Training Header Sheet with Change Log Form

Kentucky
Writing – Grade 8
2022 Spring Op

WR08914276258
Manned or robotic space exploration

Date	Comments	Version
05/2022	Training Set	Set A
10/2022	Release	Set B

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Prompt, Sources, Rubric

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Prompt

On-Demand Writing Directions: Carefully read the prompt below. Then read the provided texts. Enter your essay in the space provided.

Human Space Exploration

Write a well-organized essay arguing whether the people of Earth should continue to pursue manned exploration of space, or focus solely on robotic missions instead. Support your argument with evidence from the texts.

Sources

from "Debating Manned Moon Missions"

by Kenneth R. Fletcher

1 We asked experts in science and space policy to discuss their views on manned space missions.

John Logsdon
Director of Space Policy Institute, George Washington University

2 The main goal is sending people beyond earth's orbit starting with the moon, eventually getting to Mars, and perhaps beyond. The moon is the first step. We don't know how to go to Mars yet. The moon is a destination of value in its own right, because there is lots we can do there that will help us learn how to go to Mars.

3 This is not primarily about science, and therefore not primarily about the discovery of fundamental new knowledge. It is to test the belief that humans are destined to live in other places in addition to earth. In order to do that, they have to be able to live off the land and do something worthwhile. Exploration lets us find out whether both of these are possible. . . .

Steven Weinberg
Winner of the 1979 Nobel Prize in Physics
Cosmologist, University of Texas

4 Manned missions to space are incredibly expensive and don't serve any important purpose. It isn't a good way of doing science, and funds are being drained from the real science that NASA does. Sending people to space may be a great show, but so much of what you do has to be built around the necessity of keeping people safe and alive that science takes a second place. Above all, it's an incredible waste of money. For the cost of putting a few people on a very limited set of locations on Mars we could have dozens of unmanned, robotic missions roving all over Mars and still have money left over to allow the more astronomical sciences to go forward. Unmanned missions have been tremendously important in making this a golden age of astronomy.

5 Very often the case is made that putting people into space pushes technology and that's good for technology on earth. I think that's nonsense. The kind of technological stimulus we would get from unmanned space exploration is much greater. It would involve developing robotics and computer programs that could deal with things in real time without people around. That's the sort of thing that's tremendously useful on earth. The only thing you learn by developing the technology to put people into space, is how to put people into space.

Fletcher, K. (2008, July). Debating manned Moon missions. *Smithsonian Magazine*. Retrieved from https://www.smithsonianmag.com

from "Why Space Exploration Is a Job for Humans"

by Jared Keller

1 When the Space Shuttle Atlantis rolled to a stop in July 2011, NASA bid farewell to the nation's symbol of manned spaceflight. The Obama administration has scrapped NASA's plan to return humans to the Moon by 2020, which was behind schedule because of technical and budgetary problems. As financial constraints threaten the possibility of future ventures into outer space, many in the astronomical community are advocating for the increased use of unmanned robotic spacecraft, arguing that they will serve as more efficient explorers of planetary surfaces than astronauts. The next giant leap, then, will be taken with robotic feet.

2 Dr. Ian A. Crawford thinks it should be otherwise. A professor of planetary sciences at Birkbeck College, London, Crawford makes the case for human space exploration in a new paper entitled "Dispelling the myth of robotic efficiency: why human space exploration will tell us more about the Solar System than will robotic exploration alone," published recently in the journal *Astronomy and Geophysics*. If the goal of space travel is to expand our knowledge of the universe, argues Dr. Crawford, exploration will be most effective when carried out by astronauts rather than robots on the surface of a planet.

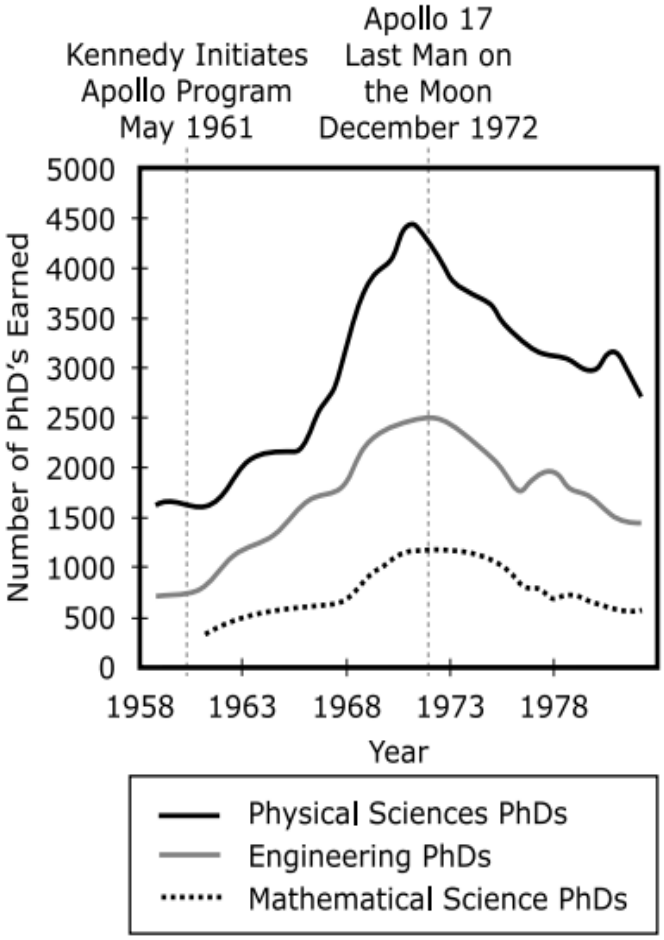
3 At the core of Crawford's argument is that human beings are much better at performing the type of geological fieldwork that makes planetary exploration scientifically valuable: they're faster and significantly more versatile than even the most advanced autonomous probes. "People who argue for robotic exploration argue for more artificial intelligence, the capacity for robots to make more complex decisions that somehow leads to increased efficiency," explains Crawford. "But one of the things that make them cheap is miniaturization. You can make robots more intelligent and efficient to a certain point, but they won't get smaller and therefore cheaper." With miniaturization, he explains, comes a depletion in the number of scientific instruments a probe can carry, the number of samples it can collect, and its ability to cover more ground. "[Mars rovers] Spirit and Opportunity are fantastic things on Mars, but the fact that they've traveled as far in eight years as the Apollo astronauts traveled in three days speaks volumes." At a certain point, the costs of developing 'smarter' (but not better equipped) autonomous rovers will exceed the meager gains in scientific collection and outstrip existing scientific budgets.

