Road Trip!

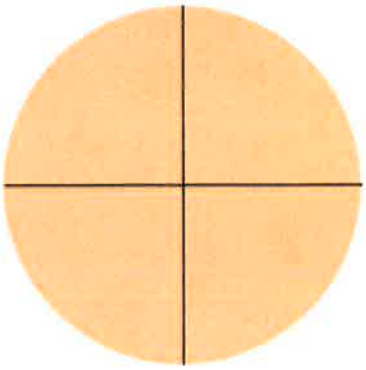
Samantha and Jordan are going on a road trip from New York to California. They are going to stop at the capital of every state they pass through. Can you name the states they will pass through?

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____

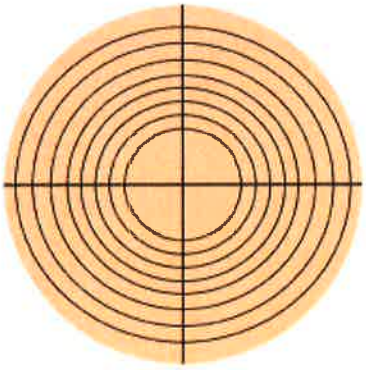
Make a Solar System Mobile

You will need:

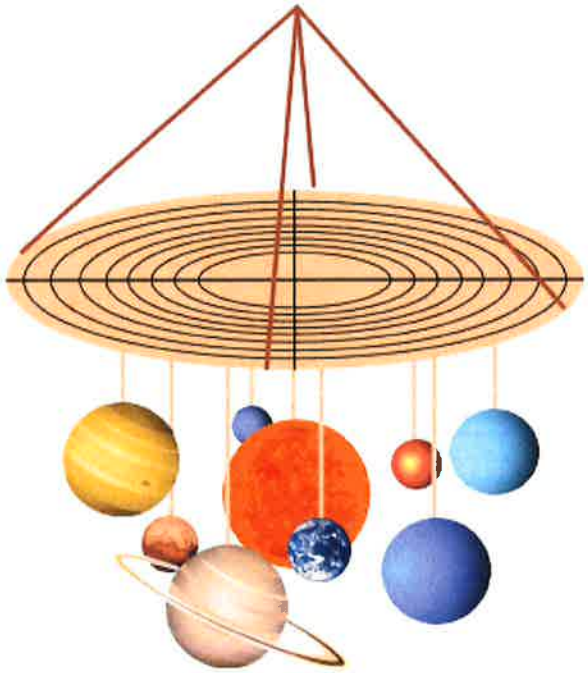
- String or yarn
- Tape or glue
- Scissors
- Hole punch or large nail
- Cardboard circle (one from a pizza works great)



1. Print out the sun and 8 planets on the following pages. Cut out each planet. (If you want, print out two of each planet and glue them together so that each planet has two sides.) Attach a piece of string to each with a piece of tape.



2. Draw a cross down the center of a round piece of cardboard. Then, using a compass, draw 8 circles, each bigger than the last. These will be the orbits of your planets.



