

# storybook **STEM** **RED AND LULU**



**CREATED BY BROOKE BROWN AND KATIE KING**

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## Red and Lulu by Matt Tavares



# Dig Deeper Into the Text! Teacher Questions for RED AND LULU



What part of the country do you think the story could be set in? Does it snow often where you live?

How are the different seasons represented in the illustrations?

How do you think Lulu felt as the tree was getting cut down? How do you know?

How is the city different than Red's home?

Where was the tree being used? Discuss this tradition.

Read and discuss the Rockefeller Center Christmas.

Look at the very last page. Where is this location? What conclusion can you draw from looking at the picture? Why do you think the illustrator drew this page?

TEACHERS: PRINT ON COLORED PAPER AND LAMINATE. USE THIS BOOKMARK YEAR AFTER YEAR TO HELP EXTEND STUDENTS' THINKING!

Intended Use



# COMPREHENSION

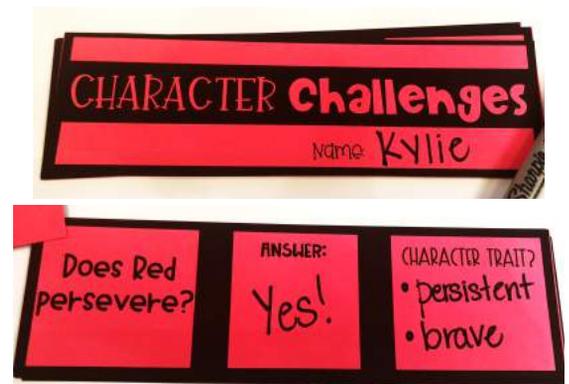
1. Read *Red and Lulu*. After using the bookmark to help lead a class discussion, go over the digital anchor chart for Character Challenges.



CHARACTER Challenges	
Answer	What does this tell me?
Does Red persevere? Yes!	• He is brave! • strong willed • he cares
How does Red treat others? He is loyal to Lulu!	• He is a true friend & loyal
Does Red get mad or mean? No	• he is calm • he is patient
What does Red learn? • He likes the city too! • It was worth the journey!	• He adjusts to change well & he is brave!

2. Create the whole class anchor chart using the provided pieces and student responses.

3. Ask students to write their own Character Challenges book. The last column in their booklet asks them to identify a character trait that we can use to describe Red as a result of his response to the challenge.



# COMPREHENSION

Name: \_\_\_\_\_

## Character Challenges

Write and draw about a challenge, the response, and what we learned about the character.

_____	_____	_____
_____	_____	_____

4. This half sheet can be used as an exit slip to check for understanding for analyzing how characters respond to challenges.

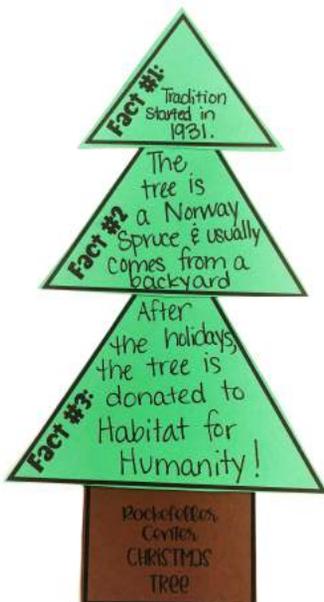
5. Optional High Flyer activity: Have students watch Brave Irene on Storyline Online. They will look for similarities and differences between the two texts. Prompt them to focus on the setting, character challenges, and lessons learned.

## COMPARE and CONTRAST

When someone is **COMPARING** two things they are looking for similarities. When someone is **CONTRASTING** two things, they are looking for differences.

**WORDS TO USE:**

<b>COMPARE</b>	<ul style="list-style-type: none"><li>• both</li><li>• similar</li><li>• also</li><li>• as well as</li></ul>	<b>CONTRAST</b>	<ul style="list-style-type: none"><li>• however</li><li>• different</li><li>• on the other hand</li><li>• but</li></ul>
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6. After reading the Rockefeller Center Christmas Tree page (You may even want to photocopy and let students highlight), they should make the tree and record three facts that they learned.

# Character Challenges

**We can learn a lot about characters when we see how they respond to tough times.**

## Questions to ask:

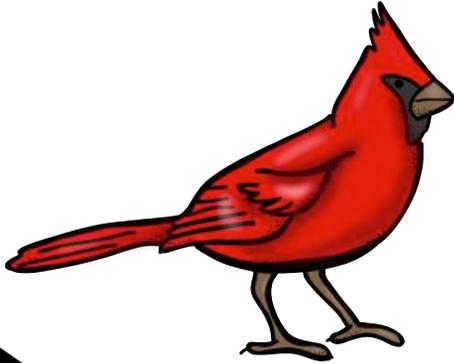
- Do they persevere?
- Do they lash out at others?
- How do they change?
- What do they learn?



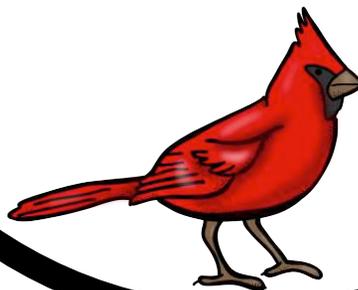
**CHARACTER**

**challenges**

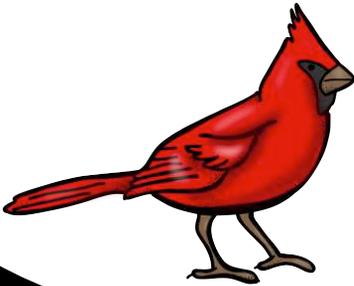
Does Red  
persevere?



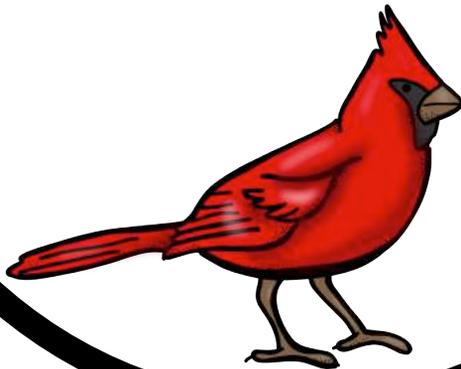
Does Red  
get mad or  
mean?



How does  
Red treat  
others?



What does  
Red learn?



**Answer**

**What does this  
tell me?**

# CHARACTER Challenges

Name:

Does Red  
persevere?

ANSWER:

CHARACTER TRAIT?

Does Red  
get mad  
or mean?

CHARACTER TRAIT?

How does  
Red treat  
others?

CHARACTER TRAIT?

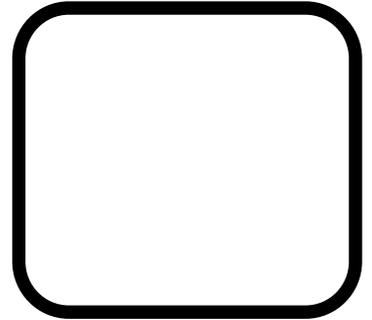
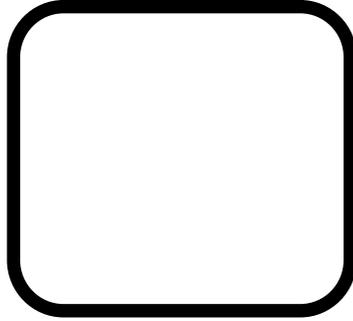
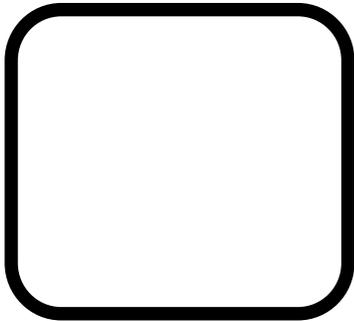
What  
does Red  
learn?

CHARACTER TRAIT?

Name: \_\_\_\_\_

# Character Challenges

Write and draw about a challenge, the response, and what we learned about the character.