Keller, J. (2012, April 4). Why space exploration is a job for humans. *The Atlantic*. Retrieved from https://www.theatlantic.com

from "Benefits Stemming from Space Exploration"

by the International Space Exploration Coordination Group

1 Investment in the Apollo Moon exploration programme in the 1960s correlates with the level of technical education later attained by students (Figure 3), suggesting that the programme's high public profile and dramatic achievements had a widespread influence on the level of US technical education.



Source: Siegfried, W.H., "Space Colonization—Benefits for the World," Space Technology and Applications International Forum, 2003

2 A 2009 survey found that fifty percent of the internationally renowned scientists who published in the prestigious journal *Nature* during the previous three years had been inspired by Apollo to become scientists; 89 percent of the respondents also agreed that human spaceflight inspires younger generations to study science.

3 One of the lessons from Apollo is that having a visible space exploration programme is important in encouraging young people to pursue science, technology, engineering, and mathematics (STEM) fields. Such a programme will also send a message to students that they have the possibility of long-term exciting careers in science and technology.

4 Today, many space exploration missions include components designed to stimulate young people's interest in STEM. More than 2 million teachers and 43 million students from 49 countries have participated in student experiments and activities associated with the International Space Station (ISS). In some cases, scientists enlisted the help of students to conduct their investigations aboard the ISS, and in other cases students designed space experiments themselves. For example, a programme inviting students to design scientific experiments for implementation on the ISS has attracted the interest of tens of thousands of young people.

International Space Exploration Coordination Group, NASA. (2013, September). Benefits stemming from space exploration. Retrieved from https://www.nasa.gov/sites/default/files/files/Benefits-Stemming-from-Space-Exploration-2013-TAGGED.pdf

Rubric

KAS Argumentation Rubric--8th Grade On-Demand Writing

Guiding Principle C1: Students will compose arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.

