

# MARS 2040: PACKING FOR SPACE

HELP NASA GET ASTRONAUTS  
TO MARS BY PACKING THINGS  
TO KEEP THEM HEALTHY, HAPPY  
AND BUSY ALONG THE WAY.

# MISSION TO MARS



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# CONTENT

OVERVIEW

MATERIALS

KEY CONCEPTS

PACKING FOR SPACE

NGSS



## ABOUT THE LESSON

Help NASA get astronauts to Mars! A trip to Mars is a long journey through the isolation of space, so the astronauts are going to want to pack things to keep them happy and busy along the way. There isn't a lot of room aboard the rocket to Mars, and astronauts

must share that limited space with scientific equipment, food for the entire trip, and a few personal items. In this lesson, you will learn about NASA's projected hopes of landing a manned space craft on Mars around the year 2040, and what is important to bring along the way.

## MATERIALS FOR THIS ACTIVITY

- 2 sheets of paper
- Ruler (If no printer)
- Scissors
- Pen/Pencil (If no printer)

For additional supporting materials, search “Mars” at **[msichicago.org](https://msichicago.org)**.

For this activity, you can print off the packing pieces and the “suitcase” diagram from the **activity outline** section. The images can be easily copied and pasted into a Word document to send to students.

If students do not have access to a printer, they can use a ruler and a pen/pencil to draw out the shapes and the diagram.

## SPACE TRAVEL

**Traveling to Mars:** A trip to Mars will take six to nine months. Mars is around 140 million miles from Earth. This changes as Mars and Earth orbit around the sun at different speeds, like two cars on a racetrack.

**Limitations of Space Travel:** There is a limited amount of space in the rocket for the astronauts, their equipment and food. Most of the rocket's space is used for liquid and solid fuel for the journey to and from Mars. With limited space, astronauts are limited to only a few items to take with them from home.

### MENTAL HEALTH:

**Importance:** When traveling in space, astronauts are cut off from their lives on Earth. The physical and mental health of astronauts is equally important for a successful mission. Astronauts are encouraged to bring personal items that remind them of home and games that stimulate their minds.

**Personal Items:** A limited amount of personal items like music, family photos, hobby items, instruments and books can help to combat the loneliness of space travel.

**Brain Games:** Games such as puzzles, crosswords, and sudoku can help stimulate the astronaut's mind.

### ENGINEERING DESIGN

**Packing:** Food and personal items are packed wherever there is available space. Your packing strategy can affect the success of the trip. Everything must fit in its container like putting together pieces of a puzzle.

### IMPORTANT QUESTIONS

- 1. What does an astronaut require for a trip from Earth to Mars?**
- 2. How does a human combat the loneliness of space?**
- 3. What personal items would you bring on a long trip to remind you of home?**

