



# AMAZING STARGAZING



Want to help your child explore stars and constellations but it's daytime or cloudy or rainy? Don't worry, Miles and Loretta have two activities that will help your family do some amazing stargazing -- with a flashlight or with a "telescope"!

## WHAT YOU'LL NEED

*To make the flashlight discs:*

- Constellation cards (see following pages)
- Flashlight
- Black paint or black marker
- Black construction paper
- White colored pencil or chalk
- Scissors
- Needle

*To make the "telescope":*

- Constellation cards (see following pages)
- Paper towel tube
- Various crafts materials to decorate the tube - for example: paint, glitter, crayons, colored pencils, confetti, glue, etc.



## REMINDERS

- Only a grown-up should use the scissors.
- Only a grown-up should use the needle.

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## HOW TO MAKE IT

*To make the flashlight discs:*

1. Print the constellation cards on the following pages. Have your child pick out his or her favorite constellations, and have a grown-up cut out the corresponding cards.
2. Choose a flashlight that you wouldn't mind not using again since it won't be as bright as it used to be.
3. Open the flashlight to access the reflector (the shiny cone surrounding the bulb).
4. Paint over the reflector with black paint or draw over it entirely with black marker.
5. To make a disc: Take the face cap (this is the piece that screws around the reflector and lens) and trace its circumference onto black construction paper.
6. Trace as many discs as you want to match the number of constellations you'd like to see.
7. Have a grown-up cut out the discs.
8. With a white colored pencil, mark dots on the discs to match the placement of the stars on your child's favorite constellations.
9. Have a grown-up use a needle to poke holes on the marked dots.
10. Flip the disc over and place it on top of the reflector, replace the lens, then screw the face cap back on. (The reason for flipping the disc is so its mirror image will be projected accurately.)
11. Turn the flashlight on in a dark room and shine it onto a wall to see your constellation.

**Here are some ways you can extend the experience with your child.**

Place the flashlight close to the wall and then far away. How does that change the image? Which position gives the clearest projection? Discuss how adjusting the distance from the wall to get a clearer image is much like using a lens on a telescope in space to get a clearer image.

Project the flashlight on the ceiling. Is the beam powerful enough to reach that far? Ask children to speculate what happens to the beams of light when the surface is far away. Will the flashlight beam shine the constellation through a glass of water? Does water distort the image?

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## HOW TO MAKE IT

*To make the “telescope”:*

1. Print the constellation cards on the following pages. Have your child pick out his or her favorite constellations, and have a grown-up cut out the corresponding cards.
2. Invite your child to decorate the paper towel tube. Paint it, sprinkle glitter on it, draw on it – encourage your child do whatever he or she would like as long as they’re having fun!
3. Have your child hold up the paper towel tube to their eye as though it’s a telescope, and hold up the constellation card on the other end of the tube.

### Here are some ways to extend the experience:

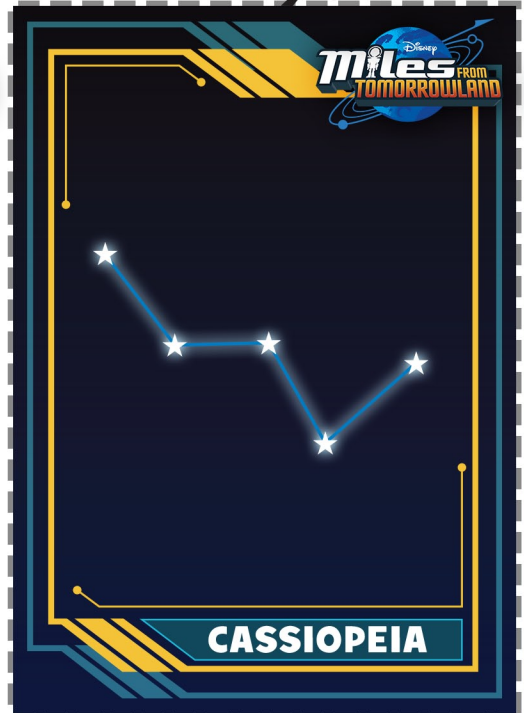
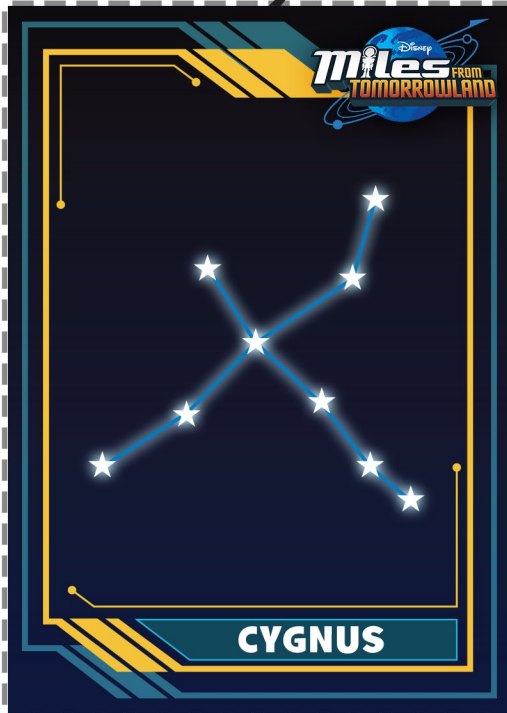
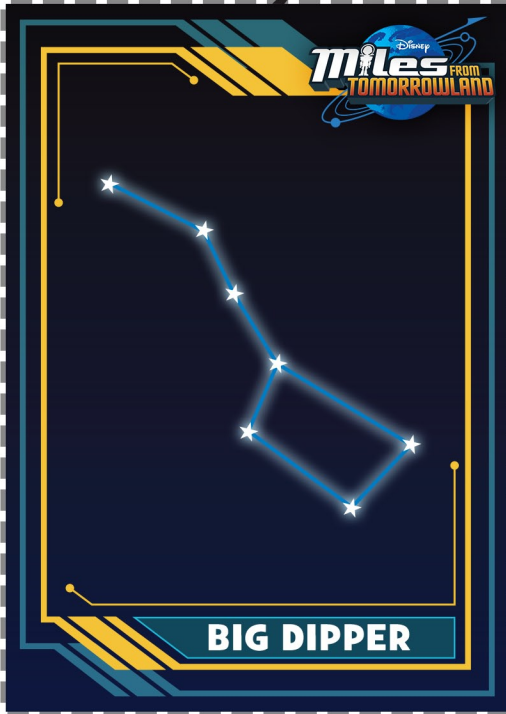
Encourage your child to make his or her own constellation by putting drops of glue on black construction paper then adding sprinkles of glitter. Give their sparkling constellation a name and have fun brainstorming names together!

Tell your child that a telescope helps scientists look closer at things that are far away. As you adjust the lens at the end of the telescope, the object may look clear, blurry, nearer, or farther away. As children look through their “telescopes” at the constellation cards, ask them to pretend they are adjusting the lens and move the constellations slightly nearer or farther away. Discuss how using a telescope helps scientists study space objects that are normally beyond their ability to see.

Go to the library or go online with your child to learn more about the names of their favorite constellations. Find out what the names mean and how the shape or design of the connecting lines represent the names.



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