Project Park Design

Home Connection

Dear Family,
During the last few days, your child worked with a team to make a park model that included benches that were in the Sun at different times of the day. They acted just like engineers!

To make the model, they…

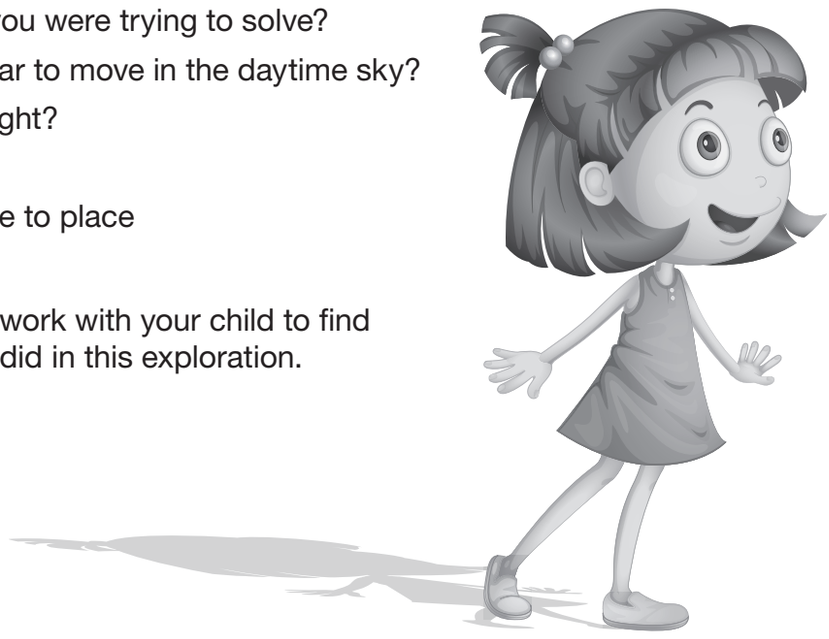
- identified and learned about a problem
- planned ways to solve the problem
- made a model
- tested the model
- thought about their test results and made a new plan

In this exploration, your child learned about engineering design and science concepts such as sunlight and shadows and the rotation of Earth as the reason for day and night. Your child also practiced mathematics and science skills. The teams measured lengths, planned and conducted an investigation, used data to make comparisons, and made claims supported by evidence.

Talk with your child about the project. If your child needs help telling what happened, ask prompting questions, such as

- What was the problem you were trying to solve?
- Why does the Sun appear to move in the daytime sky?
- What causes day and night?
- What causes shadows?
- How did you know where to place your park benches?

On the other side of this page, work with your child to find out more about what the team did in this exploration.



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Home Connection

Your child studied patterns of the daytime sky such as the apparent movement of the Sun across the sky and how this creates different sizes of shadows and shade.

Sunrise	Morning	Midday	Afternoon	Sunset
				

Try It!

You can also observe the nighttime sky and the patterns of the Moon. Use the Moon journal below to keep track of your observations.

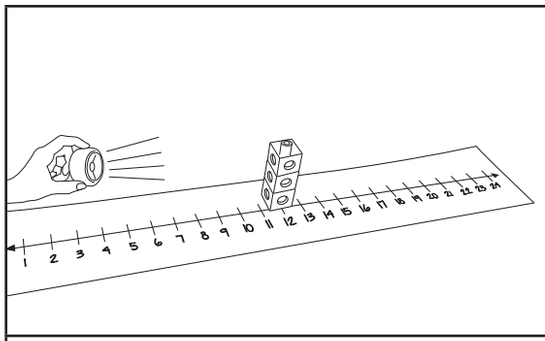
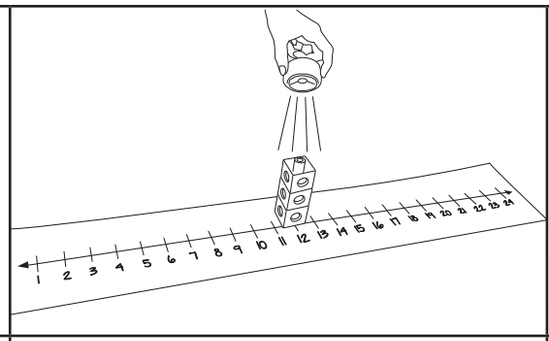
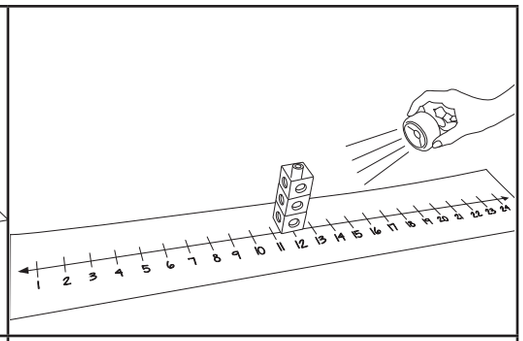
Month:

Date: _____ Time: _____	Date: _____ Time: _____	Date: _____ Time: _____	Date: _____ Time: _____	Date: _____ Time: _____
Date: _____ Time: _____	Date: _____ Time: _____	Date: _____ Time: _____	Date: _____ Time: _____	Date: _____ Time: _____
Date: _____ Time: _____	Date: _____ Time: _____	Date: _____ Time: _____	Date: _____ Time: _____	Date: _____ Time: _____

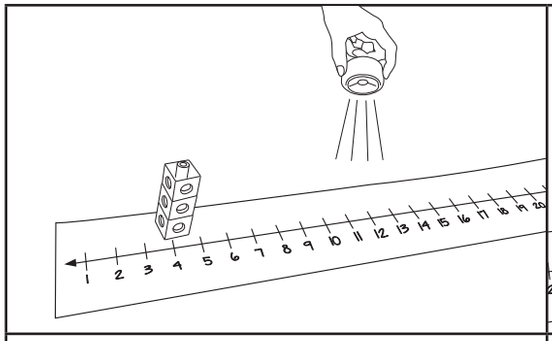
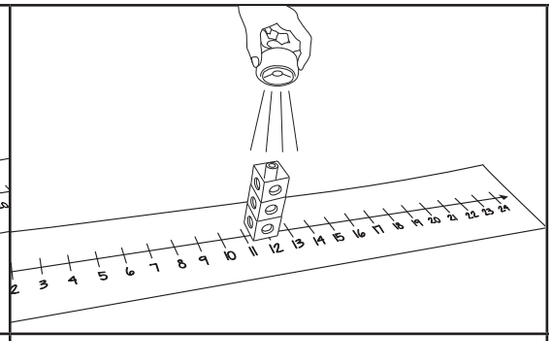
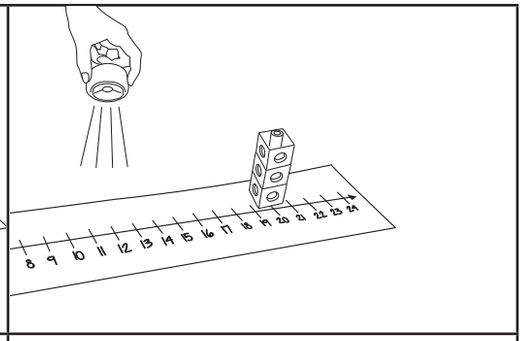
Name

Changing Shadows

1. Place the cube tower on 12.
2. Shine the light on the tower as shown.
3. Draw the shadow for each picture.

		
Light on the left	Light in the center	Light on the right

4. Hold the light over number 12.
5. Put the tower on 4, 12, and 20. Draw the shadow for each.

		
Tower on 4	Tower on 12	Tower on 20

Sun and Shadow Patterns

Name _____

1. Draw where you see the Sun in the sky.
2. Draw your shadow. Measure it. Write how many inches.

Morning

N W E S

_____ inches

Midday

N W E S

_____ inches

Afternoon

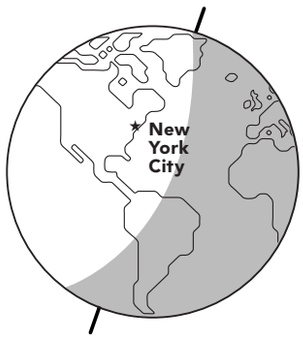
N W E S

_____ inches

On Earth

Name _____

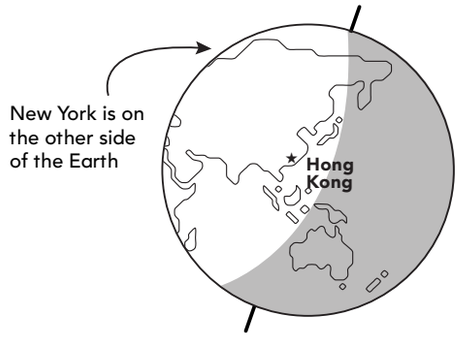
Use the Earth model and Day and Night Card.
Answer the questions.



Daytime or nighttime in New York City?

_____

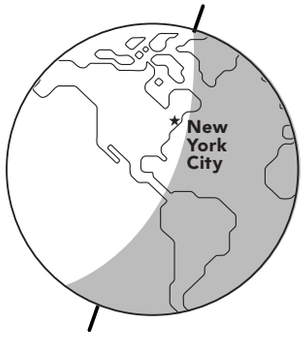
_____



What are most people in New York City doing?

_____

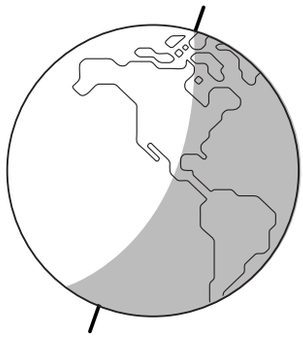
_____



Soon to be sunrise or sunset in New York City?