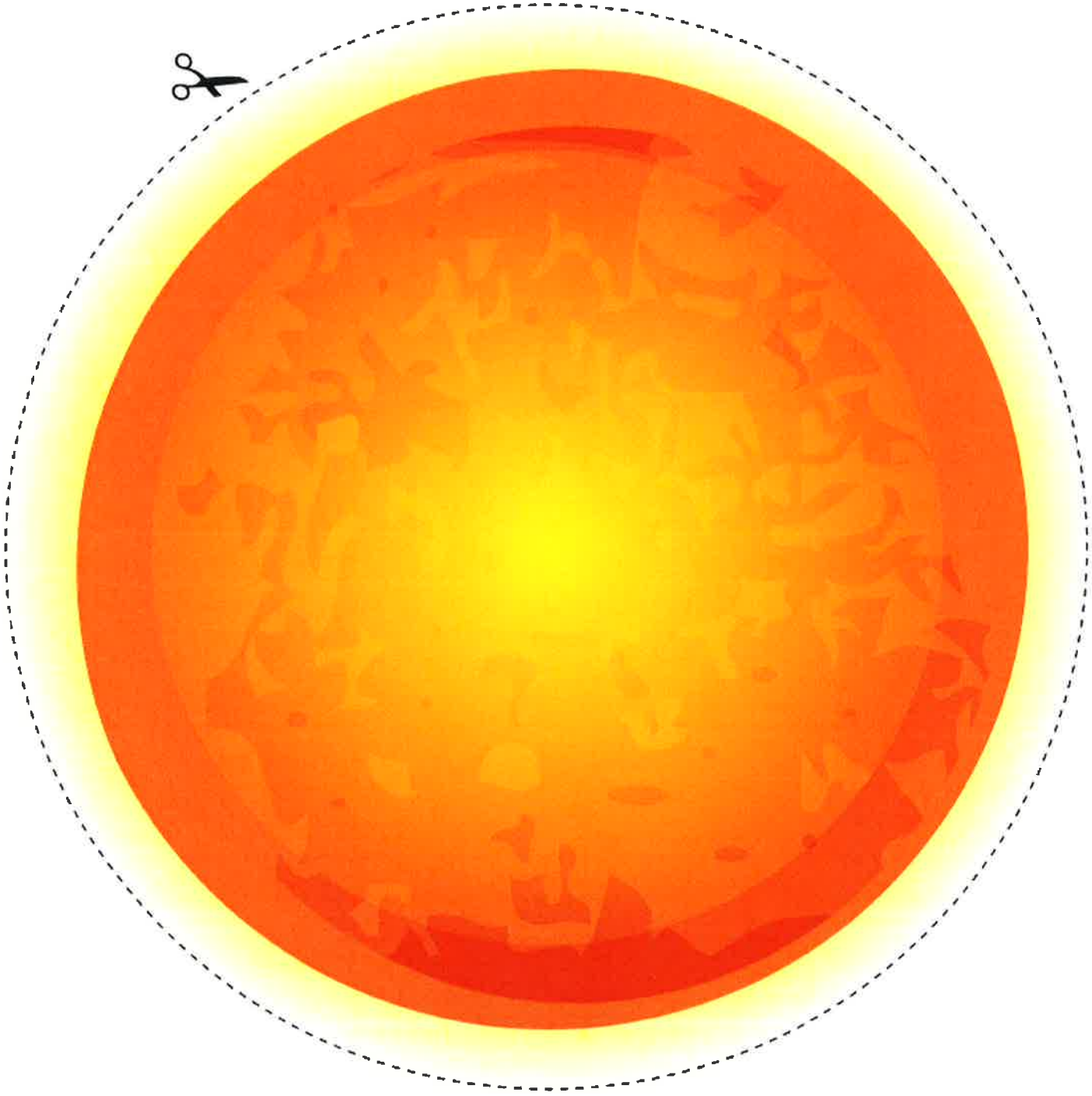
3. With a hole punch or a large nail, make holes in the middle of the cardboard for the sun. Then punch a hole on each orbit, spacing them out. Attach the sun in the middle, and each planet on its orbit in this order, from closest to the sun to farthest: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune.

4. To hang your solar system mobile, make four holes on the edge of the cardboard circle and tie on four pieces of string, then tie them together.

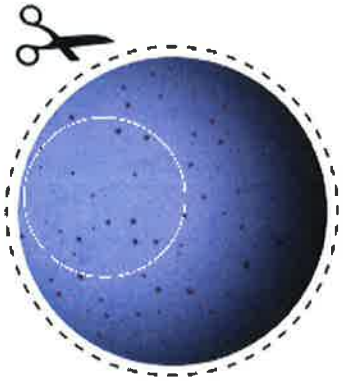
Make a Solar System Mobile

The Sun

The sun is much too big to show in accurate proportion to the planets, so we will just make it the biggest. Without the warmth and light of the sun, nothing could survive on our planet.



Make a Solar System Mobile

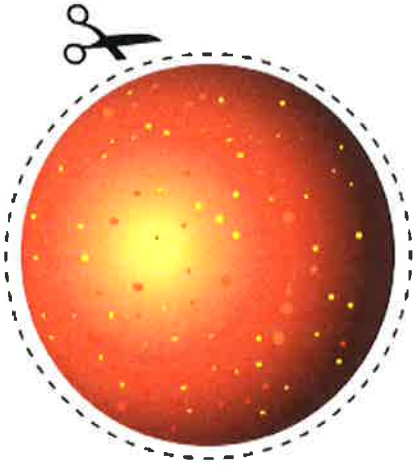


Mercury

Mercury is the closest planet to the sun. The surface of this barren planet is covered with craters. These craters have been created by thousands of years of being hit with asteroids and comets. There is no atmosphere on Mercury.