Scoring Elements	Score Point 1	Score Point 2	Score Point 3	Score Point 4
Clarity and Coherence	Makes claim(s) that may **lack** focus or be **unclear.** **Misses many or all** demands of the prompt.	Makes **general** claim(s) that address the prompt, but may have **lapses** in focus. **Attempts** to address **some** demands of the prompt.	Introduces and maintains **clear and coherent** claim(s). Addresses **all** demands of the prompt.	Introduces and maintains clear, **credible** and coherent claim(s). **Thoroughly** addresses all demands of the prompt.
Counterclaims	Makes an **ineffective attempt** or makes **no attempt** to acknowledge opposing claim(s). Makes an **ineffective attempt** or makes **no attempt** to counter and/or refute opposing claim(s).	**Attempts** to acknowledge opposing claim(s), but lacks insight, interpretation or clarification. **Attempts** to counter and/or refute opposing claim(s).	**Acknowledges and distinguishes** opposing claim(s) with insight, interpretation or clarification. **Counters and refutes** opposing claim(s).	**Skillfully** acknowledges and distinguishes opposing claim(s) with insight, interpretation or clarification. **Thoroughly** counters and refutes opposing claim(s) with **carefully selected evidence.**
Support	Includes **minimal or no purposeful** support of claim(s) with evidence. Provides **incomplete, inaccurate and/or irrelevant** explanations of evidence and ideas. Provides **minimal or unrelated** reasoning to support claim(s).	**Attempts** to support claim(s) with evidence. Provides **vague and/or general** explanations of evidence and ideas. Provides **vague and/or general** reasoning to support claim(s).	Supports claim(s) with **logical reasons and relevant evidence.** Provides **logical** explanations of evidence and ideas. Provides reasoning that **clearly links evidence** to support claim(s).	**Thoroughly** supports claim(s) with logical reasons and **carefully selected,** relevant evidence that **strengthens the argument.** Provides **thorough and effective** explanations of evidence and ideas. Provides varied reasoning which **thoughtfully** links evidence to support claim(s).
Sourcing	Uses **one or none** of the provided sources or **ineffectively** uses a minimum of two provided sources to support the claim(s) and/or opposing claim(s). Cites **little or no** evidence. **Little or no** use of quotes and/or paraphrasing of details, examples and ideas.	Uses a minimum of two provided sources to **attempt** to support the claim(s) and/or opposing claim(s). **Inconsistently** cites evidence. **Attempts** to quote and/or paraphrase details, examples and ideas.	**Accurately and effectively** uses a minimum of two provided sources to support the claim(s) and/or opposing claim(s). **Effectively** cites evidence by quoting and/or paraphrasing details, examples and ideas.	Accurately and **skillfully** uses a minimum of two provided sources to support the claim(s) and/or opposing claim(s). **Consistently and thoroughly** cites evidence by quoting and/or paraphrasing details, examples and ideas.
Organization	Builds **minimal or no overall** structure for the argument. **Ineffectively** organizes claim(s), counterclaims, evidence and reasoning, creating a lack of cohesion. Makes a **minimal attempt** or makes **no attempt** to use transitions to link claim(s), counterclaims, reasons and evidence. Provides a **weak conclusion or lacks a conclusion** to support the argument.	**Attempts** to build a structure for the argument. **Attempts** to organize claim(s), counterclaims, evidence and reasoning, but contains **some lapses that disrupt the cohesion or are inappropriate for the context**. **Attempts** to use transitions to link claim(s), counterclaims, reasons and evidence, but they are **simple and infrequent.** Provides a **basic** conclusion or **concluding statement in an attempt** to support the argument.	Builds and **maintains a clear** structure to develop the argument. **Logically** organizes claim(s), counterclaims, evidence and reasoning. Uses **effective** transitions to create cohesion and clarify the relationships among claim(s), counterclaims, reasons and evidence. Provides a **logical** conclusion to support the argument presented.	Builds and maintains a **sophisticated** structure to develop the argument. **Skillfully** organizes claim(s), counterclaims, evidence and reasoning to **strengthen the argument**. **Consistently** uses a **variety** of transitions as well as varied sentence structures to create a **strong** cohesion and clarify the relationships among claim(s), counterclaims, reasons and evidence. Provides a **thorough** conclusion to support the argument presented.
Language / Conventions	**Lacks or uses an inappropriate** formal tone or voice. **Lacks** a task appropriate writing style. Uses **simple or inappropriate** word choice. **Makes significant** errors in the conventions of Standard English grammar, usage, spelling, capitalization and punctuation which **interfere** with understanding the writing.	**Uses a weak formal tone or voice and/or has lapses** in appropriate formal tone or voice. **Attempts** to establish a task appropriate writing style. **Attempts** to use appropriate word choice**.** Makes **frequent** errors in using the conventions of Standard English grammar, usage, spelling, capitalization and punctuation which **may interfere** with understanding the writing.	**Establishes and maintains** a formal tone or voice. **Establishes and maintains** a task appropriate writing style. **Effectively** uses appropriate word choice. **Effectively** uses the conventions of Standard English grammar, usage, spelling, capitalization and punctuation with **minor** errors that **do not interfere** with understanding the writing.	**Consistently** establishes and maintains a **sophisticated** formal tone or voice. **Consistently** establishes and maintains a **sophisticated,** task appropriate writing style. **Consistently** uses **effective** and **varied** word choice. **Skillfully** uses the conventions of Standard English grammar, usage, spelling, capitalization and punctuation with **few,** minor errors that do not interfere with understanding the writing.

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A101

Score Points: 1,1,1,1,1,1

i think that people should continue doing the space thing because it would be cheaper and would be able to experence it and we would be able to see it through human eyes instead of robot eyes. With the avancement of contunuing it we would be able to finally not have to woory about about a robot going rouge and we could be able to finnaly say we did it wiithout robotic help and it would be a accomplishment for the human race. Wth this accomplishment we would be doing something great and for once without a robots help.

A102

Score Points: **1,1,1,1,1,1**

they should focus on robots because they dont use near as much money becease they dont need nice suits to go to space because there not human and dont breath and u could take them up there and leave them for years and that would save money going back and forth to space because they wouldnt have to buy so so much space food and fuel for the rocket too take off and the rockets cost alot like so so so much and thats why we have not been to space in a while because of cost of the rockets they take so long too build because u gotta check every thing like 10 times so win u in space u wont get hurt and gotta make sure its big anuff for everyone to be comfortable win they get in the space ship the also gotta make sure no air from space gets in the space ship so that means u gotta check seals u also gotta check the buttons to make sure they work and most inportant u gotta know what to do if something fails u gotta be ready for every thing that would ever happen like if a buttton broke or if the motor had failer and wouldnt start or if someone was too get hurt really bad someone up there would know how to help and on earth

A103

Score Points: 1,1,1,1,1,1

1. i think people should focus more on robtic missions instead because robots in our time and future these days will do way way more stuf for us. in the future because technology just keeps getting better and better as we get older. in the text it says that most people argue for robtic exploration and to me i think that is good because robots is more important then space because robots will probally be what we send up to space in the future. also its states in the text that robots are valuable and they are just alot faster and they way more stuf then most things can do. its just to me like i feel like robots are way more valubale and like they do almost everything for us now and in the future its un thinkable of waht robots will be doing for us.

A104

Score Points: 1,1,1,1,1,1

I think the people of Earth should continue to pursue manned exploration of space to because many space exploration missions include componennts designed to stimulate young people's interest in STEM. There is more than 2 million teachers and scientists that help with space missions. Even know all of them are higly educated in the space dileima, there is still lots of information to find out about mars and other planets in the solar system. The main goal is to send people beyond earth's orbit starting with the moon, eventually gettiing to Mars, and perhaps beyond. Another reason why we should keep continuing space missions is that we can build better robots in genaral. Making better robots can give us data about the surroundings on another planet.