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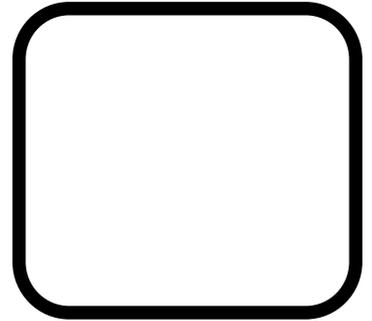
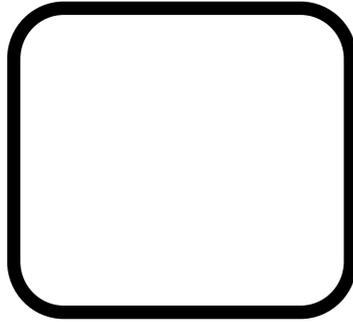
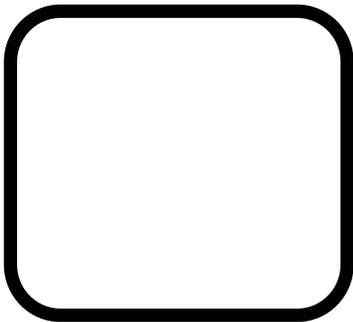
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Name: \_\_\_\_\_

# Character Challenges

Write and draw about a challenge, the response, and what we learned about the character.



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# COMPARE *and* CONTRAST

When someone is **COMPARING** two things they are looking for similarities. When someone is **CONTRASTING** two things, they are looking for differences.

## WORDS TO USE:

- |                |              |                 |                     |
|----------------|--------------|-----------------|---------------------|
| <b>COMPARE</b> | • both       | <b>CONTRAST</b> | • however           |
|                | • similar    |                 | • different         |
|                | • also       |                 | • on the other hand |
|                | • as well as |                 | • but               |



the flaps.

Fold on the solid line, cut on the dotted lines, and write under

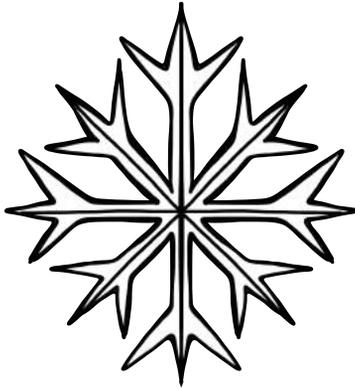
Similarities between *Red and Lulu* and *Brave Irene*

Name: \_\_\_\_\_



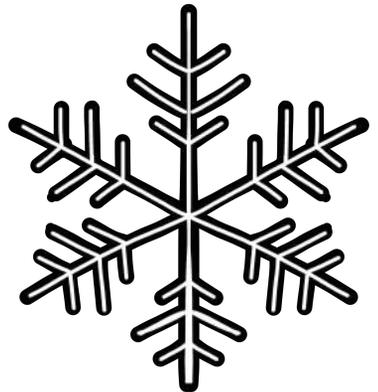
SIMILARITY

# 1



SIMILARITY

# 2



SIMILARITY

# 3

ROCKEFELLER CENTER  
CHRISTMAS TREE CRAFT

**Fact #1:**

**Fact #1:**

**Fact #2**

**Fact #2**

**Fact #3:**

**Fact #3:**

Rockefeller  
Center  
CHRISTMAS  
TREE

# TEACHER TALK

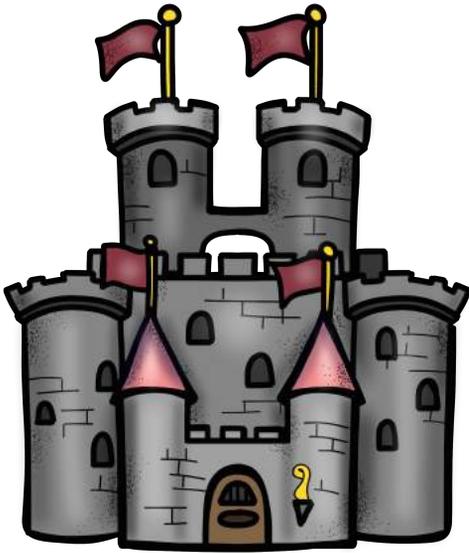
After going over the definitions, teachers can use the cards in all kinds of ways. Have students pair up. Put one of the cards up on the projector and ask the students to come up with a sentence. Another option would be to have the students act out the words together.



To quickly gauge understanding:  
Print on colored paper and have students hold up.  
Use this as a quick way to check for understanding!  
Scan the room to look for the color of the word you discussing.



# mighty



huge in size or  
strength

# frantically



in a hurried,  
excited way

# glee



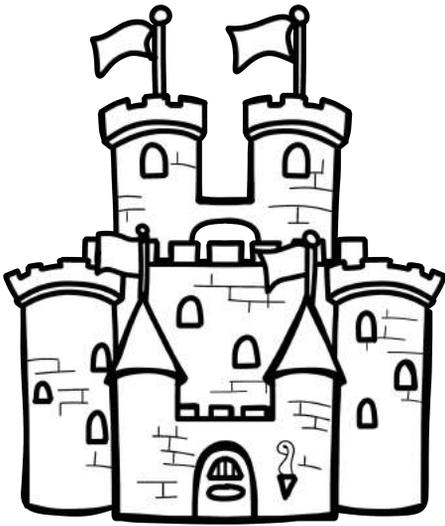
great delight

# marveled



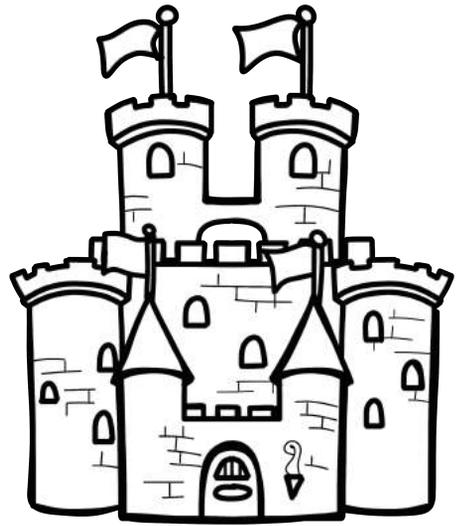
acting out of  
wonder

# mighty



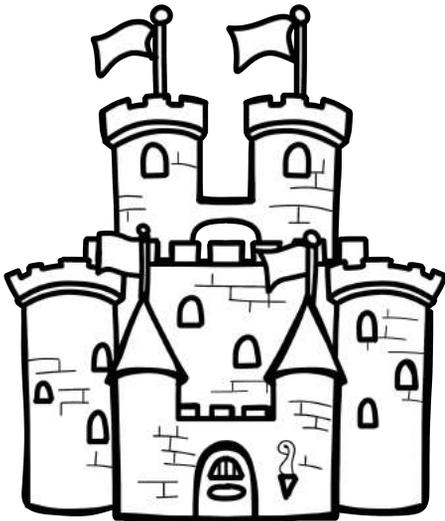
huge in size or  
strength

# mighty



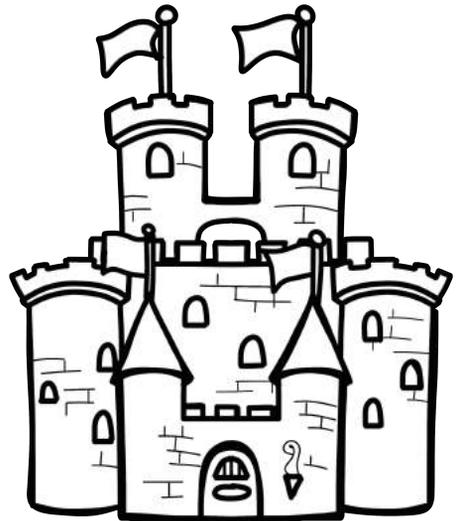
huge in size or  
strength

# mighty



huge in size or  
strength

# mighty



huge in size or  
strength

**frantically**



in a hurried,  
excited way

**frantically**



in a hurried,  
excited way

**frantically**



in a hurried,  
excited way

**frantically**



in a hurried,  
excited way

**glee**



great delight

**glee**



great delight

**glee**



great delight

**glee**



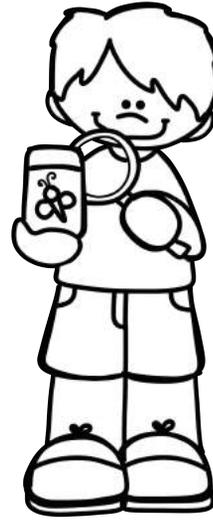
great delight

**marveled**



acting out of  
wonder

**marveled**



acting out of  
wonder

**marveled**



acting out of  
wonder

**marveled**



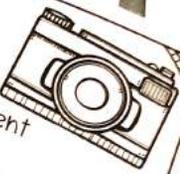
acting out of  
wonder

# PICTURE IT!

Name: \_\_\_\_\_

Name: Lillian

Directions: Draw and write about two different examples of each word.