Venus

Venus is second closest to the sun. It is the hottest planet in the solar system. It is the brightest of all the planets, and is also known as the evening star and the morning star.



Make a Solar System Mobile

Earth

The Earth is the third planet from the sun, and the fifth largest of the eight planets in our solar system. It was formed 4.5 billion years ago, and life appeared on its surface within 1 billion years. Earth is home to millions of species, including humans — and that means you!

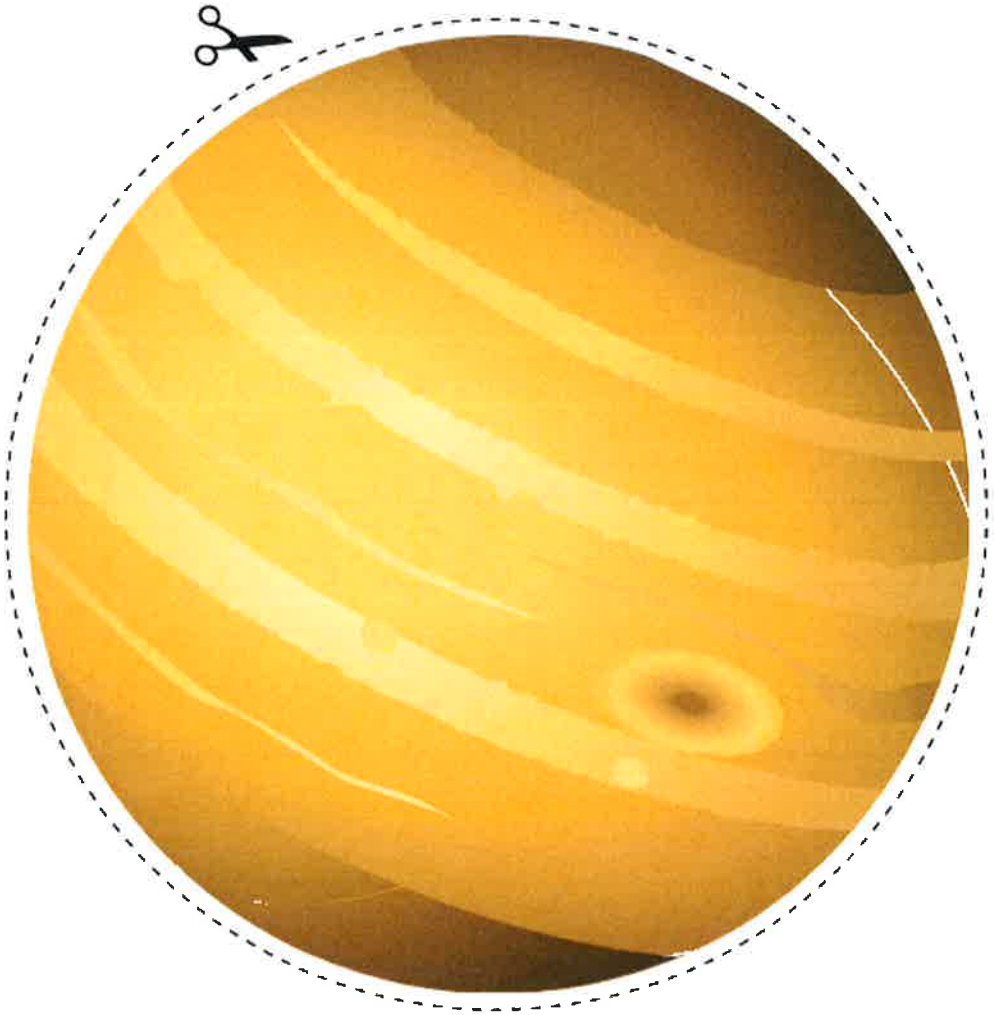
Mars

Mars has three moons, and has the nickname "The Red Planet." Mars is the only planet whose surface can be seen in detail from the Earth. Mars is the fourth closest planet to the sun.