A105

Score Points: 2,1,1,2,2,1

I think the people of Earth should continue to pursue manned exploration because it help inspire young generations to study science. The second paragraph in the article, "Benefits Stemming from Space Exploration", says, ". . . 89 percent of the respondents also agreed that human spaceflight inspires younger generation to study science." Another reason is because the exploration of space will tell more than roobotic exploration alone. The second paragraph of the article, "Why Space Exploration Is a Job for Human", says, "A professer of planetary sciences at Bribeck College, London, Crawford makes the case human space exploration in a new paper entitled "Dispelling the yth of robotic efficiency: why human exploration will tell us more about the Solar System than will robotic exploration alone." The last reason I chose is exploration of space helps us know if a certain planet is ok to live on. The third paragraph of the article, "Debating Manned Moon Missions", says, "It is to test the belief that humans are destined to live other places in addition to earth. In order to do that, they have to be able to live off the land and do something worthwhile. Exploration lets us find out whether both of these are possible. . . ." Therefore, I bleive that people of Earth should continue to pursue manned exploration of space.

A106

Score Points: 2,1,1,2,2,2

We should continue to pursue manned exploration of space. The exploration of space with humans was shut down in 2011. Therefore humans makes planetary explorantion more valuable, humans are faster and significantly more verstile than probes and humans are destined to live on diffrent planets and it needs human exploration.

Humans makes planetary exploration more valuble. For example in the text "Why space exploration Is a Job for Humans" It says"Human beings is much better at performing the type of geological fieldwork that makes planetary exploration more valuable". This proves that humans make geological fieldwork more valuable. Therefore humans are better than probes in geological fieldwork.

Humans are faster and significanly more verstile than probes. For instance in the text it says"They´re faster and significantly mre versatile than even the most advanced autonomous probes". This shows that humans are more versatile than probes. Therefore humans are more verstile than drones.

Humans are destined to live on diffrent planets and it needs human exploration. According to the text "Debating Manned Moon Missions" It says"It Is to test the belief that humans are destined to live in other places in addition to earth In order to do that ,they have to be able to live off the land and do something worthwhile exploration lets us find out whether both of these are possible". This suggests that we have to have humans to find out if we can live on diffrent planets.

Therefore If we did not shut down human space exploration we could of found out lots of things about space,

A107

Score Points: 2,1,2,1,2,2

Do you think earth should continue to pursue manned exploration of space? I am going to tell you why i think we shouldn't. My reasons are because of financial and technical problems.

My first reasoning for why we shouldn't explore space is financial problems,it says in paragreaph three, "you can make robots more intelligent and efficientvto a certain point,but they won't get smaller and therefor cheaper." (Jared Keller) When Keller says this he is saying that the things we need for this will not become any more cheaper then what they are today. Once we use all the money to buy all the equptment for this we will have non left to finish building and we won't be able to go into space.

My second reason why i think we shouldn't send people to space is because technical problems in paragraph one it says,"...NASA's plan to return to the moon by 2020, which was behind scedual because of technical adn budgetary problems." (Jared Keller) Keller is saying that technical problems are holding them back. The technical issues might not occure on earth and may occure in soace where they can't do anything about it.

In conclusion the reasons why i think we should not send people to space are, financial and technical problems. So do you think we NASA should go to space?

A108

Score Points: 2,3,2,2,2,3

" The Obama administration has scrapped NASA'S plan to return humans to the moon by 2020." Will people ever enter Space again? Space Exploration should continue to be pursued by the people of Earth.

Dr. Ian A. Crawford says " If the goal of space travel is to expand our knowledge of the universe, ecploration will be most effective when carried out by astronauts rather than robots on the surface of the planet." This is saying that if we want to have knowledge of space and the universe, then Human exploration should continue because robots are not smart enough. At the heart of Crawfords argument is that people are much better at completing and performing the type of geological feildwork that makes planetary exploration scientifically more valuable: they're faster and signifigantly more veratile than the most advanced robots. Many other scientist agree with Crawford. John Lodgeston is one of the many that agree with Crawdford. He says, "This is not primarly about science, amd therefore not primarly about the discovery of fundamentlal new knowledge. It is to test the belief that Humans are destined to live in other places in addition to earth. In order to do that, they have to be able to live off the land and do something worthwhile." In this he is also saying that Space Exploration should continue by Humans.

Others like Steven Weinburg may say, "Manned missions to space are incredibly expensive and don't serve any purpose. It isn't a good way of doing science, and funds are being drained from the real science that NASA does." Although he is right, Manned missions are expensive so are Robotic missions and with Manned missions we would get more information on how to get to Mars. Dr. Crawford states "People who argue for robotic exploration argue for more artifiial intelligence, the capacity for robots to make more complex desicions that somehow leads to increased efficiency."

Space exploration should continue to be pursed by the people of the Earth. Robotic figures would not get nearly enough information for us to go to mars, only Humans can.

A109

Score Points: 3,2,3,1,2,3

The people of Earth should focus only on pursueing manned exploration. Others may think or say that we should focus on robotic space missions instead. Although, manned exploration is better. Manned exploration is better because humans are, smarter, faster and more versatile than any robot.

Humans are faster than any robot. Many robots take very long to get things done but humans are used to being quick and getting things done. So humans are mor adaptive to work and tasks than robots. A text called, Why Space Exploration Is a Job for Humans, states, "But the fact that they've traveled as far in eight years as the Apollo astronauts traveled in three days speaks volume." This proves, that Humans can travel faster than robots when it comes to exploring space.