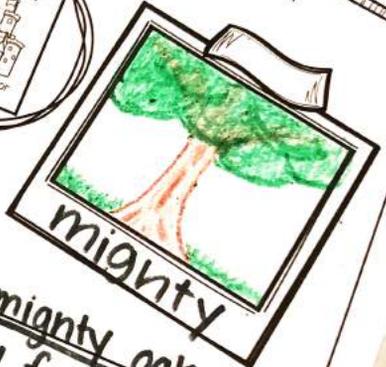


**mighty**



**mighty**

The mighty storm caused a lot of damage.



**mighty**

The mighty oak was forty feet tall.

**glee**



**glee**

Trayvon sang with such glee!

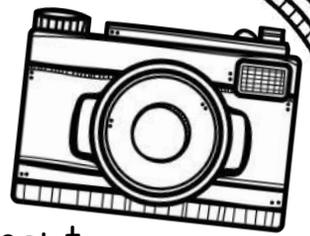


**glee**

Sue couldn't contain her glee after the win!

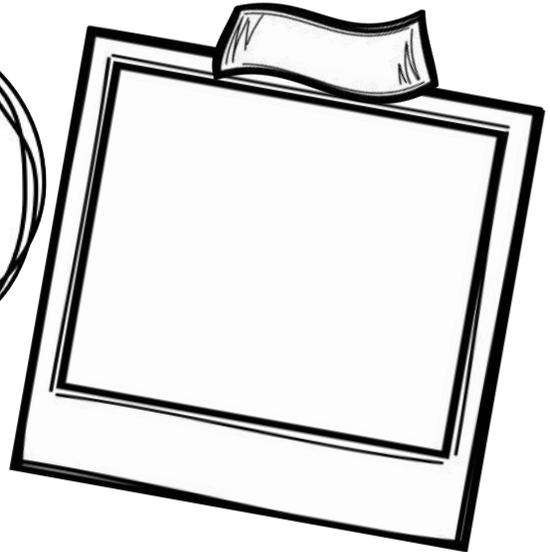
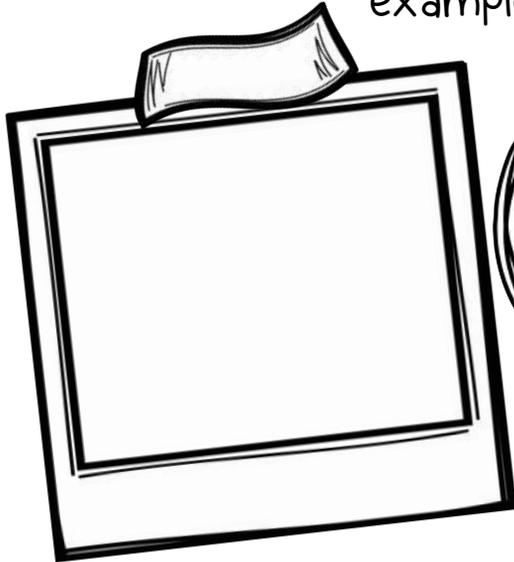
© Brooke Brown and Katie King

Name: \_\_\_\_\_



# PICTURE IT!

Directions: Draw and write about two different examples of each word.

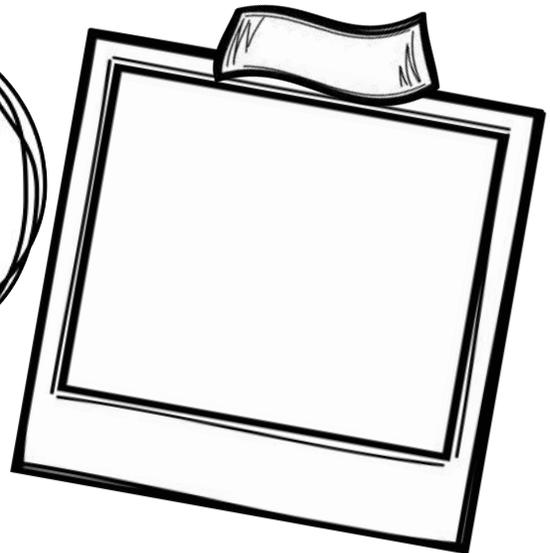
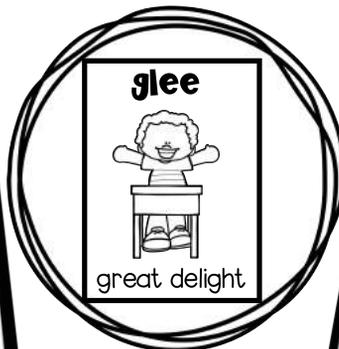
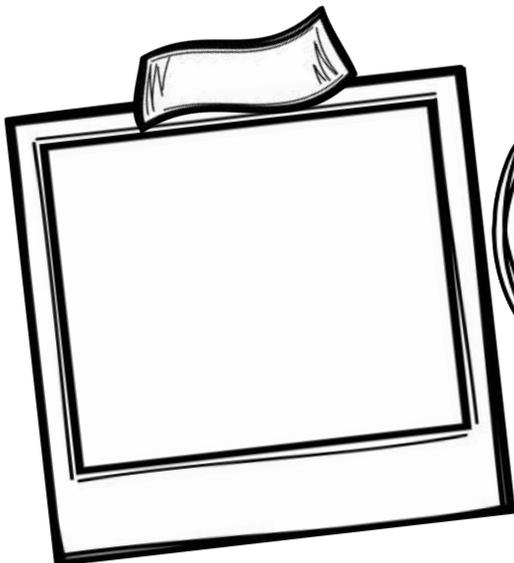


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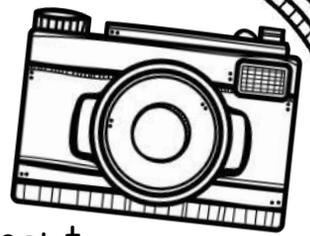
\_\_\_\_\_

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\_\_\_\_\_

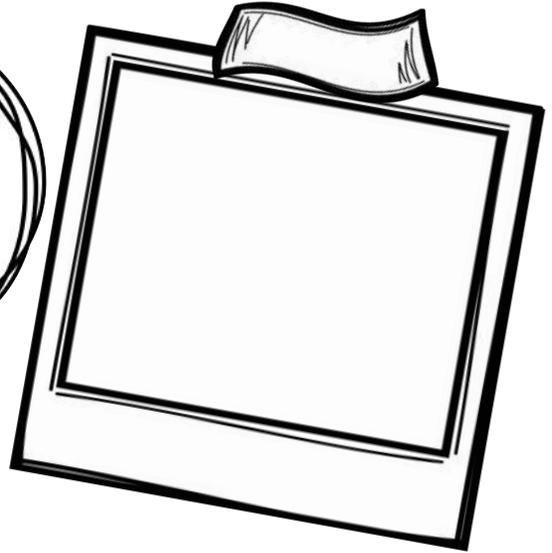
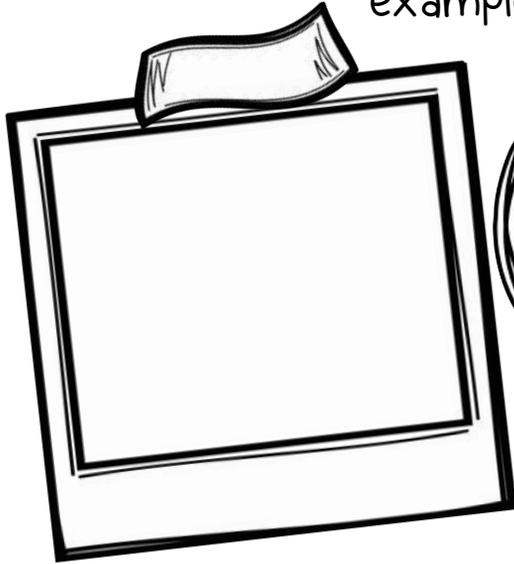
\_\_\_\_\_

Name: \_\_\_\_\_



# PICTURE IT!

Directions: Draw and write about two different examples of each word.

