Welcome to your future home: Mars.

In the morning, sleep in a little—your day is 40 minutes longer than on Earth. Grab breakfast from the greenhouse, where you grow your food. Then take a jog on the treadmill—you have to keep your muscles strong, or they will **deteriorate** in the low gravity.

How's the weather? Windy and ridiculously freezing . . . as always. (The average temperature is -81° F.) But the view is spectacular: an endless expanse of red rocks and soaring mountains. You'll spend your day exploring and making incredible new discoveries.

Sound intriguing?

Good, because life on Mars could become a reality . . . and it could happen in your lifetime.

A Welcoming Planet

Humans have been exploring space for decades. We first launched into orbit in the early 1960s, and 12 astronauts had walked on the surface of the moon by the end of 1972. But it's Earth's neighbor Mars, a bright red orb about half Earth's size, that scientists say is most capable of supporting human life. Compared with other planets in our solar system, Mars is downright welcoming (the surface of Venus, for instance, is more than 800 degrees!), in part because of its closeness to Earth. Mars even has frozen water on its surface.

Since the late 1990s, NASA has been exploring Mars using remote-controlled "rovers." Most recently *Curiosity*, a car-size vehicle, traveled through space on an unpiloted spacecraft and landed on Mars in August 2012. Directed by NASA scientists, the rovers prowl the surface, taking pictures, collecting and analyzing soil, and probing for signs of life.

But what about human explorers? Plans are already in the works to send astronauts to Mars as soon as the mid-2030s.

If you weigh 100 pounds on Earth, you'd weigh only 38 pounds on Mars—and you'd be able to make a 30-foot-high slam-dunk.

Although Mars is about half the total size of Earth, its land area is only a bit smaller than our planet's. (Earth's area is mostly water.) That's a lot of room for a potential colony.

That's *Curiosity*, a NASA rover currently exploring Mars. Its top speed is only 1.5 inches per second. A human explorer would be able to cover a lot more ground.

And after that?

Imagine bustling colonies of brave explorers and their families, working hard to build a new society. With Earth's population projected to hit more than 9 billion by 2075, we'll certainly need the extra space.

Extreme Conditions

But before you start packing your bags, let's consider the challenges. For starters, Mars is far away. Just getting there could take up to 10 months. By comparison, it took astronauts only about four days to get to the moon.

Scientists already know that time away from Earth's gravity harms the human body. Bones and muscles get weaker. The body produces less blood. Heart muscles **atrophy**. What damage would months and months of living in space do?

And then there is the matter of water, oxygen, food, and fuel. Scientists will have to find solutions to these problems, or the first humans on Mars won't survive very long in their new home.

Tiny Dangers

Along with the extreme conditions on Mars, there's another, tinier risk. It's so tiny you can't even see it: germs.

Some scientists believe that our germs could contaminate the whole planet of Mars, potentially killing Martian life before we have the chance to discover it. Worse, there is a small but terrifying chance that any microscopic life already there might be harmful to us. Humans would have no natural **immunities** to these germs.

Worse still, if any of those Martian germs hitched a ride back to Earth, the result could be catastrophic. Animals, plants, and people could be wiped out.

Worth the $$$?

A more practical concern is the cost. The price of a mission to Mars could approach $1 trillion. How can we justify spending that much when so many problems—poverty, disease—could use the cash here on Earth?

Then again, some of the technologies developed for space travel could help here on Earth too. Many of NASA's past inventions have benefited our food safety, transportation, and medicine. (Do your foam shin guards protect you during soccer games? Thank NASA.)

In the end, the thrill of exploring an unknown world may be too hard to resist. "Imagine the excitement when NASA . . . starts to select the first astronauts to walk on Mars," **astrophysicist** Neil deGrasse Tyson wrote in *Foreign Affairs*. "Right now, those science-savvy future explorers are in middle school."

Could one of them be you? ●

What do you think? Should NASA send humans to Mars? Go back through the article, and review the infographic to find reasons that support each side of the debate. Write them in the chart below.

Yes/Pros/Positives	No/Cons/Negatives
1.	1.
2.	2.
3.	3
4.	4.
5.	5.

Name: _____ Date: _____ Per: ___ Class: SPR2015 SWW

Write an Argument (Persuasive) Essay

Learning Goal: I can write to persuade others to believe and act on my ideas.

Directions: Follow the steps below to plan an essay explaining your opinion on whether or not NASA should send humans to Mars.

STEP 1: SUMMARIZE THE ISSUE

Let readers know a little bit about the issue you will be writing about. This is not your opinion of the issue, but a brief summary. In this case, summarizing the pros and cons of humans traveling to Mars.

STEP 2: WRITE YOUR HOOK

After you have explained to the reader what the issue is, you will need to write a hook to "hook" the reader's attention. The hook should relate to the topic of your essay. You can do this in several ways. Choose one, or several:

1. **ASK A QUESTION:** Ask the reader if they think sending people to Mars is a good idea?

OR

2. **START WITH A SURPRISING FACT:** Use a fact from the article, infographic, or your T-chart, that will engage, shock, or interest the reader.

OR

3. **ANECDOTE:** An anecdote is a very short, but true story. You can describe a positive fact or negative fact about what we know life could be like on Mars.

STEP 3: WHAT DO YOU THINK? WRITE YOUR THESIS

Should NASA send humans to Mars? Consider the pros and cons, evidence from the article, information from the infographic, as well as your own opinion.

Then, make your decision about people traveling to Mars. Do you check:

☐ **YES** **or** ☐ **NO**

Now put this answer into a sentence. This is your thesis. After you summarize the pros and cons, and set your side of the argument up with a hook to engage your reader, your thesis will tell what side of the issue you are taking. The thesis is a clear, strong statement of the choice you made.

STEP 4: FIND YOUR SUPPORT

Which of the items on your "Pros" and "Cons" T-chart support your thesis? List them here.
What are other points that support your opinion? **LIST 3 TO 5 SUPPORTING REASONS.**

STEP 5: ACKNOWLEDGE THE OTHER SIDE

If you said, **"Yes! People should travel to Mars!"** explain why someone would disagree with you.
If you said, **"No Way! Don't go to Mars."** give reasons why someone would disagree with you.

STEP 6: REBUTTAL

Restate your thesis in **STEP 3** in a different way. This tells the reader that although some people may disagree *you can explain and provide evidence for your side of the issue to continue* arguing your side.

STEP 7: CONCLUSION

Use 2-3 sentences to remind your reader of your main points in **STEP 4.** Then finish with a strong sentence. You can do this in several ways

A strong sentence can:

1. Refer back to your hook. Don't say exactly the same thing. Change some words around.
2. Finish with an important quote from the article (make sure to provide the page number).
3. Leave your reader with an inspiring thought about going, or not going, to Mars.

STEP 8: WRITE YOUR ESSAY

Now that you have all your planning done, you are ready to start writing. You can now move on to transferring this information to binder paper in an essay form. Your essay may be 3 to 5 paragraphs.