Humans are more versatile than robots. Many robots aren't very capable of multitasking like humans. This is because as humans we learn how to multitask but robots are programed differently. Therefore, while robots can only do one thing at a time, we can do multiple things at the same time. Why Space Exploration Is a job for humans says, "You can make robots mor intelligent and efficient to a certain point, but they wont get smaller." This proves we cannot fully advance robots to be as versatile as humans.

Humans are smarter than robots. Humans have a better brain comasity than robots because robots Don't think outside the box like humans do. Robots are just built to think of only one main subject. Why Space Exploration Is A Job for Humans says, " Human beings are much better at preforming the type of geological feildwork." This proves that humans are smarter than robots.

In conclusion humans are better to use for space exploration than robots. This is because humans are, smarter, faster, and more vertile. Therefore Earth should contiue to pursue the way that they explore space.

A110

Score Points:3,1,3,2,3,2

Working for robotic missions- sounds great! This could also infer to science of the future. In thepassage "Benifits Stemming from Space Exploration" by the International Space Exploration Coordination Group", it would be better. Focusing more on robotic missions would bring more people to the job, it would be a new way of learning, and the achievements.

One way of focuing on robotic missions is better is it would bring more people. If people hear more about robotic missions it would intrest people to do more reserch on it. "89 percent of the respondents also agreed that human spaceflight inspires younger generations to study science." This shows how even the younger generations are willing to be attched to robotic missions. " A programme inviting student to design scientific experiments for implementation on the ISS has attracted the intrest of tens of thousands of young people." This infers more people are intrested. This is how bringing more people, focusing on robotic missions would be better.

Another way focusing on robotic missions would be better is it is a new way of learning. With STEM (science, technology, engineering, and mathematics) it would be a better way of learning. "Having a visible space exploration programme is important." This infers that having a visual item would help the mind of a human work better. A programme would send a message to stundents that have the posibility of long-term exciting careers in science and technology. In fact unmanned missions have been extremely important in making this a golden age of astronomy. This is how people can learn new ways of learning on robotic missions would be better.

Finally on focusing on robotic missions would better is the achievements that could happen. "More than 2 million teachers and 43 million students from 49 countries have participated in student experiments and activites associated with the International Space Station (ISS)." This explains how many people have really got into it and the great achievement they've put. Although there hasn't been many think about all the greater things that could happen. This is how great achievements could be better for focusing on robotic missions.

Focusing on robotic missions would bring more people into it, it would be a new of learning, and the achievements. With the information given this is how robotic missions showed be more focused on. Imagine all the great abilities with focusing on robotic missions.

A111

Score Points: 3,3,3,2,3,2

In the past history we have relied upon technology to help us with the task of space travel, many say that its time to put the technology away and let the humans be back in space well I say otherwise.

If you think about space travel we dont fully have the the knowledge to get us back into space, with sending humans to space you have to have food, supplys, ect. just for the human to live in space and learn about the unknown mysteries of space. While a robot on the other hand like the rovers they sent on mars all they needed was to get to the planet on a space craft collect the data they needed and a way to get back to NASA to show the progress they have made. Not to mention what they said in "Why space exploration Is a Job for Humans" they simply stated that "the capasity for robots to make more complex decisions that somehow leads to increased efficiency," this is a perfect example of why not only should robots go into space but they also have enough intelligents to be able to go into space and collect the data nessasary.

when you think about space what do you think about? do you think about stepping on the moon or touching the stars? See the thing is you dont think about how much money it will cost for you to get there at least not at first, when you think about the money what pops into your mind? How about more than thousands of dollars to get you to that white big white dot into the sky or maybe you want to go to mars or but that is even farther and longer of a distance away and so cost more now i'm just taking a guess here but I'd say its about more than a billion dollars and closer to the trillions dont you think? Now lets say that we were to send you to the moon a couple of tousands of dollars, for a human at least. Now you have to add in the fact that you need space suits, a shuddle, food, ect. and eventually it all adds up to funds that we dont have to spend. Lets go back to the space rovers now shall we, these robbots have to be built which i will admit it isnt cheap no matter how small you make them but they dont cost just as much as sending a person into space. in the reading of "Debating Manned Moon Missions" Steven Weinberg talks about the cost of sending humans and rovers into space he states " For the cost of putting a few people on a very limited set of locations on mars we could have dozens of unmanned, robotic missions roving all over mars" when he says this he simply means that robots are a fraction of the cost that humans have.

Now I bet your wondering what if we had the funds and the resorses couldnt we send a human up in space? No i still dont think we could, for as many times we have tried to get to the moon and how many failed attempts we have had i belive that it is to risky to take the chance and have more lives lost. Not only where lives lost but people also had families to get back to they also had a life that they lived only to never see the stars again and you are willing to take the chance to take that? No i dont think you would.

when I think about how much money time and effort not to metion the risks of this experiment, I do belive that until we have the funds and diligents to send humans into space I think we should only send out rovers from now on.

A112

Score Points: 3,3,3,3,3,4

When you think of space, you think of stars and planets, right? You think about astronauts going up the moon and taking the first leap for man kind. As the future approches, more and more mission are focused solely on robotics. Insted of sening people to space, they send robots. What's the purpose of the exploration if you don't get to explore. I believe we should continue the manned explorations because we can expand our knowledge, more and more people are learning and are interested in what this path has to offer, and not all robots have enough capacity.