Make a Solar System Mobile

Jupiter

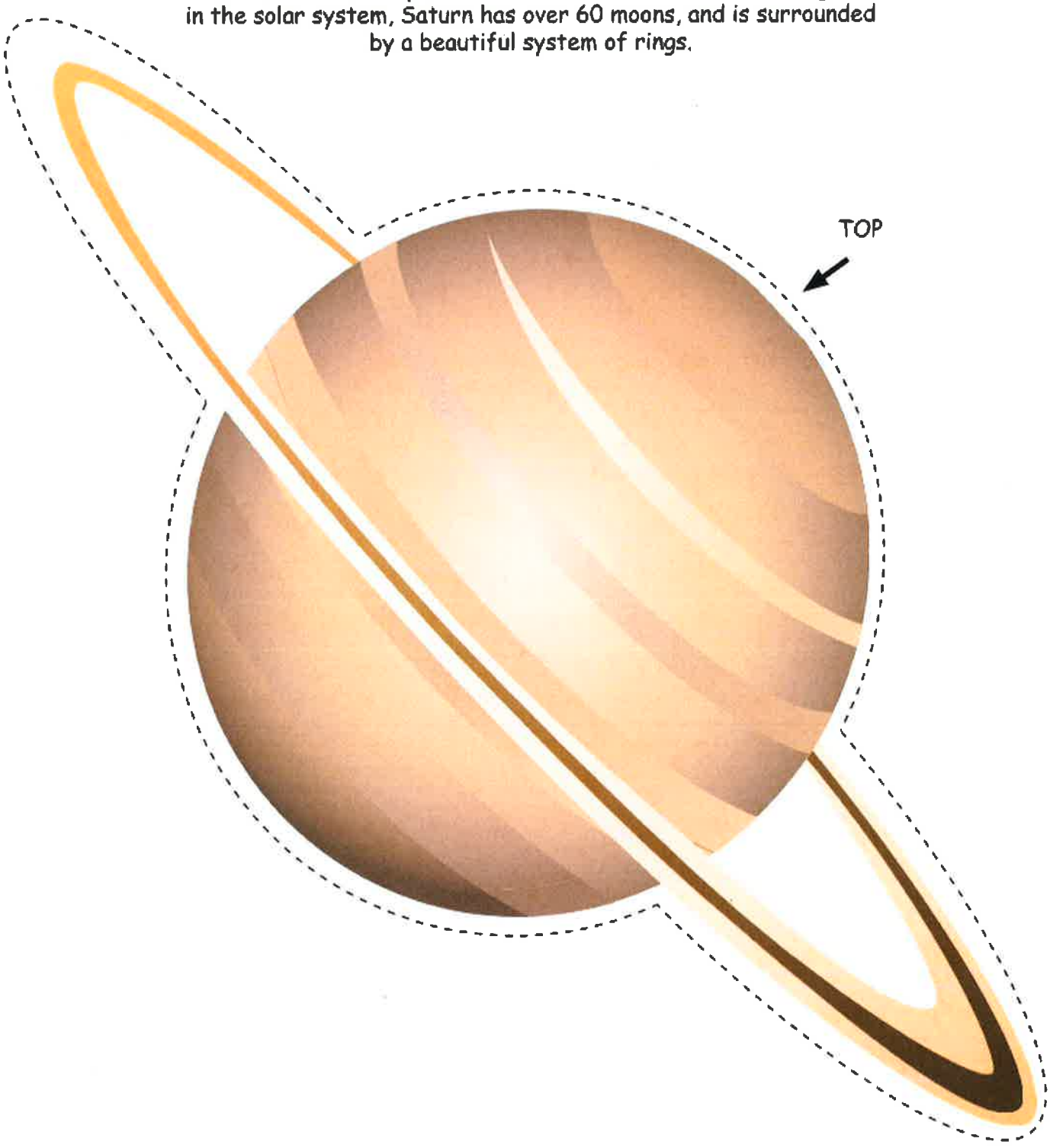
Jupiter is the largest planet in the solar system, and the fifth closest planet to our sun. If you weigh 100 pounds on Earth, you would weigh 264 pounds on Jupiter. Jupiter rotates faster than any other planet. It rotates so quickly that the days are only 10 hours long. The great red spot on Jupiter is a storm that has been going on for over 300 years.



