

## Constellation Maker

*Parent Guide*, page 1 of 2

*Read the “Directions” sheet for step-by-step instructions.*

### SUMMARY

In this activity, children and adults will create a constellation that symbolizes an American woman. Many cultures have used constellations to remember the stories of heroes, like the Greeks and some American Indians.

### WHY

This activity will help children build critical thinking skills and develop their use of symbols to illustrate and tell stories. The art project will also help build hand-eye coordination and fine motor skills.

### TIME

- 20–60 minutes, depending on materials, design, and hand-eye coordination

### RECOMMENDED AGE GROUP

This activity will work best for children in kindergarten through 4th grade.

### GET READY

- Read *Maria’s Comet* together. *Maria’s Comet* is a work of historical fiction about the childhood of Maria Mitchell, America’s first female professional astronomer. For tips on reading this book together, check out the Guided Reading Activity ([http://americanhistory.si.edu/ourstory/pdf/telescope/telescope\\_comet.pdf](http://americanhistory.si.edu/ourstory/pdf/telescope/telescope_comet.pdf)).
- Read the [Step Back in Time](#) sheet.

### CHALLENGE WORDS

- **constellation:** a pattern of stars, like connect-the-dot pictures (but with some of the dots missing)
- **symbol:** something that stands for or suggests something else; especially a visible sign of an invisible idea, like faith or courage

More information at <http://americanhistory.si.edu/ourstory/activities/telescope/>.

# Constellation Maker

*Parent Guide, page 2 of 2*

## YOU NEED

- Directions sheet (*attached*)
- ThinkAbout sheet (*attached, optional*)
- Step Back in Time sheet (*attached*)
- pencil

## EITHER

- needle
- light-colored thread
- colored fabric
- embroidery hoop
- scissors

## OR

- dark-colored paper
- chalk or star-shaped stickers



## Constellation Maker

### Step Back in Time

For more information, visit the National Museum of American History Web site <http://americanhistory.si.edu/ourstory/activities/telescope/>.

**M**aria (Mar-AYE-ah) Mitchell was America's first woman professional astronomer. She was the first American woman to discover a new comet, and won a gold medal from the king of Denmark as an award for her discovery. After Maria became famous she continued to work as an astronomer, and also taught astronomy to younger women at Vassar College. She used a telescope that is now part of the collection of the National Museum of American History. Maria not only helped her students at Vassar College, but brought attention to other American scientists, schools for girls, and the women's rights movement.



"Solar System" quilt made by Ellen Harding Baker of Cedar County, Iowa, in 1876.

When Maria was growing up, many girls were expected to spend time sewing. Maria thought that sewing could be good practice for the skills needed to become an astronomer. In 1864, she wrote, "The fine needle-work and the embroidery teaches [girls] to measure small spaces. The same delicacy of eye and touch is needed to bisect the image of a star by a spiders-web, as to pierce the delicate muslin with a fine needle . . ."



Close view of the "Solar System" quilt

**astronomer:** scientist who studies the stars, planets, sun, moon and sky

**astronomy:** the science of learning about the stars, planets, sun, moon, and sky

**bisect:** to divide into two parts

**comet:** a ball of frozen gases, frozen water, and dust

**delicacy:** ability to be careful and exact

**embroidery:** the art of making designs with sewing needle and thread

**muslin:** a plain cotton fabric

## Constellation Maker

*Directions*, page 1 of 4

*For adults and kids to follow together.*

*Before you start:*

Take a look at the pictures on the [Step Back in Time](#) sheet. These pictures come from a quilt that a woman named Ellen Harding Baker made in 1876. What kinds of things did Ellen sew on her quilt?

Look back at the book *Maria's Comet*. Find how many times Maria or the author mentions sewing.

Constellations were made by people who looked into the sky and saw patterns that connected to stories they knew, like seeing the outline of a warrior in a pattern of stars. Astronomers use constellations to identify areas of the sky.

*Make your own constellation!*

1. Think about an American woman whose story you would like to tell in a constellation.

**Tip** Your American woman can be famous or not.

If you would like help designing your constellation, take a look at the questions on the [ThinkAbout](#) sheet.

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2. Draw your constellation on a piece of paper. Be sure to think about how many stars there will be and where they should be. If you will be sewing, cut your paper to be about the same size and shape of your embroidery hoop.

## Constellation Maker

*Directions, page 2 of 4*

**Tip** Each star will take three stitches, so if you have limited time or thread, you might want to limit the number of stars in your constellation.

Some constellations represent big pictures, but only include a few stars. For examples, check out the constellations as shown on Google Sky (<http://www.google.com/sky/>). For a brief tutorial on viewing the constellations on Google Sky, visit (<http://americanhistory.si.edu/ourstory/v/googlesky.html>). Or, take a look at images of constellations from a book from 1835 ([http://www.sil.si.edu/imagegalaxy/imageGalaxy\\_MoreImages.cfm?book\\_id=SIL-007-158](http://www.sil.si.edu/imagegalaxy/imageGalaxy_MoreImages.cfm?book_id=SIL-007-158)).

3. Once you've finished drawing, use your pencil to gently poke small holes through your picture where each star will be located.