As the years past, more robotic mission are being placed. What happened to "One small step for man, one giant leap for mankind."? We can learn anything we want from robots, anything at all, but what happens when that is all we rely on? The goal is to expand our knowledge, to know the unknown. In the text "Why Space Exploration Is a Job for Humans", Dr. Ian A. Crawford says "...exploration will be most effective when carried out by astronauts rather than robots on the surface of the planet." What he means by this is astronauts are more effective than robots roaming around.

You can even go all the way back to the schools. More and more kids are taking their footsteps toward the STEM path. They want to learn, they want to expeirence what these areas have to offer. They learn all these techneiques and information they need to prepare themselves for the real world. How would they be able to put them to use if all manned exploration was bygone when they reached the the level of expeirence? Kids today are so talented, most of them, if they put there mind to it they can acheive it. Accordin to text, "Benefits from Space Exploration", it says "In some cases, scientists enlisted the help of students to conduct their investigations aboard the ISS, and in other cases students designed space expeirments themselves." Kids are designing and investigation into these experiments. Why not put this to use?

Robots can do amazing things. Almost anything we can do, they do better. What happens when they run out? They run out of fuel or capacity? Some are cheap and others not so much. These roves are extordinary, until they run out. In the text, "Why Space Exploration Is a Job for Humans" Crawford explains, "You can make robots more intelligent and efficent to a certain point, but they won't get smaller and therefore cheaper." People say manned exploration is expensive, what about robotic exploration? What about the time it takes? It states it the text, "...Spirit and Opportunity are fantastic things on Mars, but the fact that they've travled as far as eight years as the Apollo astronauts traveled in three days speaks volume." What do you think this says about robotic missions?

We can all agree that, yes, robots can be smater than humans. Most are less expensive, they can help out trememdously in almost any mission. Most manned explorations can be a waste of money and sometimes time. Yes, this can all be true, but humans don't crash. They don't have systems like robots, to where if there was a malfunction in the systmen or the data didnt add up it wouldn't be a major catastrophe. For robots if there is a glitch in the system, what will happen? They could loose all the progress that they have made. They could loose the fieldwork. According to the text, "Why Space Exploration Is a Job for Humans" it states, "At a certain point, the cost of developing 'smarter' (but not better equipped) autonomous rovers will exceed the meager gains in scientific collection and outstrip exsiting scientific budgets." This shows not only will these rovers become more expensive, but they also will be less equipped. Meaning something could go wrong and they might not have the tools needed.

In conclusion, manned exploration should continue to pursue. Everyday we are expanding knowledge, kids are learning more and more as they discover the fields, and not every robot or rover is able to be used in these important missions. Everyday something new happens, whether its another way to travel in space or another person has landed on the moon. We should keep exploring, see where this leads us. Who knows? Maybe manned exploration will pursue and become something extrodinary.

A113

Score Points: 4,2,4,4,4,3

Who should explor space Humans or robots.?,and Why? People are arguing whether people of earth should continueto pursue manned exploration or if they should start focusing solely on robotic missions instead. We need to help NASA make there minds up about what to do. I personally think we should continue to pursue with manned exploartion, My Reasons to this is, Humans are more efficient, Humans are trained for science of this type, Human are more encourging than robots. Therefore, if we continue using humans than we will have more advantages with them than with robots.

First, Humans are more efficient, They do not waste time or energy to get what they need done to some humans they might but to a lot this kind of science is important. According to the passage,"Why space exploration is a job for humans." "Human beings are much better at performing the type of geological fieldwork that makes planetary exploration scientifically valuable." For Example, They're faster and significantly more vestible than even the most advanced automous probes. Humans are more efficient than robots. Even if you increase the intelligence and efficiency to a certain point they won't get smaller or cheaper to deal with.

Second, humans are trained for this type of science and they have worked so hard to get to the position they are at, But for robots to take that over the robots do not deserve to be apart of NASA. For Example, of what I have heard about NASA It did not start with technology, It started with the human kind. Robots and technology did not come untill the late 1700's and NASA was created far many years before the late 1700's. In Fact, NASA did not start to think about robotics until they did not have enough people interested in the geological physics of earth and other planets. But see the thing is that they became more interested when NASA let it out to the world that what they were doing was going to one day be history and was going to change the world. Humans have been trained for years to do this kind of science they recently just started to think about robots for the job but the programing they would have to do to get the robots on the same page with the humans would take a long time to do.

Last, Humans are more encourging than robots. This is becaus not everybody depends on technology and wants technology to do it for them, No they want to do it themselves and have that adventure of their own. According to " benefits stemming from space exploration." It says " 50% of the internationally renowned scientists who published in the prestigious journal ***Nature*** during the previous three years had been inspired by Apollo to become scientists; 89% of the respondants also agreed that human spaceflight inspires younger generations to study science." So This is what people think about the manned exploration. Also, According to the same passage. "Visible space exploration programme in encouraging young people to pursue science, technology, engineering, and math.**(STEM)**. And More than 2 million teachers and43 million students from 49 countries have participated in student experiments and activities associated with the international space station **(ISS)"** This work was done by humans not by robots.

On the other hand, some people think that robots could be good for exploration in space. Here's why. According to "Debating Manned Moon Missions." "For the cost of putting a few people on a very limited set of locations on mars we could have dozens of unmanned , robotic missions roving all over mars and still have money left over to allow more astromical sciences to go forward. Unmanned missions have been tremendously importanat in making this a golden age astromony." So There you have it this is what some people think about robots doing Missions in space. Also, Doing robotics in space woukd involve developing robotics and computer programs that could deal with things in the real time with out people around. The only thing you learn by developing technology to put people into space , is how to put people into space.