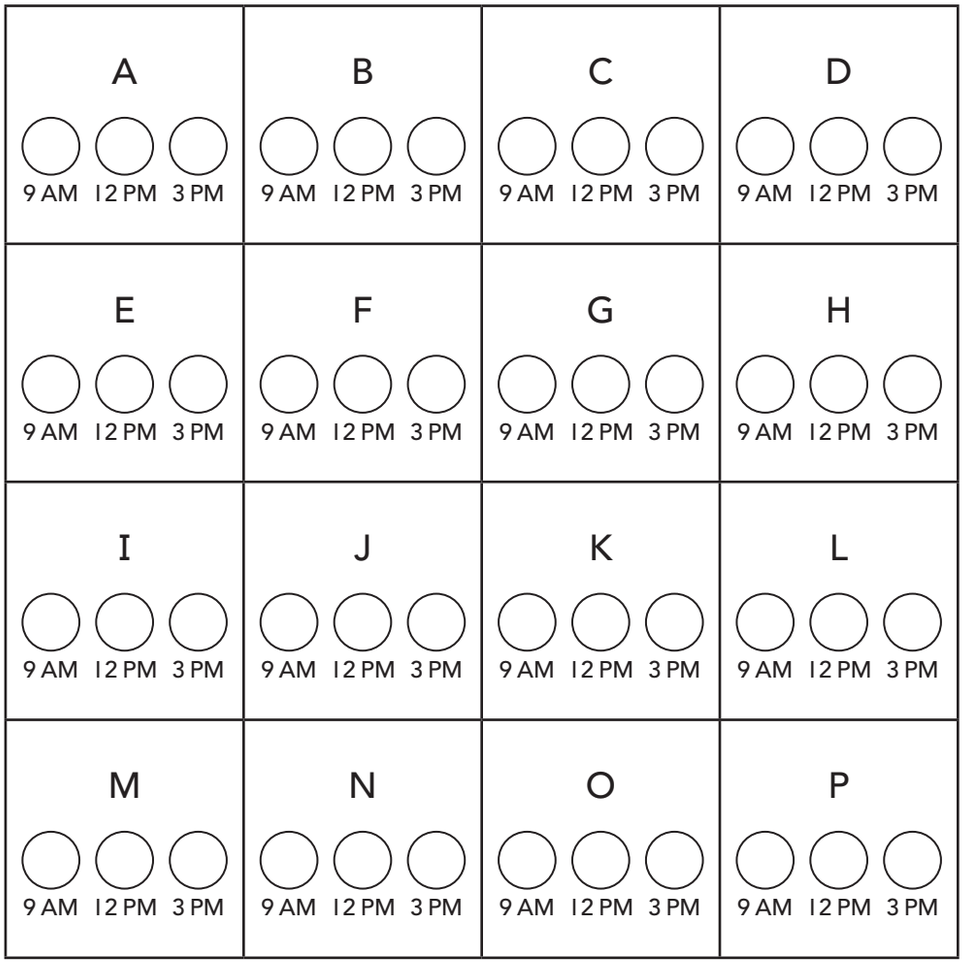
_____

_____



Sunlight in the Park

Name _____



1. Put the platform grid on 9 AM. Look at the sunlight and shadow in each square.

2. For each square, color the 9 AM circle.
   - all sunny? Color yellow.
   - mostly sunny? Color orange.
   - all or mostly in shade? Color black.

3. Move the grid to 12 PM. Repeat the steps. Move the grid to 3 PM. Repeat the steps.

Park Model Plan

Name _____

Follow these steps.

1. **Circle one:** My plan Team plan

2. **Review** Look at your **Sunlight in the Park** page.
   - Which squares are all sunny at least 2 times a day?
   - Which squares were all or mostly sunny 3 times a day?

3. **Plan** How will you make sure that your plan is successful?_____

   _____

4. **Review** the goals. Draw your plan.

   Yellow – bench Blue – playground Green – open area

A	B	C	D
E	F	G	H
I	J	K	L
M	N	O	P

Testing the Park

Name _____

Follow these steps.

1. Place your park model and the city walls on the platform grid in the Shadow Viewer.
2. Slowly move the park. Stop at 9 AM, 12 PM, and 3 PM.
3. Look at the yellow benches.
   Write **M** for mostly in the Sun.
   Write **A** for all in the Sun.

	Morning 9 AM	Midday 12 PM	Afternoon 3 PM
Bench 1			
Bench 2			
Bench 3			

Reflect On It

Name _____

Look at your team's park model and your test results.

Our model met these goals:

☐ Use 2–3 benches.
Use 5 pieces of playground equipment.

☐ At least one bench is mostly or all in the Sun at 3 times of the day.

☐ At least one bench is all in the Sun at 2 times of the day.

Our model followed these rules:

☐ Benches may not touch sides.

☐ Playground equipment must be connected by at least one side.

1. Was our plan successful? **yes no**
   Why? _____

   _____

   _____

2. How might you improve your plan? _____

   _____

   _____