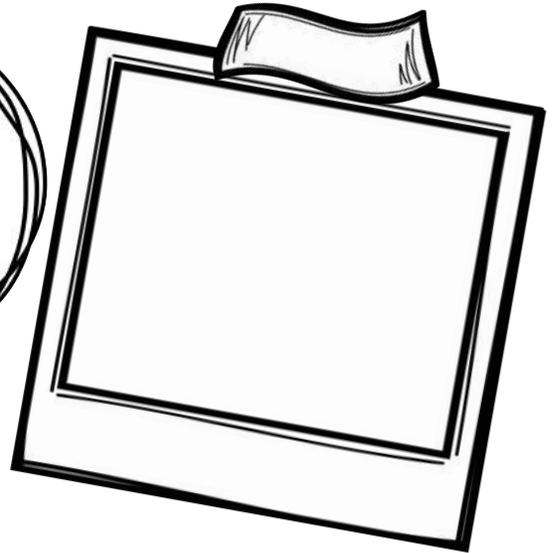
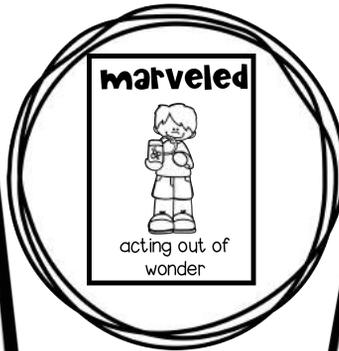
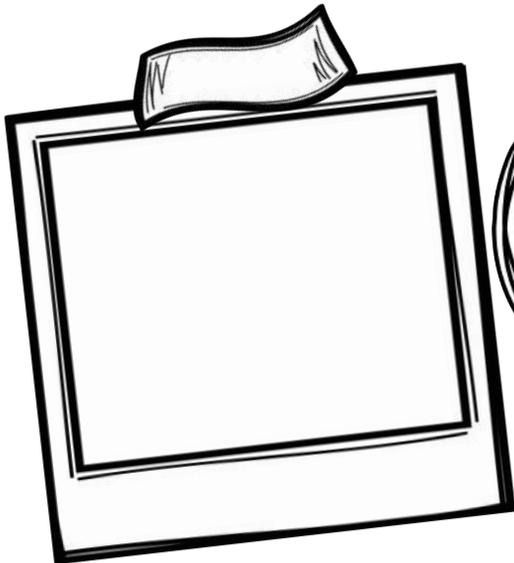


\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



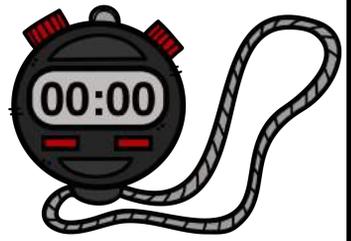
\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

# MATH CONNECTION



## Distance

We measure long distances in miles. Online maps, such as Google Maps, can help you calculate distances for travel.



### To calculate distance from New York City:

1. Open Google Maps
2. Right click on your location
3. Choose Measure Distance
4. Zoom out until you can click on New York City

# STEM CHALLENGE LESSON PLAN

**NGSS Standard Alignment:** K-2-ETS1-1: Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool, K-2-ETS1-2: Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

**NEEDED MATERIALS PER PAIR OF STUDENTS:** 1 straw, 1 roll of scotch tape, 1 copy of bird parts, scissors

**MATERIALS FOR STATIONS:** 10 mini cups with optional lights pictures taped on, 1 shoebox, 1 large classroom rug or plastic tablecloth, tub of building bricks, large tub of linking cubes



Before beginning the STEM challenge, establish students' background knowledge by showing them the following QR Code videos about the forces of flight.

"Red Flies High" is a series of STEM challenges that first requires students to build a flying bird model out of a straw, bird parts, and tape. The construction of their bird should take no more than 30 minutes. I recommend that students work with partners to construct their bird and complete the flight challenges. Utilize the vocabulary cards to guide students' understanding of forces of flight and display in your classroom

Once their bird model is constructed is able to fly when thrown, students will put their bird to the test with 5 different New York City themed challenges. The 5 flight challenges need to be set up at different stations in your classroom. All 5 events will take 45 min-1 hour for your students to complete. Needed materials for each station are listed on the instruction cards. Copy the student recording booklet front to back and students will fold in half.

Each student group will take their bird model and recording booklet to each station with them. They will follow the instructions at each station and record test results in their booklets.

# RED FLIES HIGH

Red needs to fly through New York City to find Lulu!

Can you create a model of a cardinal that flies when it is thrown?

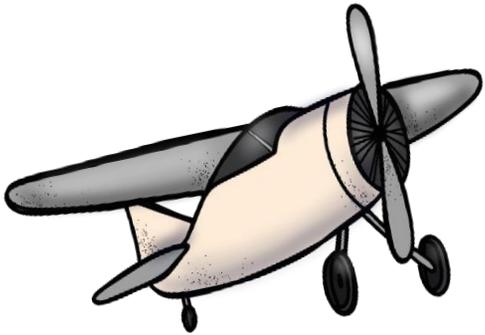


## MATERIALS:

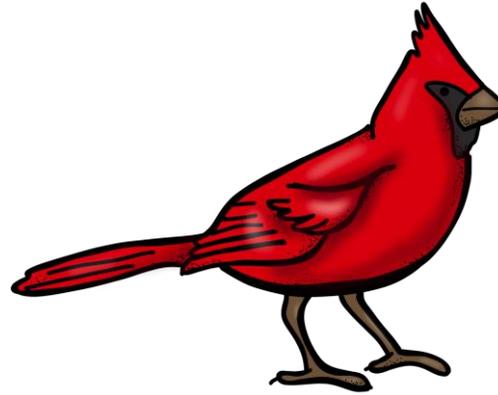
- 1 straw
- bird pieces
- Scotch tape

# LET'S EXPLORE FLIGHT!

## FORCES OF FLIGHT



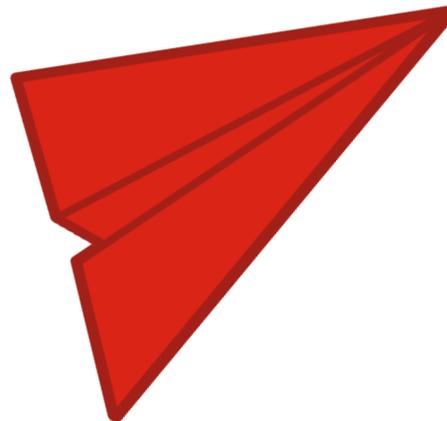
## HOW BIRDS FLY



## HOW BIRDS FLY 2

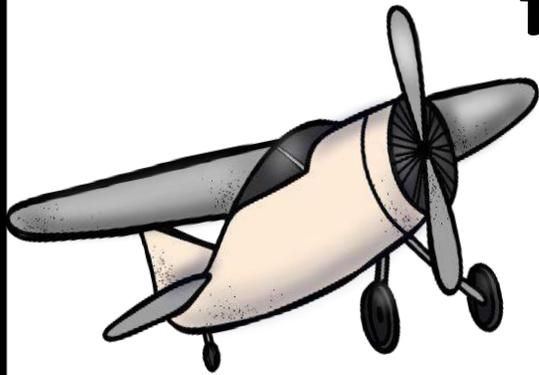


## MAKE A PAPER AIRPLANE



# WORDS TO KNOW

## THRUST



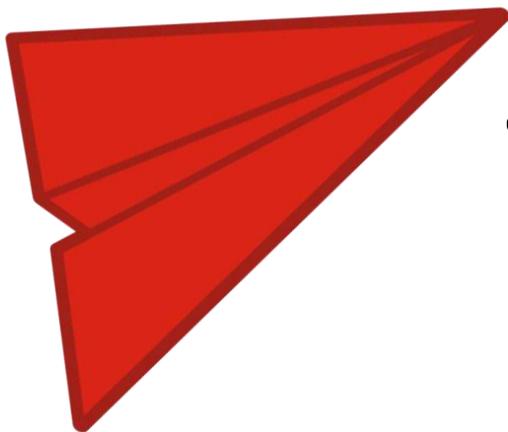
the force of flight that pushes an object forward