In conclusion, Many people have different opinions but, I personally think that sending people into outer space to do the research and explorations would be better. People need to have this chcnce and when they do they can sit at home thinking that what they have done was good and for them to know that they might have saved the world they would be so happy. But if robots get to have that chance then how o you think people are going to feel when people could not help but robots could. People are more efficient and are trained hard for the science and are more encouraging to people. This is why I think we the people should have the right to do space explorations with out robots interfearing.

A114

Score Points: 4,3,4,4,3,3

Space exloration has been very important in the ways of science and history. America winning the space race by landing a human on the moon was revolutionary. This event lead, and is still leading, to more space exploration. However, the exploration has mainly been lead by robots. Sure these robots are man made, but does it make a difference in exploration? The answer would be yes. The people of Earth should pursue more manned exploration in space instead of robots because, it explains more about our vast universe, it inspires more people, and it is much more impressive.

As far as we know the universe is infinite. Which can lead to amazing discoveries. Humans are more equipped for this than we might think. In *"Why Space Exploration Is a Job for Humans",* Crawford explains that the "[Mars Rovers] Spirit and Opportunity are fantastic things on Mars, but the fact that they've traveled as far in eight years as the Apollo astronauts traveled in three days speaks volumes." Sending humans instead of robots makes for faster travel. This will all lead to more information in a short amount of time. Which is extraordinary and will make greater advancements to mankind. Also in *"Why Space Exploration Is a Job for Humans",* the authour states "With miniaturization, he explains, comes a depletion in the number of scientific instruments a probe can carry, the number of samples it can collect, and its ablility to cover more ground." This statement explains that humans are more capable of being equiped and ready to go than robots because of their small size. Which agian leads to better information. Lastly we get the statement of "...human beings are much better at preforming the type of of geological fieldwork that makes planetary exploration scientifically valuable: they're faster and signifiicantly more veratile than even the most advanced autonomous probes." in *"Why Space Exploration Is a Job for Humans".* This quote explains that humans are just more bodily fit for this job than robots. We think and move faster than any exploration robot in the field. Once again this all just leads to more quantity and quality information.

Now with information comes inspiration. Ever since the first moon landing many want to go into the field of aronatics. You can see this on a chart in *"Benefits Stemming from Space Exploration".* This chart shows that during the moon landings the amount of people to get a physical sciences PhD was very large. This all explains that real people on the moon inspired millions to become scientist. Which made a huge impact towards our future. It was because of human space exploration that we have great programs to help get the students of today a long-term and exiciting career in science and technology. Programs such as STEM is a huge example of this. In *"Benefits Stemming from Space Exploration"* you get the quote "More than 2 million teachers and 43 million students from 49 coutries have participated in student experiments and activities associated with the International Space Station (ISS)." The ISS is a station floating around Earth at all times. Many astronauts get sent up there. Once again we have a human exploration activity inspiring millions to work as space scientists. Imagine if these were robot lead explorations. We wouldn't have as many bright scientist as we do now. Without them we would never know what we know now. I don't know about you but that's a scary thought.

Lastly, we have the fact the human exploration is just plain out more impressive than robotics. However impression doesn't always mean it the best financial decsion. As much as I hate to admit it, human exploration is more expensive than robotics. You see this in *"Debating Manned Moon Missions",* it states "For the cost of putting a few people on a very limited set of locations on Mars we could have dozens of unmanned, robotic missions roving all over Mars and still have money left over to allow the more atronomical sciences to go forward.". Robotics makes for a cheaper way to bring home information. All though, putting humans into space pushes for better technology. So as expensive as it may be the impact will have an even longer effect. Creating a better future in the long run.

There you have it. The future should be in mankinds hands, not robotic ones. What do you think? The cheaper the better or the more expensive to a better future?

A115

Score Points: 4,4,4,4,4,4

... *And we have lift off!* In the past few decades alone, this pharse has become increasingly more prevellent as man-kind quite literallly reaches for the stars. However, man-kind is steadilly being replaced by robot-kind as space rovers have began to venture out into the cosmos to do our research for us. In light of this, many people, civillians and professionals alike, have began to concern themselves with questions like: "Will these robotic astronauts take human astronauts jobs?" and "Are the robots even *that much* more efficient in gathering intel?" With these doubts placed by many people, including myself, the new wave of robotic space travellers has been taken into consideration, and for good reason. Do space rovers really make a difference in the long run?

In reality, the money we spend on robots doesn't add up to much. Though robots are intellegent, humans who go to space give noticably more detailed description of their findings, and they cost significantly less. With this in mind, what to space rovers bring to the table? In more regards to money, the solution many people come to in order to cut down on funding is to simply make these robots smaller. However, smaller does not mean cheap. As Dr. Ian A. Crawford says, with miniaturization comes a depletion in the number of scientific instruments a probe can carry, the number of collected samples and the amount of ground coverage. With this added to the equation, the funding for these robots is redundant passed theory.

One argument in support of these robotic missions however, is that robots make more complex decisions than humans and they carry out their work more efficiently. The problem with this is the fact that robots were designed to think like a smarter than average human, and most astronauts *are* smarter than average. Take Apollo Space Race astronaut John Glenn into consideration, as he had an IQ over 170 and got his research done much quicker. Inmore recent times, the Mars rovers Spirit and Opportunity have taken as many as 8 years to complete research Appollo astronauts completed in 3 days. Do you really want your tax dollars to go to research that increases at a snails pace?