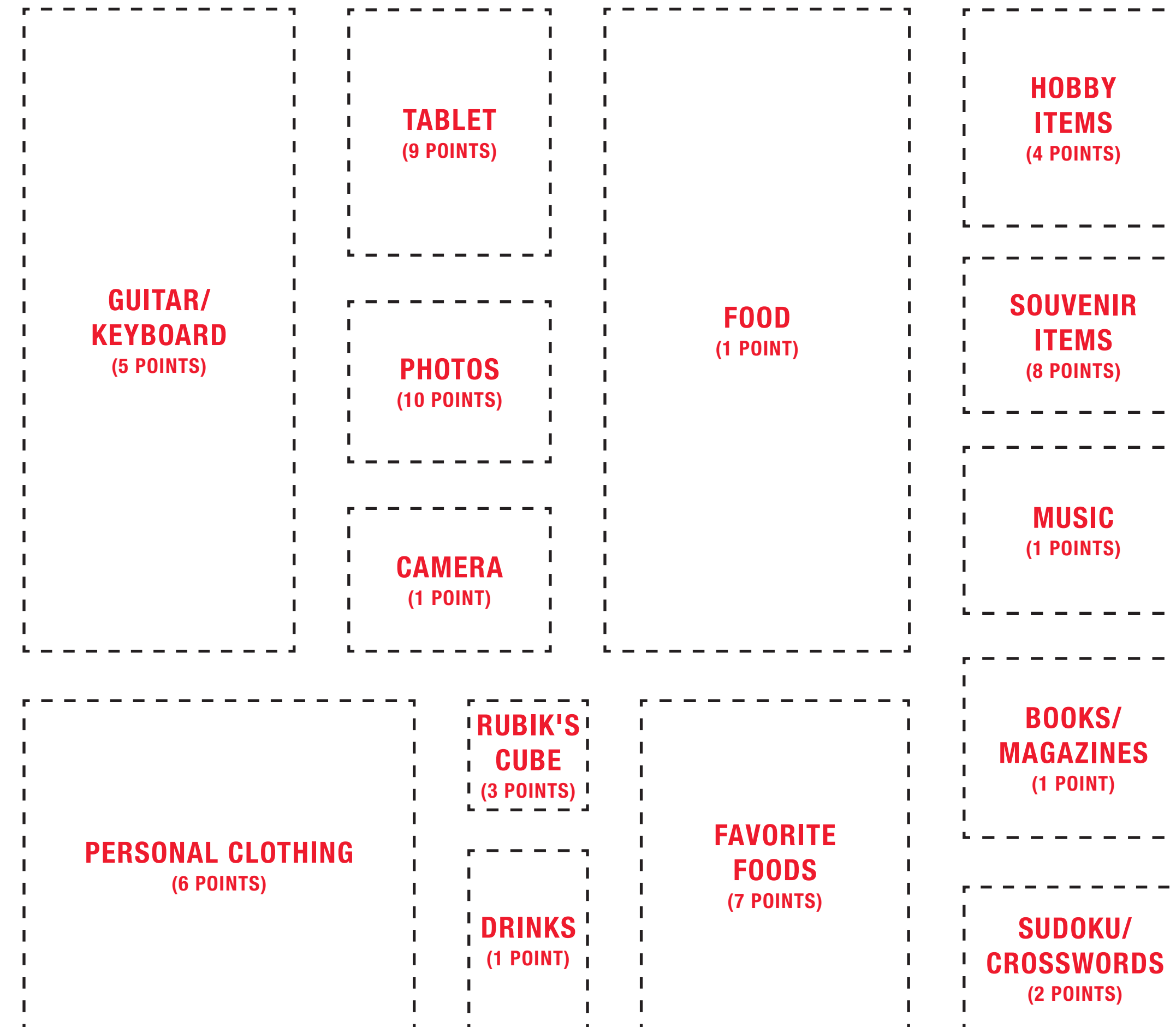
Keeping astronauts healthy, physically and mentally, is critical to the wellbeing of the astronaut and for a successful mission to Mars.

These are some items astronauts identified as important things they would like to bring along with them:

- Music
- Guitar or keyboard
- Electronic tablet
- Souvenir items
- Hobby items like arts and crafts
- Sudoku and crossword puzzles
- Personal clothing: pajamas, t-shirts, funky socks etc.
- Family photos
- Favorite foods
- Books and magazines
- High-quality camera