Make a Solar System Mobile

Saturn

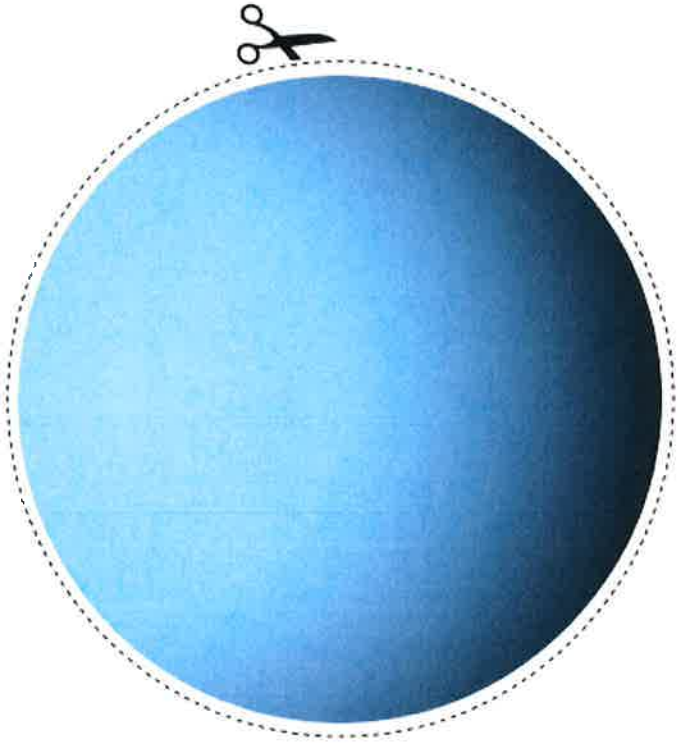
Saturn is the sixth planet from the sun and the second largest in the solar system. Saturn has over 60 moons, and is surrounded by a beautiful system of rings.



Make a Solar System Mobile

Uranus

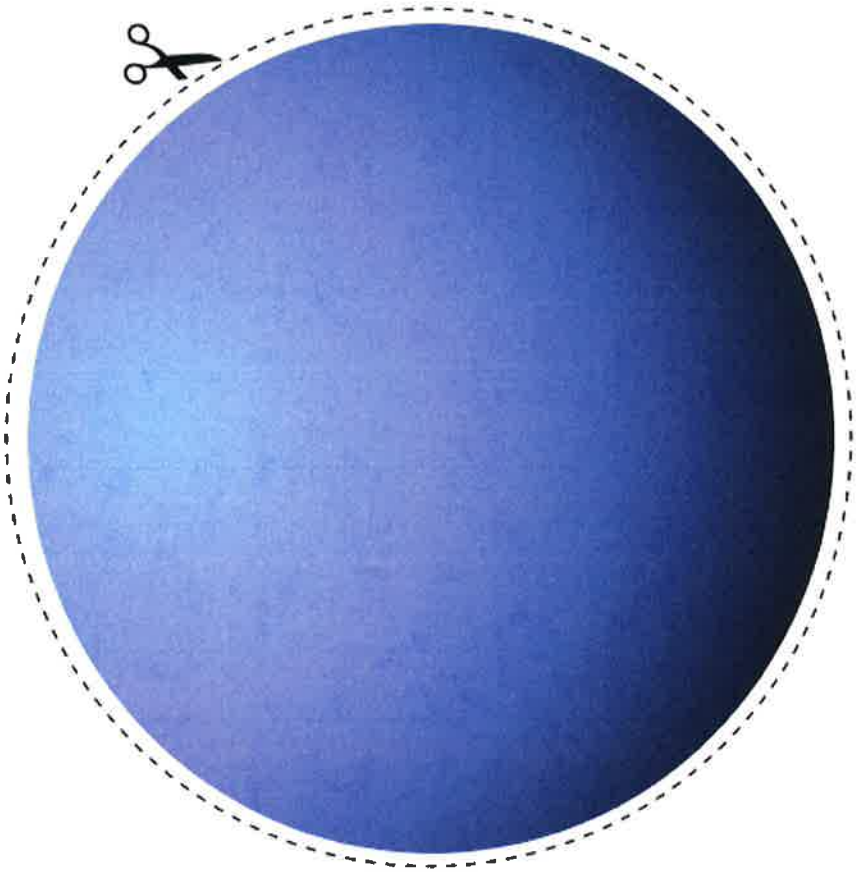
Uranus is the seventh planet from the sun. Because of the strange way it spins, nights on some parts of Uranus can last for more than 40 years. Uranus is a very cold planet. It is made up of rock and ice and has a large rocky core. It has the nickname "Ice Giant." It is possible there are diamonds on the surface of this planet.