Further more, the goal of these manned space trips is to know if human life can be accomplished and sustained. How can a robot, something that is not human, tell us that? According to Space Policy Institute Director John Logsdon, humans *have to* explore other un-Earthly terrians in order to make the belief that humans can survive on planets like Mars mean something worthwhile. Rovers are designed to handle planetary conditions, humans are not. Therefore robotic exploration, at least on this side of the equation, is useless.

Although the feat of getting something into space at all is an accomplishment in it's own right, manned trips to space are still vital to research and human survival. Discontinuing these ventures are a disservice to us all and we *must* gather information through a human perspective while time is still of the essence. Stopping this in favor of robotic exploration can damage the existing research to a point where we might have to begin it all over and that cannot happen. Robots can replace a lot of things, but they cannot human research of the universe and beyond.

A116

Score Points: 4,4,4,4,4,4

"For the cost of putting a few people on a very limited set of locations on Mars we could have dozens of unmanned, robotic missions roving all over Mars and still have money left over to allow the more astronomical sciences to go forward," says 1979 Nobel Prize winner in physics, Steven Weinberg. Just imagine how much more data humans could gain if we only sent robots into space? Organizations like NASA would be able to send out more info scouring robots and have money to focus on other things if they just stop spending money to send a few people to a planet at a time. I claim that Earth should focus solely on robotic missions instead of pursuing manned exploration of space.

According to Jared Keller in their first paragraph of, "Why Space Exploration Is a Job for Humans," they write, "many in the astronomical community are advocating for the increased use of unmanned robotic spacecraft, arguing that they will serve as more efficient explorers of planetary surfaces than astronauts," and I completely agree with that. Robots can better record data on planetary surfaces than humans just because thay have one program in mind, one job to do like taking photographs with a steadier hand or collecting samples from exactly the right place. Instead of a human who could easily get distracted or get hurt. Which takes me into my subject for this paragraph; the dangers of space exploration to humans. Everyone already knows that humans can and have gotten killed during exploration due to problems in the planning, mistakes by them or an unknown source. When we have robots out doing their jobs it will make it so no more human lives are lost and data can be gathered more efficiently. "Sending people to space may be a great show, but so much of what you do has to be built around the necessity of keeping people safe and alive that science takes a second place," discussed Steven Weinberg, whichI agree with. So if humans were to send out more robotsto explore space it would be a good thing because one robot breaking down or getting destroyed is not equal to human lives being lost. We can always make more robotics, dead humans cannot be replaced.

Next, robotic exploration of planets and space can allow for more money to be put toward other operations by NASA and others. According to Steven Weinberg once again, "Manned missions to space are incredibly expensive and don't serve any important purpose. It isn't a good way of doing science, and funds are being drained from the real science NASA does." Like he said, NASA is losing money for no reward, the human missions to space always cost more than robots and there arn't even as many missions. If we wanted to actually invest more money into progrems that help keep us safe he at home, on earth, then we should take more funding away from manned explorations to space and focus solely on robots which will get the same thing done with a lower price. Stated by Jared Keller in his text, "The Obama administration has scrapped NASA's plan to return humans to the Moon by 2020, which was behind schedule because of technical and budgetary problems." This means that already we're running low on funds and it would lessen the weight on our back if we just moved a lot of the fund from manned space exploration missions to robotic missions and other projects that help out on earth. We can upgrade our probes and put money money toward Earth while still finding out the same amount of information as we were with humans. It may take a little longer but the pros outweigh the cons. That's why Earth should focus solely on robotic missions instead of pursuing manned exploration of space.

To adress the opposing side of the arguement with a quote from "the International Space Exploration Coordination Group", "Investment in the Apollo Moon exploration programme in the 1960s correlates with the level of technical education later attained by students... suggesting that the programme's high public profile and dramatic achievements had a widespread influence on the level of US technical education." This basically means that since investment by John Kennedy in the 1960s until the Apollo space program was completed, the amount of students in the US earning technical education degrees increased positively and now that NASA has only been sending robots, the excitement hasen't really been there anymore. Another opposing claim by Jared Keller once again which talks about humans says, "they're faster and more versatile than even the most advanced autonomous probs." Finally, another quote given by Dr. Crawford in Jared Keller's text says, ""You can make robots more intelligent and efficient to a certain point, but they won't get smaller and therefore cheaper." With miniaturization, he explains, comes a depletion in the number of scientific instraments a probe can carry, the number of samples it can collect, and its ability to coer more ground." This means that as robotic probes become more powerful or strong it will require more and more money unless you want to just make them smaller and have less storage or efficiency. To combat those statements, we have had more manned space missions since the Apollo but that hasen't made as many more students join technical field like back then. In my opinion, that rise in technical science and technology students was just because of how new space travel was and now people arn't as worderous or excited about those fields even if another manned exploration was to happen. Next, Jared Keller said that humans were faster and mre eficient that probes but that still dosen't change the facts that hmans cost way more to send into space and probes are only getting more powerful. Lastly, Jared Keller said that probes were going to get weaker or cost more money but as more scientific breakthroughs show up, probes will only become better and recieve more funding.

To conclude, that is why I believe thatI claim that Earth should focus solely on robotic missions instead of pursuing manned exploration of space.