### PACKING THE PIECES

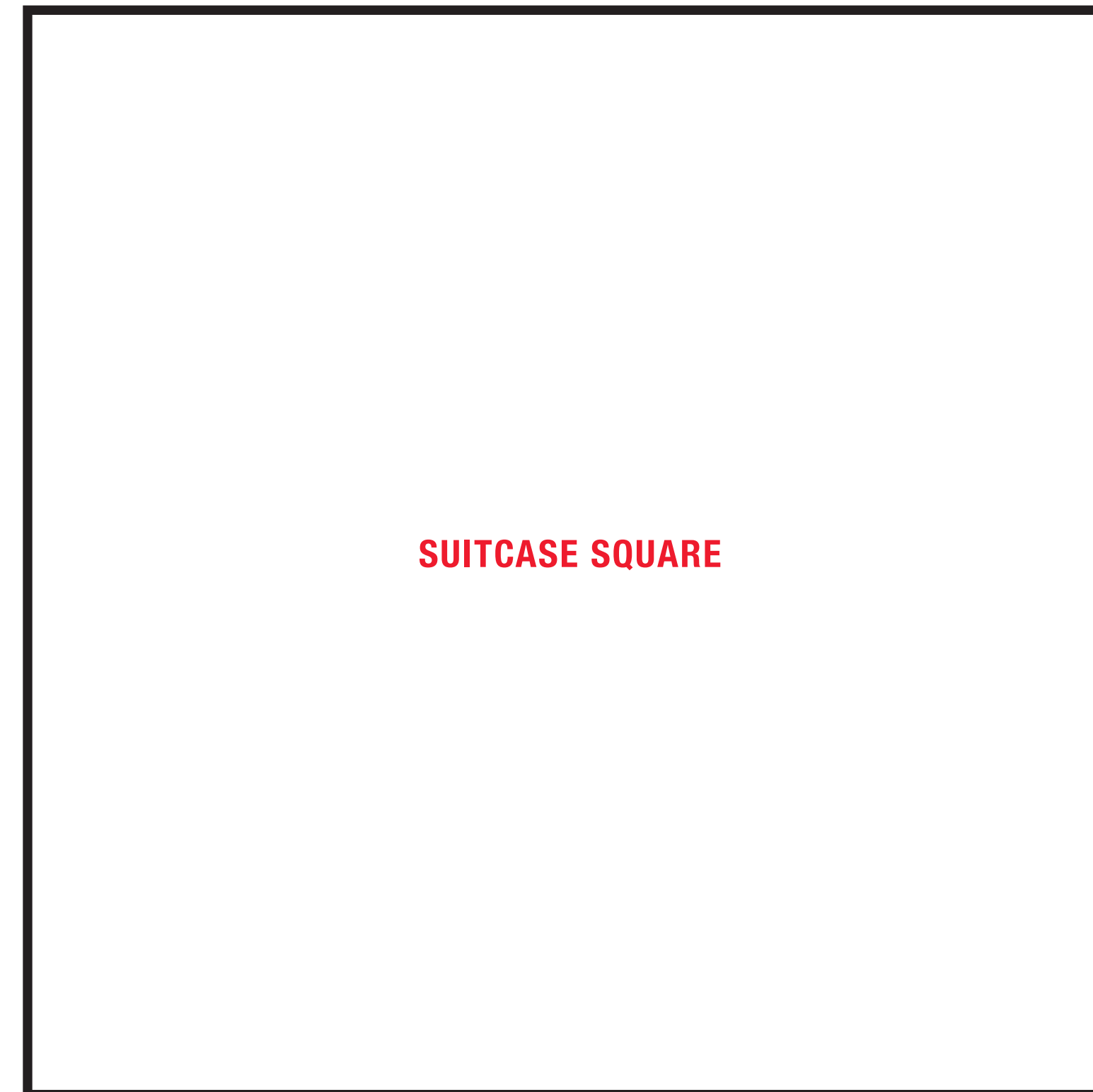
- Cut out each piece.
- Choose the items that you want to take on a trip to Mars.
- Try to fit all the items you chose into the suitcase diagram on the next page.
- Each item has a point value. Add up the points for the items you fit into your suitcase.





## **SUITCASE SQUARE**

- Arrange your chosen items in the square.
- Add up the points for each item that fits in the square.
- If the items you've chosen don't fit, try different combinations.
- **REMEMBER: You need food and drinks to survive the journey.**





## NEXT GENERATION SCIENCE STANDARDS

### Science and Engineering Practices:

Asking questions and defining problems

Developing and using models

Planning and carrying out investigations

Analyzing and interpreting data

Constructing explanations and designing solutions

Engaging in argument from evidence

Obtaining, evaluating and communicating information

### Crosscutting Concepts:

Patterns

Structure and function



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