**Tip** If you do not want to sew, consider two other ways to make constellation art:

- Skip this step and all upcoming steps. Instead, use star-shaped stickers to show where the stars would be on your constellation.
- Do this step, but skip all other steps. Hold your paper up to the light to see how the stars would shine in your constellation. Or turn off the lights and shine a flashlight through the little holes to shine your constellation on the wall.

4. Put your cloth inside the embroidery hoop.

## Constellation Maker

*Directions, page 3 of 4*

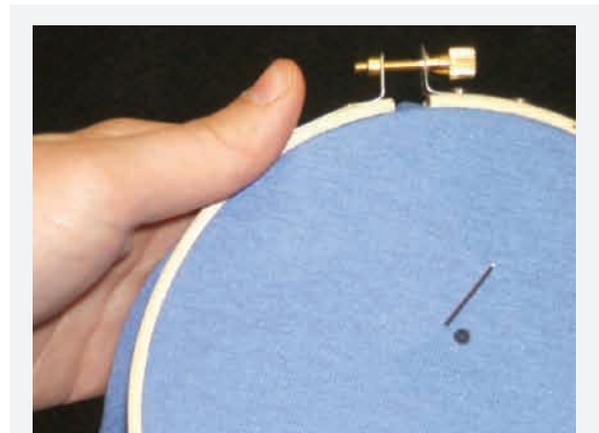
5. Tape your picture to your cloth or embroidery hoop. Use a marker to poke through the paper and mark the holes where the stars should be.

6. Remove the paper from your sewing project.

7. Cut about two feet of thread.

8. Thread the needle by passing thread through the eye of the needle.

9. Pull the ends of the thread together and tie a knot at the end.



Step ten, from the front of your sewing project.

10. Poke the needle through the cloth (from back to front) where one of your stars should be. Pull the thread all the way through until the knot is against the cloth. The side that the knot is on is the back of your sewing project. The back of your sewing project design will look different from the front.

11. Aim the tip of your needle just a little bit (about a half or a quarter inch) away from where the thread goes through the cloth. Pull the thread all the way through until there is only a tiny bit on the front side of the cloth. You've made your first stitch!

## Constellation Maker

*Directions, page 4 of 4*

12. Make another stitch so it makes an “X” shape across your first stitch, and then one more, so it looks like the stars from Ellen Harding Baker’s quilt.

13. Tie a knot on the back side of the cloth, right where the thread goes through the cloth on the last stitch of your star. Cut the rest of the thread off.

**Tip** Each time you start a new star, tie another knot at the end of your thread and start again at step ten.

If you end up with less than six inches of thread on your needle, it will be very hard to sew, so throw out the short thread, cut another two feet of thread, and start again at step eight.



14. Continue making stars until you have finished making your constellation.

15. Tell others the story of your constellation.

**Tip** Don't be surprised if others need to hear the story of your constellation to know what picture you made. Most constellations take a lot of imagination.

For more activities and information about *Maria's Comet* and astronomy in American history, visit <http://americanhistory.si.edu/ourstory/activities/telescope/>.

## Constellation Maker

### ThinkAbout

Think about an American woman you admire. She could be alive or dead, famous or not.

- What do you want to be when you grow up? Find out about a famous woman who had that job or the first woman to have that job.
- Is there any woman in your family that you admire?

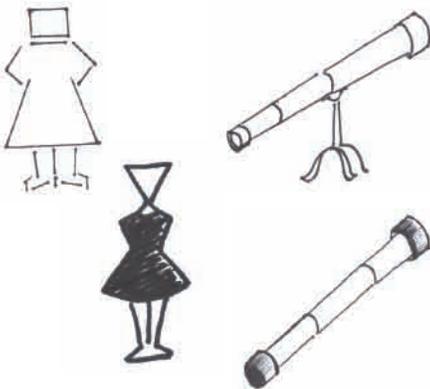
Then fill out one or more part of this chart to start thinking of ways to tell her story through a picture. The chart uses Maria Mitchell as an example.

<i>Name</i>	Maria Mitchell	_____
<i>Way to describe her</i>	woman, teacher, scientist, astronomer, explorer	_____
<i>Things that were important to her</i>	telescope, book, star, comet, medal	_____
<i>Places that were important to her</i>	school, attic, Nantucket	_____

Now pick two of your ideas from the chart and sketch what that picture might look like.

woman

telescope



More information at <http://americanhistory.si.edu/ourstory/activities/telescope/>

# Constellation Maker

*For Teachers, page 1 of 1*

*Read the “Parent Guide” and “Directions” sheets for step-by-step instructions.*

## OBJECTIVES

Students will be better able to:

- Use tools for fine motor tasks.
- Use symbols to convey meaning.

## STUDENT PERFORMANCE CRITERIA

- Describes how the ideas in his/her artwork connect to his/her knowledge of the subject.
- Controls the tools used to create artwork.

## STANDARDS

### *NCHS History Standards*

#### *K-4 Historical Content Standards*

- 1B: The student understands the different ways people of diverse racial, religious, and ethnic groups, and of various national origins have transmitted their beliefs and values.

### *21st-Century Skills*

#### *Learning and Innovation Skills*

- Critical Thinking and Problem Solving