Make a Solar System Mobile

Neptune

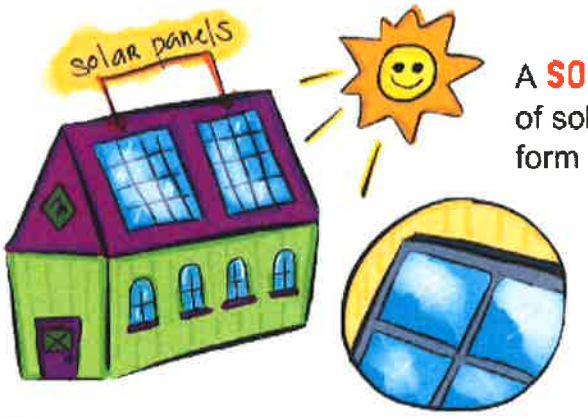
Neptune is the eighth planet. It is the farthest planet from the sun.
It is the fourth largest planet. The interior of Neptune,
like that of Uranus, is made mostly of ice and rock.
A gas called methane causes Neptune to look blue.



WHAT IS SOLAR ENERGY?

Solar energy comes from the sun. The sun is an important resource, as it helps sustain life. Without the sun, our planet would have no life. Through the use of technology, we are able to harness the energy from the sun to convert it to electricity.

SOLAR CELLS are tools that change light energy from the sun and other light sources into electricity. Many calculators use solar cells to power them.



A **SOLAR PANEL** is a group of solar cells connected to form a large, flat surface.

THINK AND DRAW

What do you think a car powered by the sun would look like? Draw a picture.

Design Challenge: Making a Solar Oven

In this fun activity, your child will create their very own solar oven to bake cookies or s'mores! We have given instructions which you can use to guide your child through the design thinking process. Since this is a design challenge, your child can be entirely creative with how they choose to make their oven using typical household items. However, we have also given a step-by-step procedure for making a solar oven in case your child is struggling to come up with ideas. Feel free to rely entirely on your child's creativity, take some inspiration from our procedure, or follow our procedure exactly. Be sure to engage your child by asking them questions that have them think critically about the design process.

What You Need:

- Cardboard pizza box
- Box cutter or scissors
- Aluminum foil
- Plastic wrap
- Black construction paper
- Ruler
- Cooking ingredients of your choice (Some options are s'mores or nachos. Avoid cooking raw meat or raw eggs using your solar oven.)
- Any other household items
- Pen and paper for taking notes

What You Do:

1. First, explain to your child their task in this activity. Explain to them that their job is to create a solar oven out of a cardboard pizza box in order to cook the food of their choice.
2. Ask your child what they would like to cook in their solar oven. Prepare the ingredients.
    a. Some ideas are s'mores, nachos, and cookies (if possible, use edible cookie dough in case the oven doesn't work very well).
3. Ask your child the following questions so that they begin thinking critically about the design process:
    a. What does your oven need in order to cook the food? (Answer: heat.)
    b. What are some of the best objects or colors that absorb heat? (Answer: the color black is good at absorbing heat.)
4. Show your child the materials they have, but don't have them start building just yet. Instead, ask them to **brainstorm** how they will use these materials in order to create a solar oven. Have them write out or draw their ideas on a piece of paper.
5. After your child has finished brainstorming, ask them to choose the design they think will work best. Remind them of the purpose of their oven: to cook the food of their choice.
    a. This is an important step of the design thinking process because it teaches your child to prioritize the functionality of their design over personal preferences, and it prevents them from getting too emotionally attached to one design.
6. Once your child has decided on a design, they can start **building**. Be sure to supervise and help out as needed.
7. After your child is done building, it's time to **test** it out! The best time to use your solar oven is between 11 a.m. and 2 p.m. when the sun's rays are strongest. Make sure to set the food on a dish so you don't make a mess inside the oven.
8. Depending on the food your child has decided to make, the cooking process will vary.
    a. To make a solar s'more: Place one or two marshmallows on top of a graham cracker. Put two to three squares of chocolate on top of the marshmallow. Wait until the chocolate and marshmallow are done cooking to top them with the second graham cracker.
        i. Ask your child why it might be a good idea to have the chocolate on top. (Answer: dark colors, like brown or black, are best at absorbing heat. If the chocolate is on top, it will absorb heat into the entire s'more.)
    b. To make nachos: place grated cheese on top of tortilla chips and wait for the sun to melt the cheese.
9. Wait for your child's oven to cook the food. (Timing will vary depending on the oven and food choice.) Be sure to frequently check back on the oven and observe whether the food is gradually cooking.
    a. If your child's oven eventually cooks the food, congratulate your child on their success!
    b. If your child's oven doesn't work, help them find out what went wrong. You could ask them if they think there was a mistake with the way they constructed the oven or if they forgot to add a necessary material. Then, encourage your child to go back and repeat this process until they make an oven that works.

Here is a procedure for creating a solar oven in case your child is struggling to come up with designs:

1. Take an empty pizza box and clean out any stray bits of cheese, sauce, or crumbs.
2. Using a ruler and pencil, draw a square that is one inch from the edges of the top of the box.
3. Use a box cutter or knife to cut out three of the four sides of the square, leaving the crease-side of the box attached.
4. Make a crease along the uncut side of the square to create a flap that stands up.
5. Cut a piece of aluminum foil that is large enough to cover the inner side of the cardboard flap.

6. Wrap the foil tightly and secure with tape.
    a. Ask your child what they think the purpose of the foil is. (Answer: aluminum foil reflects sunlight and brings heat into the oven.)
7. Line the bottom of the pizza box with black construction paper.
    a. Ask your child why they think black paper is useful and if white paper would work as well. Why or why not? (Answer: the color black absorbs sunlight best, and therefore black paper absorbs the sun's heat. White paper would not work well because it would reflect a lot of sunlight instead of absorbing it.)
8. Cut two pieces of plastic wrap that are the same size as the top of the pizza box.
9. Use tape to secure the plastic wrap to the inside edges of the square window you cut into the box. You are creating an airtight window.
    a. Ask your child why they think it's important to create an airtight oven. (Answer: your oven should be airtight in order to prevent any of the sun's heat from escaping it.)
10. Roll up some newspaper pages into tubes to stuff into the sides of the box. Make sure you are still able to close the lid of the pizza box.
    a. Ask your child what they think the purpose of the newspaper is. (Answer: newspaper insulates the oven and prevents heat loss.)
11. Finally, it's time to test out your oven by cooking something!

Author: Hanna Zarrinnegar

Name : _____ Score : _____

Teacher : _____ Date : _____

Counting to 120

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120

Number Chart (1 to 200)

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130
131	132	133	134	135	136	137	138	139	140
141	142	143	144	145	146	147	148	149	150
151	152	153	154	155	156	157	158	159	160
161	162	163	164	165	166	167	168	169	170
171	172	173	174	175	176	177	178	179	180
181	182	183	184	185	186	187	188	189	190
191	192	193	194	195	196	197	198	199	200

12× Multiplication Table

×	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8	9	10	11	12
2	2	4	6	8	10	12	14	16	18	20	22	24
3	3	6	9	12	15	18	21	24	27	30	33	36
4	4	8	12	16	20	24	28	32	36	40	44	48
5	5	10	15	20	25	30	35	40	45	50	55	60
6	6	12	18	24	30	36	42	48	54	60	66	72
7	7	14	21	28	35	42	49	56	63	70	77	84
8	8	16	24	32	40	48	56	64	72	80	88	96
9	9	18	27	36	45	54	63	72	81	90	99	108
10	10	20	30	40	50	60	70	80	90	100	110	120
11	11	22	33	44	55	66	77	88	99	110	121	132
12	12	24	36	48	60	72	84	96	108	120	132	144

Courtesy of MathsIsFun.com

Notes: