights. He loves to be in space and study life in space.



LOOK IN THE PASSAGE AND WRITE DOWN THREE INTERESTING FACTS ABOUT THE ASTRONAUT:

1._____

2._____

3._____

LOOK IN YOUR TEXTBOOK AND WRITE DOWN THREE CHARACTERISTICS OF THIS PLANET:

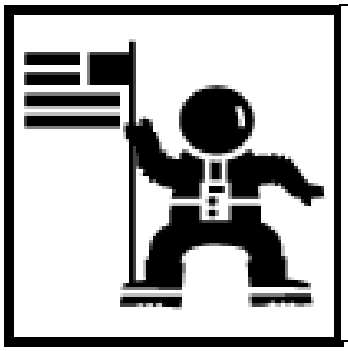
1._____

2._____

3._____

NASA ASTRONAUT #4

Sidney M. Gutierrex (Colonel, USAF, ret.) was born June 27, 1951, in Albuquerque, New Mexico. He is the proud father of three children. He went to college at the U.S. Air Force Academy and graduated with a Bachelor's degree in aeronautical engineering. He decided he loved to learn and wanted more education. He attended Webster College, in Saint Louis, Missouri, and graduated with a Master's degree in management. Finally, in 1984, NASA selected Gutierrez to become an astronaut. He has been on two space flights and has logged over 488 hours of space flight time. He was the pilot on STS-40 and was the spacecraft commander on STS-59. He retired from the U.S. Air Force and NASA in 1994. Today, he lives in Albuquerque, New Mexico, and works for Sandia National Laboratories. Gutierrex is very accomplished. He has earned many awards, such as: Hispanic Engineer of the Year, National Achievement Award, 100 Most Influential Hispanics Award, and Hispanic Achievement Award in Science.



LOOK IN THE PASSAGE AND WRITE DOWN THREE INTERESTING FACTS ABOUT THE ASTRONAUT:

1._____

2._____

3._____

LOOK IN YOUR TEXTBOOK AND WRITE DOWN THREE CHARACTERISTICS OF THIS PLANET:

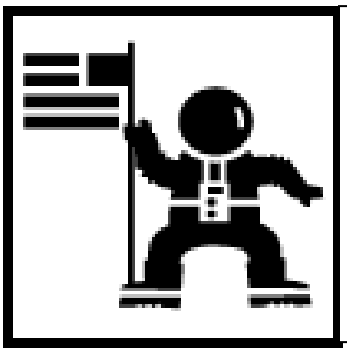
1._____

2._____

3._____

NASA ASTRONAUT #5

Marcos C. Pontes (Major, Brazil Air Force) is an astronaut for the Brazilian Space Agency (Mission Specialist). He was born March 11, 1963, in Bauru, Sao Pauol, Brazil. He is the proud father of two children. He first went to college in Brazil at the Brazil Air Force Academy. He graduated with a degree in aeronautical technology, but he was not finished with school. He continued his education at the Institutito Tecnologico de Aeronautica, in Jose Dos Compos, Sau Paulo, Brazil, where he earned a second Bachelor's degree in aeronautical engineering, but he still wanted to learn more! He went to the Naval Postgraduate School in Monterey, California, where he graduated with a Master's degree in systems engineering. Pontes learned that he loves to fly. He was a test pilot, working in areas of weapons development, missile tests, and aircraft evaluation. Finally, in 1998, he was selected by NASA to attend Astronaut Candidate Training. Pontes is now assigned to the Astronaut Office Space Operations Branch. He can't wait to be chosen for a space flight! Until then, he will serve in important technical assignments.



LOOK IN THE PASSAGE AND WRITE DOWN THREE INTERESTING FACTS ABOUT THE ASTRONAUT:

1._____

2._____

3._____

LOOK IN YOUR TEXTBOOK AND WRITE DOWN THREE CHARACTERISTICS OF THIS PLANET:

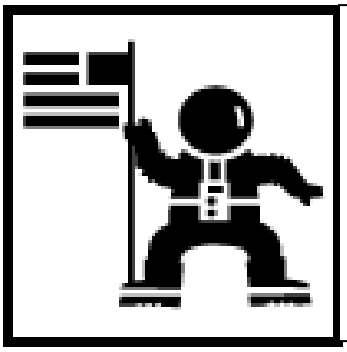
1._____

2._____

3._____

NASA ASTRONAUT #6

Michael E. Lopez-Alegria (Captain, USN) is a NASA astronaut. He was born on May 30, 1958, in Madrid, Spain. When he was in school, he moved with his family to Mission Viejo, California where he raised a family. He decided he loved engineering and went to college at the U.S. Naval Academy. He earned a Bachelor's degree in systems engineering. Next, he attended the U.S. Naval Postgraduate School and graduated with a Master's degree in aeronautical engineering. Alegria had always wanted to be a NASA astronaut and he knew he would have to learn more. He continued his education at the Kennedy School of Government at Harvard University and graduated with another Master's degree. Alegria is a great astronaut. He has successfully completed three exhausting space flights. All in all, he has logged more than 42 days in space.



LOOK IN THE PASSAGE AND WRITE DOWN THREE INTERESTING FACTS ABOUT THE ASTRONAUT:

1._____

2._____

3._____

LOOK IN YOUR TEXTBOOK AND WRITE DOWN THREE CHARACTERISTICS OF THIS PLANET:

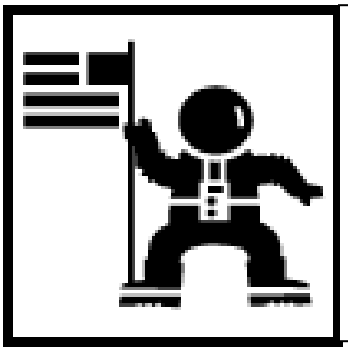
1._____

2._____

3._____

NASA ASTRONAUT #7

Carlos I. Noriega (Lieutenant Colonel, USMC, RET.) is a NASA astronaut. He was born on October 8, 1959, in Lima, Peru. He is proud of his family of five and their Latino heritage. When he moved to the U.S., he worked hard and decided to get a good education. He went to college at the University of Southern California and earned a Bachelor's degree in computer science. He continued his education by attending the Naval Postgraduate School and graduating with a Master's degree in space systems operations. He loves to use the computer to help space flights. Finally, in 1994, NASA selected Noriega to be a mission specialist. He has logged over 461 hours of space-time. He is an excellent astronaut who is currently assigned to the STS-119 crew.



LOOK IN THE PASSAGE AND WRITE DOWN THREE INTERESTING FACTS ABOUT THE ASTRONAUT:

1._____

2._____

3._____

LOOK IN YOUR TEXTBOOK AND WRITE DOWN THREE CHARACTERISTICS OF THIS PLANET:

1._____

2._____

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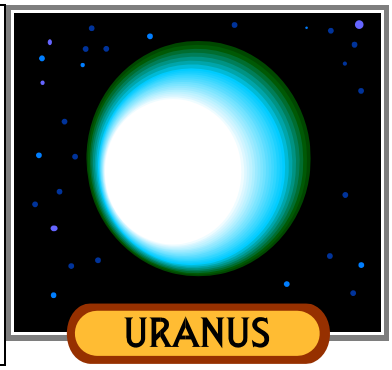
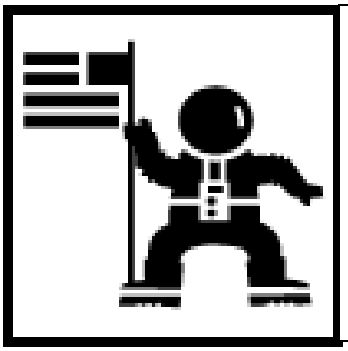


NASA ASTRONAUT #8

Ellen Ochoa (Ph.D.) was born on May 10, 1958, in Los Angeles, California. She is the proud mother of two sons. All of her life, she knew she wanted to learn about physics and engineering. She went to college at San Diego University and earned a degree in physics. She continued her education at Stanford University and graduated with a Master's and a Doctorate degree in electrical engineering. Dr. Ochoa was a co-inventor on three patents relating to optical systems. She was selected by NASA in January of 1990 to be an astronaut candidate. She was the first Hispanic woman to be an astronaut. She is a veteran of four space flights. Today, she serves as the deputy director of Flight Crew Operations at the Johnson Space Center in Houston, Texas. Dr. Ochoa has earned many awards, such as: the Women in Aerospace Outstanding Achievement Award, The Hispanic Engineer Albert Baez Award for Outstanding Technical Contribution, and the Hispanic Heritage Leadership Award. Dr. Ochoa spends a good deal of time talking to young people. She hopes she motivates young people to study hard and to make education a top priority in their lives. Dr. Ochoa shows young people that science has all kinds of areas of special interest. She hopes her talks help students decide to pursue fields in science as a career choice.



LOOK IN THE PASSAGE AND WRITE DOWN THREE INTERESTING FACTS ABOUT THE ASTRONAUT:

1._____

2._____

3._____

Department of Multicultural Education
School District of Palm Beach County, Florida 2009

LOOK IN YOUR TEXTBOOK AND WRITE DOWN THREE CHARACTERISTICS OF THIS PLANET:

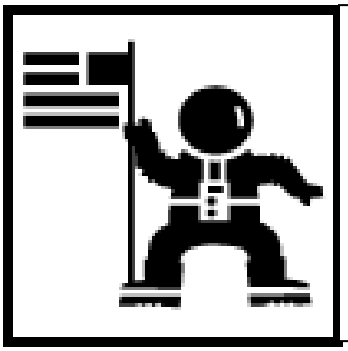
1._____

2._____

3._____

NASA ASTRONAUT #9

John D. Olivas (Ph.D.) was born in North Hollywood, California. Education and family has always been important to Olivas. He is the proud father of five children. He went to college at the University of Texas – El Paso and graduated with a degree in mechanical engineering. He continued his education at the University of Houston and graduated with a Master's degree in mechanical engineering. Next, he went to Rice University and earned a Doctorate degree in mechanical engineering and materials science. He has earned many awards including the McDonald's Hispanos Triunfadores Award. In 1998, NASA selected Olivas to join astronaut training. He has worked for the jet Propulsion Laboratory (JPL) as a senior research engineer. There, he developed tools to help people think about ways to put materials in space. Today, Olivas has an interesting job with robots for NASA. He is the lead for the Special Purpose Dexterous Manipulator Robot, Mobile Transporter, and the Mobile Base System.



LOOK IN THE PASSAGE AND WRITE DOWN THREE INTERESTING FACTS ABOUT THE ASTRONAUT:

1._____

2._____

3._____

Name_____**Date**_____

Hispanic/Latino Astronauts
STUDENT QUIZ

Directions: Read the following multiple-choice questions. Choose the best answer for each question. Use the reading passage to help find your answers.

1. In what way did the U.S. Space program grow from 1959 until today?
   A. It grew by 4 more men and women.
   B. It grew by 7 more African American men and women.
   C. It grew by 13 Hispanic men and women.
   D. It grew by 13 more men and women.

2. NASA is an acronym for:
   F. Natural Antibodies Space Accepts
   G. National Aeronautical Space Association
   H. National Aerobics Sports Association
   I. National Airports Space Access

3. What is one effect of having a good national space program?
   A. learning more about our planets and solar system
   B. learning about the armed forces
   C. learning about astronauts and scientists
   D. learning that physical sciences are a popular field

4. NASA has many employees. Which of the following is a job within NASA?
   F. mental health counselor
   G. electronic engineer
   H. doctor
   I. school teacher

5. How does the reading passage explain that astronauts are positive role models?
   A. Astronauts are leaders and involved in NASA.
   B. Astronauts have to complete an intense program.
   C. Astronauts participate in many activities.
   D. Astronauts come from a diverse group of applicants.

6. What was special about Dr. Ellen Ochoa's selection to be a NASA astronaut?
   F. She was the 14th Hispanic astronaut.
   G. She was selected in 1990.
   H. She was the first Hispanic astronaut.
   I. She was the first woman Hispanic astronaut.

7. Which one of the following is correctly expressed in the reading passage?
   A. Hispanic astronauts are different from each other.
   B. Medical sciences may be more popular that physical sciences.
   C. People of all cultures including women, should be involved in the sciences.
   D. Hispanics and women are highly represented in NASA.

8. Which statement shows that astronauts work hard to achieve their goals?
   F. Astronauts are responsible for their families.
   G. Astronauts are responsible for other people's lives.
   H. Astronauts are responsible for information, discoveries, and inventions.
   I. Astronauts are responsible for the popularity of science.

9. What is meant by the word "intense" in the second paragraph?
   A. scary
   B. difficult
   C. easy
   D. risky

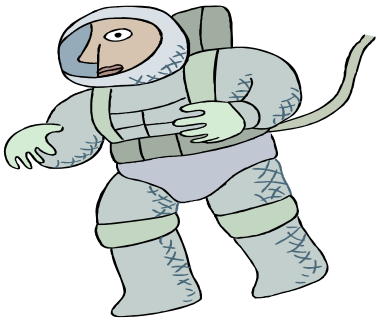
10. What is the one thing that Hispanic/Latino astronauts have in common?

F. They are all from Mexico.

G. They all dreamed of being an astronaut.

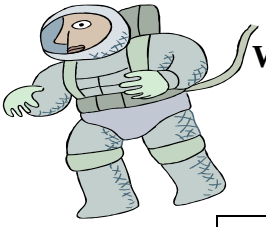
H. They all believe in a good education.

I. They all were in the U.S. Air Force.



Write about why an astronaut would be a good role model for children. Use details from the information in the reading passage to support your answer.

READ
THINK
EXPLAIN



WHY ARE HISPANIC ASTRONAUTS GOOD ROLE MODELS?

BRAINSTORMING
THINKING MAP

HISPANIC ASTRONAUTS ARE GOOD ROLE MODELS BECAUSE THEY ARE_____,
_____, and
_____.

CHARACTERISTIC #1 (Choose something like: hard working, educated, creative, good example)

CHARACTERISTIC #2

CHARACTERISTIC #3

EXAMPLES of #1: Use peoples names, reasons why, real examples

EXAMPLES of #2: Use peoples names, reasons why, real examples

EXAMPLES OF #3: Use peoples names, reasons why, real examples

CONCLUSION:

_____
_____
_____