## DRA9



force on an object in the air that reduces forward motion

## LIFT



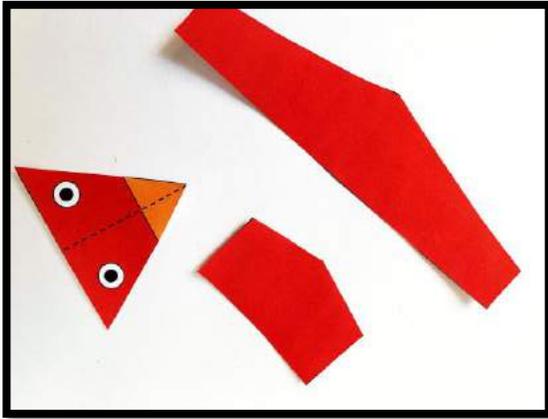
force that pushes an object upward

## GRAVITY

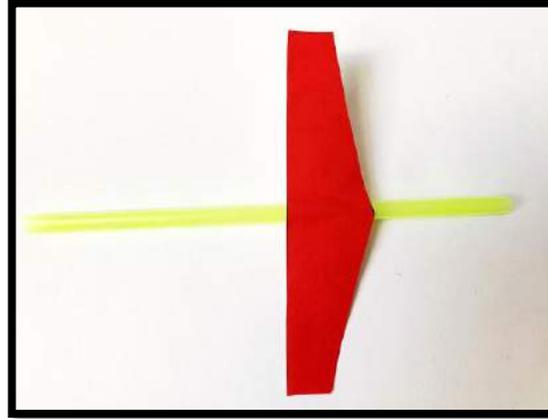


force of attraction of objects to the center of the Earth

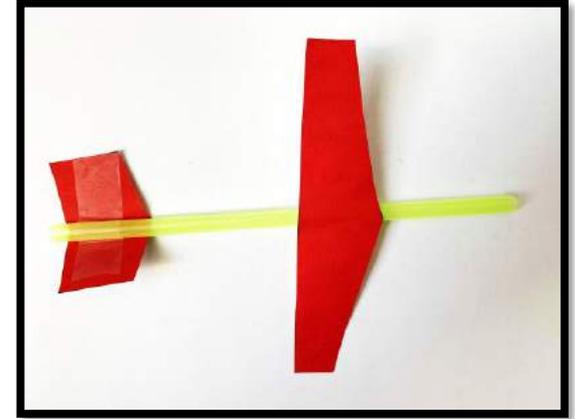
# HOW TO MAKE RED



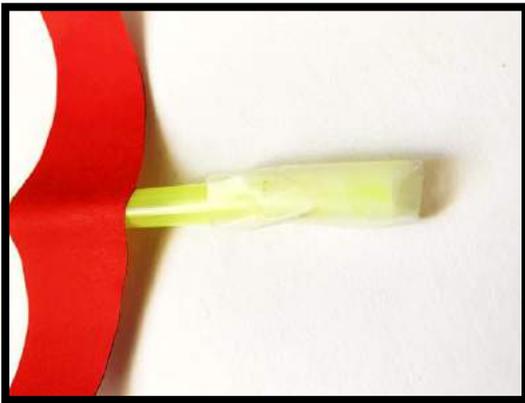
1) Cut out bird pieces.



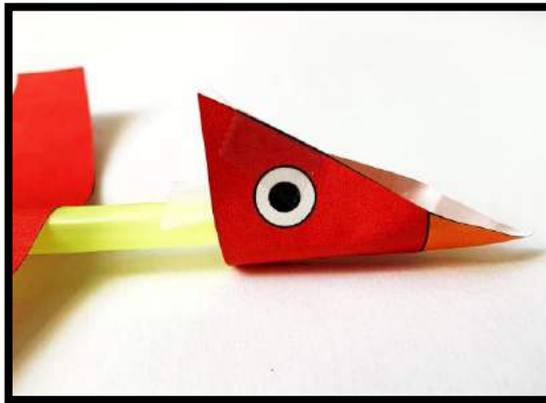
2) Tape the wings on top of the straw toward the front.



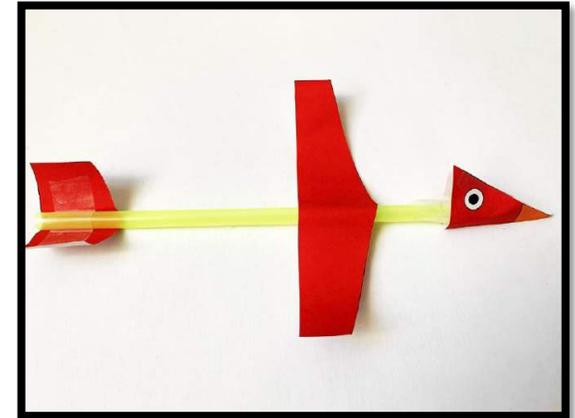
3) Tape the tail underneath the bottom of the straw on the back and gently bend upwards.



4) Wrap tape around the front to cover the hole in the straw and wrap it around the end 3 times.



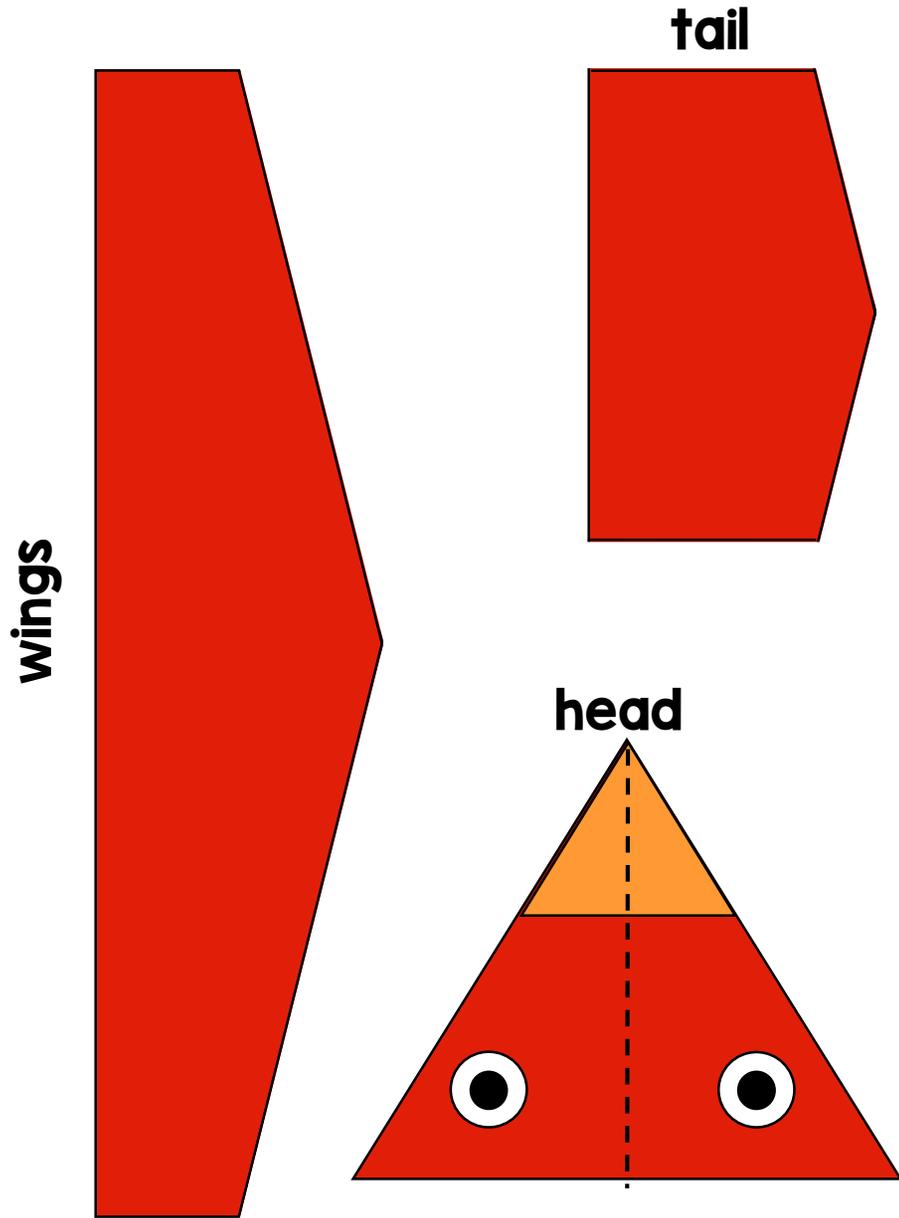
5) Fold the head piece on the dotted line. Wrap it underneath the front part of the straw and use a small piece of tape to hold it together on the top.



6) Throw Red with his head facing upward and try to keep your arm straight, just like you would throw a paper airplane!

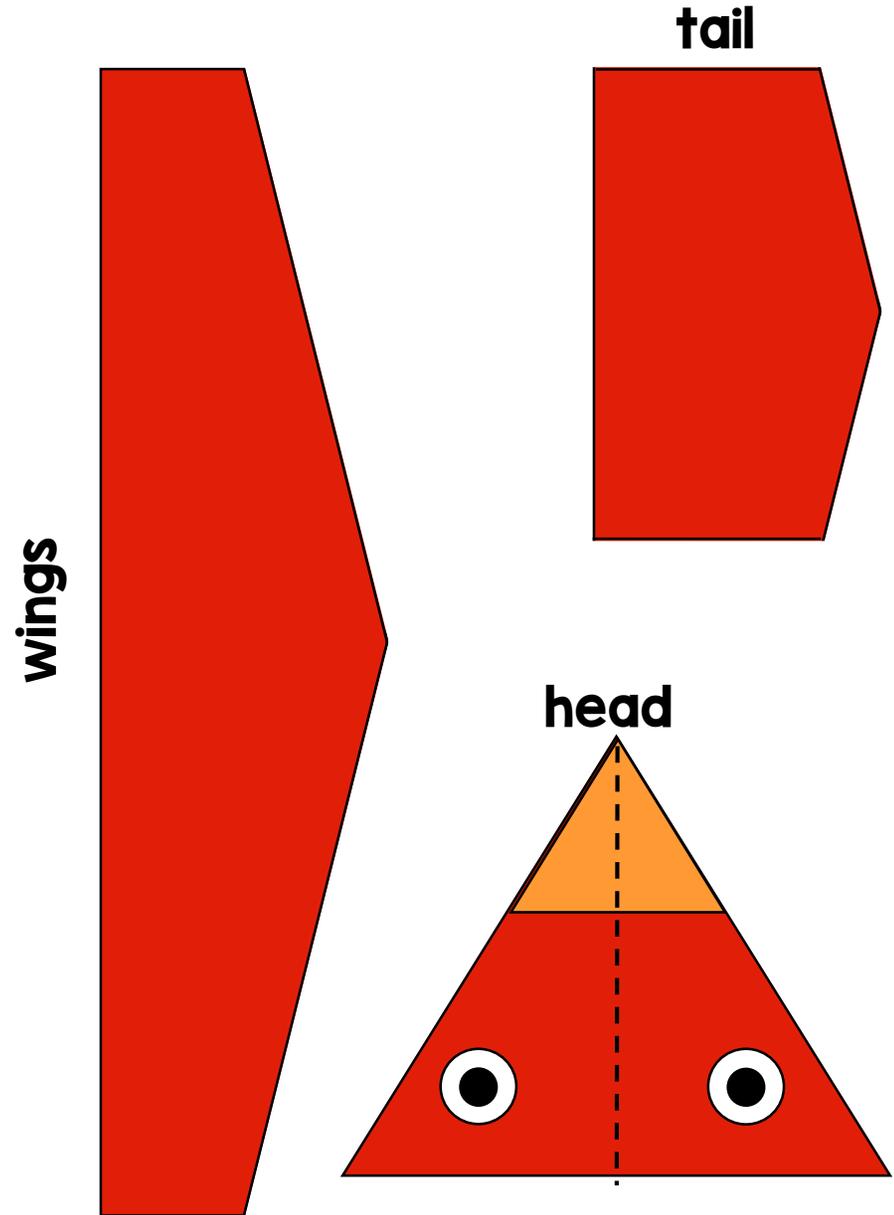
# BIRD PARTS

Cut out the bird parts and follow the instructions to make Red.



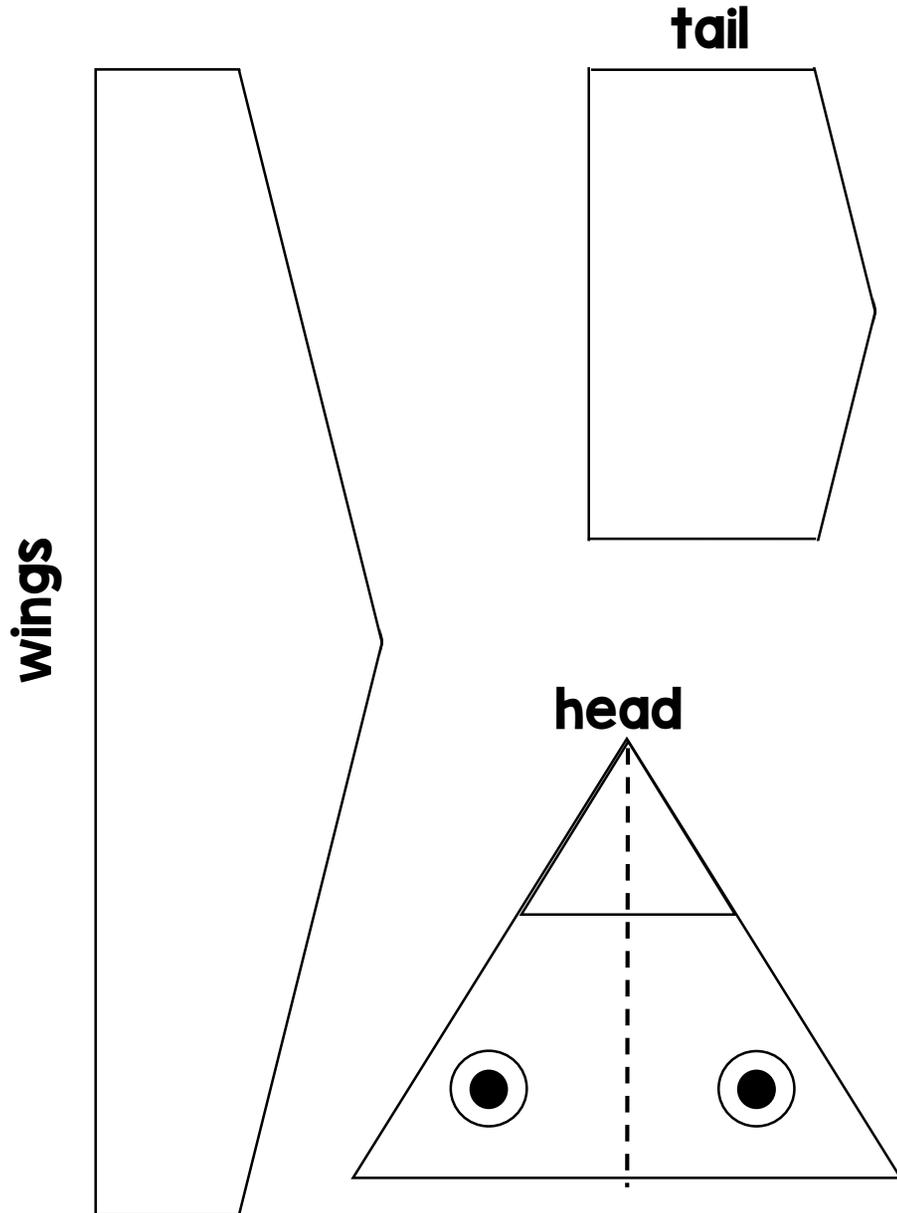
# BIRD PARTS

Cut out the bird parts and follow the instructions to make Red.



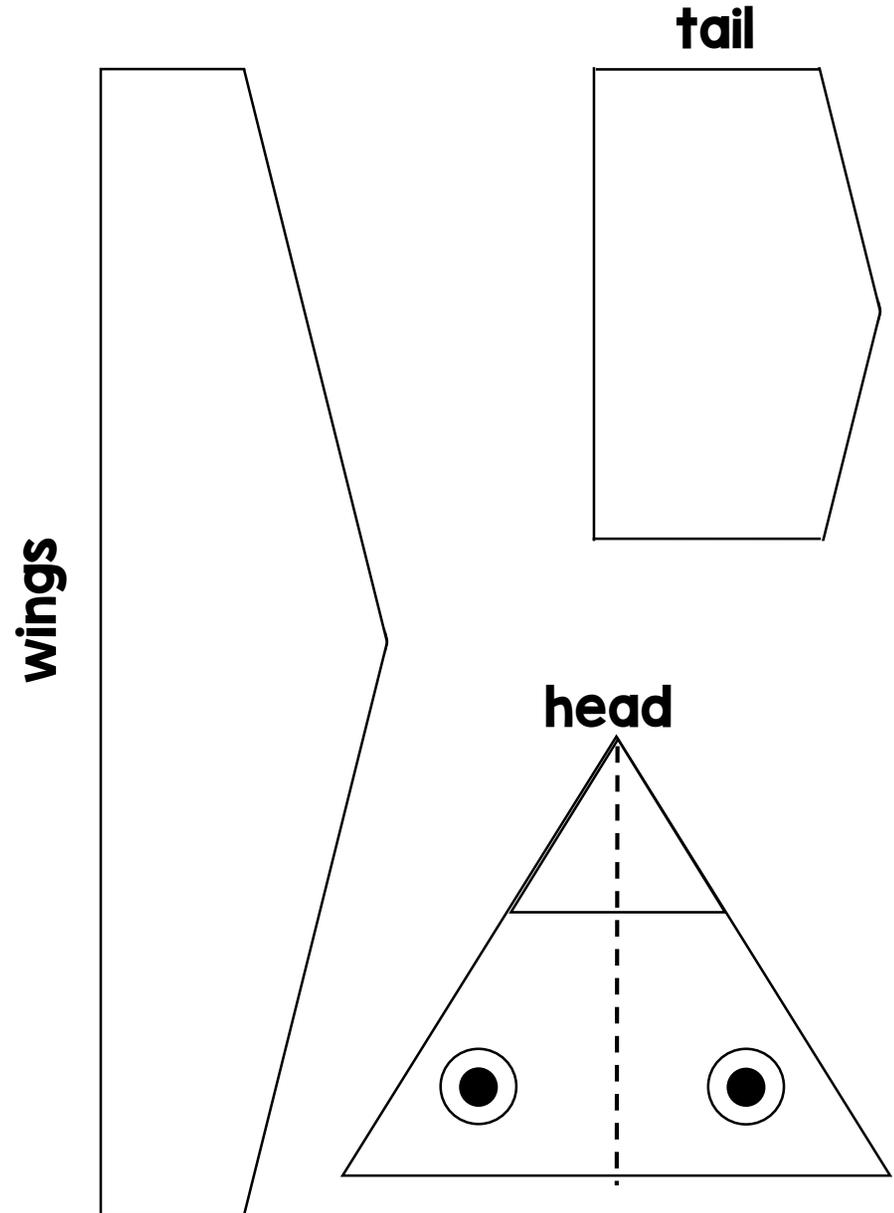
# BIRD PARTS

Color and cut out the bird parts, then follow the instructions to make Red.

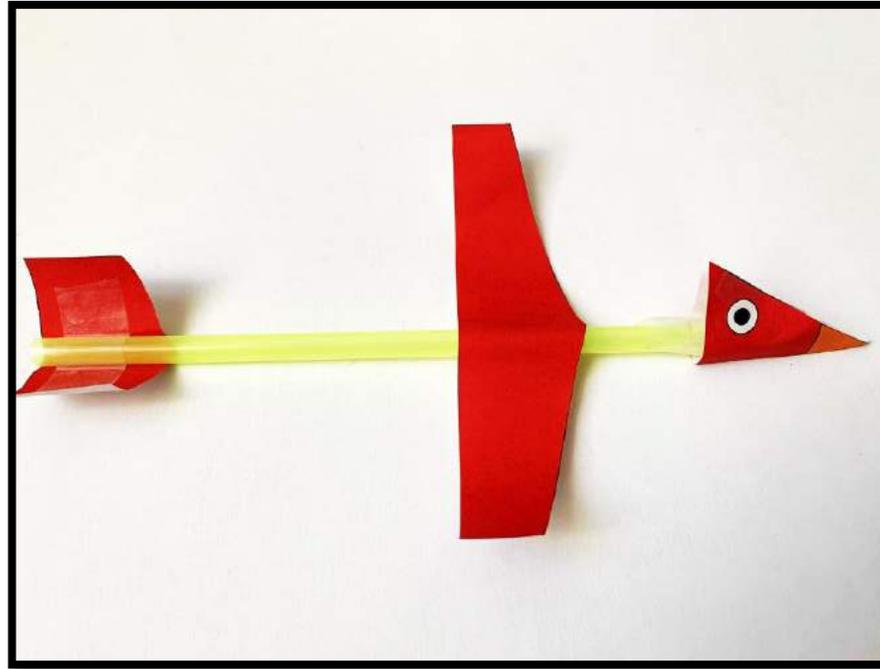


# BIRD PARTS

Color and cut out the bird parts, then follow the instructions to make Red.



# HOW DOES IT WORK?



When you throw your bird, you provide **THRUST** to power it.

Air flows underneath the wings and provides **LIFT** to help your bird glide and stay afloat.

The head and tail **BALANCE** out the bird's weight to help it fly level with the ground.

The narrow straw design reduces **DRAG** to help your bird fly faster.

**GRAVITY** is the force that pulls your bird back down to the ground.

# RED FLIES HIGH STATIONS

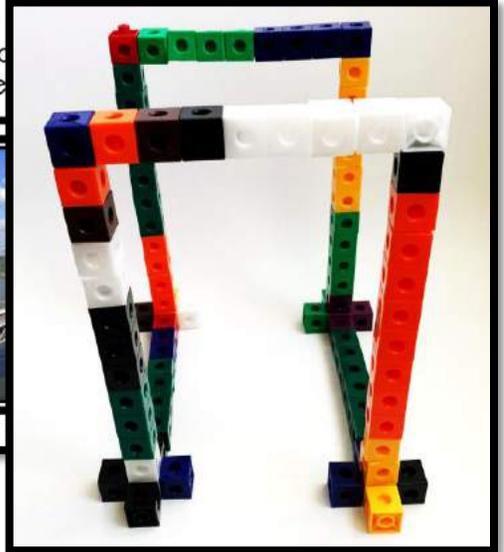
## ① THROUGH THE BRIDGE

**MATERIALS**      **CHALLENGE**

- Bird model
- Large tub of linking cubes



GEORGE



## ② TIMES SQUARE TOSS

**MATERIALS**      **CHALLENGE**

- Bird model
- Shoebox



TIM



## ③ BALANCE THE BIRD

**MATERIALS**      **CHALLENGE**

- Bird model
- Tub of building bricks



## ④ BIRD'S-EYE VIEW

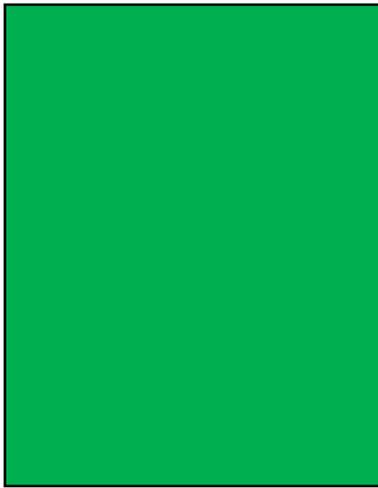
**MATERIALS**      **CHALLENGE**

- Bird Model
- Large rug or plastic tablecloth
- Meterstick

Try to fly your bird all the way over Central Park (rug or tablecloth.) Measure how far your bird flew and repeat for 3 tests.



CENTRAL PARK



## ⑤ OH CHRISTMAS TREE

**MATERIALS**      **CHALLENGE**

- Bird model
- 10 mini cups

Fly your bird over Rockefeller Center and try to knock down as many cups as possible. Record your results for 3 tests.



ROCKEFELLER CENTER TREE



1



# THROUGH THE BRIDGE

## MATERIALS

- Bird model
- Large tub of linking cubes

## CHALLENGE

Use the cubes to build a model of the George Washington bridge with two large suspension towers. Try to fly your bird through both suspension towers.



**GEORGE WASHINGTON BRIDGE**

2



# TIMES SQUARE TOSS

## MATERIALS

- Bird model
- Shoebox

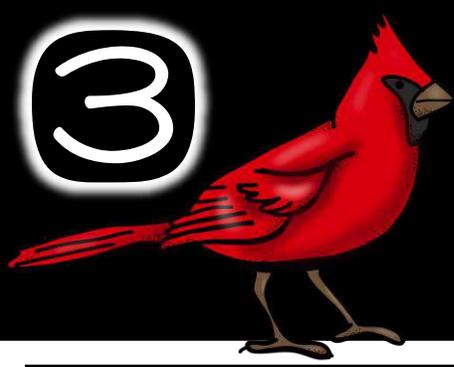
## CHALLENGE

Try to fly your bird into the Times Square shoebox. Record your results for 3 tests.



**TIMES SQUARE**

3



# BALANCE THE BIRD

## MATERIALS

- Bird model
- Tub of building bricks

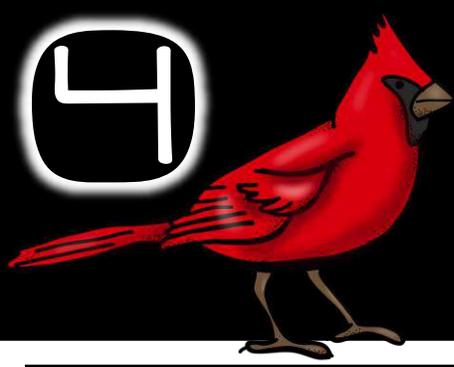
## CHALLENGE

Build the Empire State Building out of building bricks. The top of the building must only use square bricks. Try to balance your bird model on top of the building for as many seconds as possible.



## EMPIRE STATE BUILDING

4



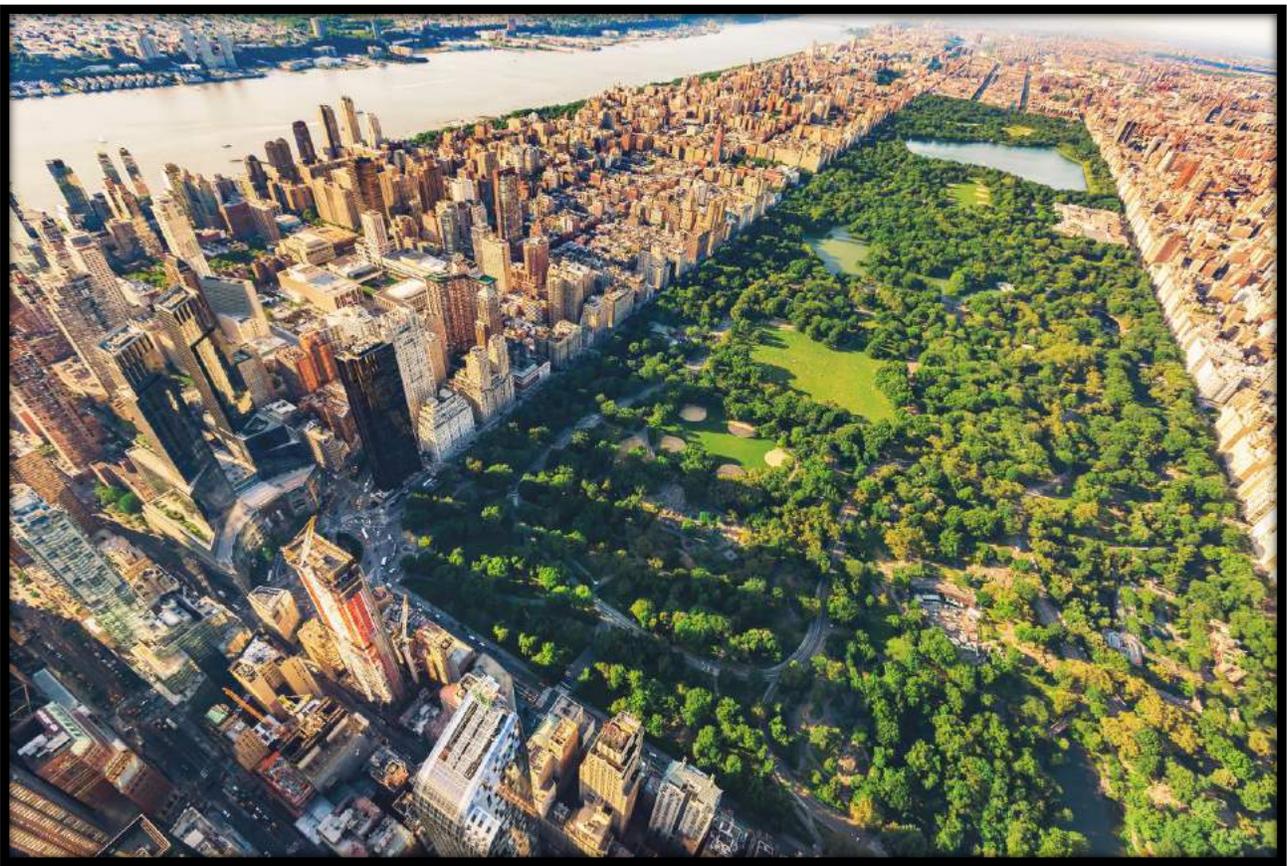
# BIRD'S-EYE VIEW

## MATERIALS

- Bird Model
- Large rug or plastic tablecloth
- Meterstick

## CHALLENGE

Try to fly your bird all the way over Central Park (rug or tablecloth.) Measure how far your bird flew and repeat for 3 tests.



**CENTRAL PARK**

# 5



# OH CHRISTMAS TREE

## MATERIALS

- Bird model
- 10 mini cups

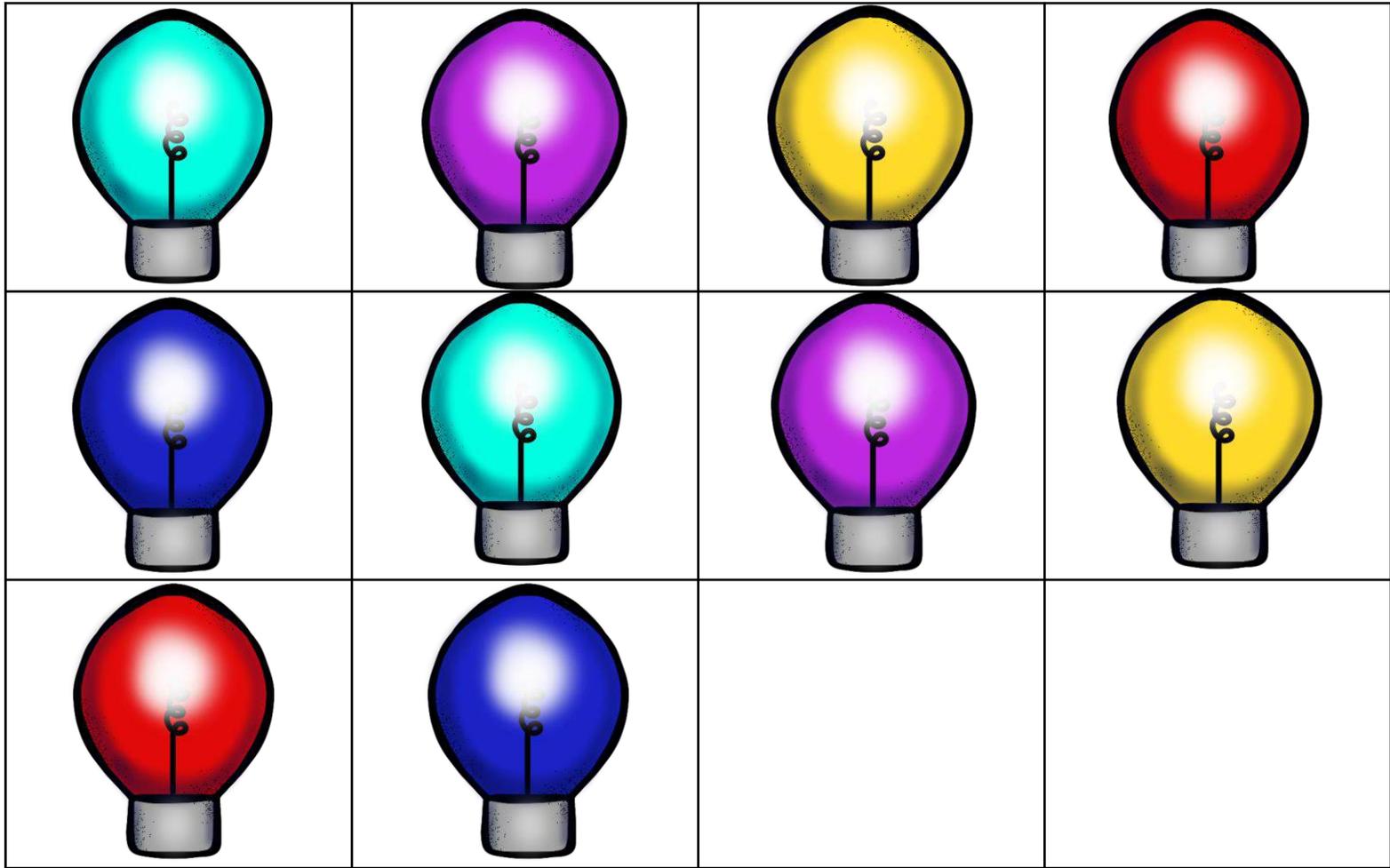
## CHALLENGE

Fly your bird into Rockefeller Center Tree and try to knock over as many cups as possible. Record your results for 3 tests.



## ROCKEFELLER CENTER TREE

# Optional Lights to Tape onto Cups



**The easiest challenge was:**

**It was easy because:**

**The most difficult challenge was:**

**It was difficult because:**

**My favorite challenge was:**

# RED FLIES HIGH



Name: \_\_\_\_\_

## 1 THROUGH THE BRIDGE

TEST	How many suspension towers did Red fly through?
1	
2	
3	
TOTAL ARCHES	

## 2 TIMES SQUARE TOSS

TEST	Did Red land in the box?
1	
2	
3	
TOTAL SUCCESSFUL BASKETS	

## 4 BIRD'S-EYE VIEW

TEST	Distance Traveled
1	
2	
3	
FARTHEST DISTANCE	

## 3 BALANCE THE BIRD

TEST	How many seconds did Red balance on top of the Empire State Building?
1	
2	
3	
TOTAL SECONDS	

## 5 OH CHRISTMAS TREE

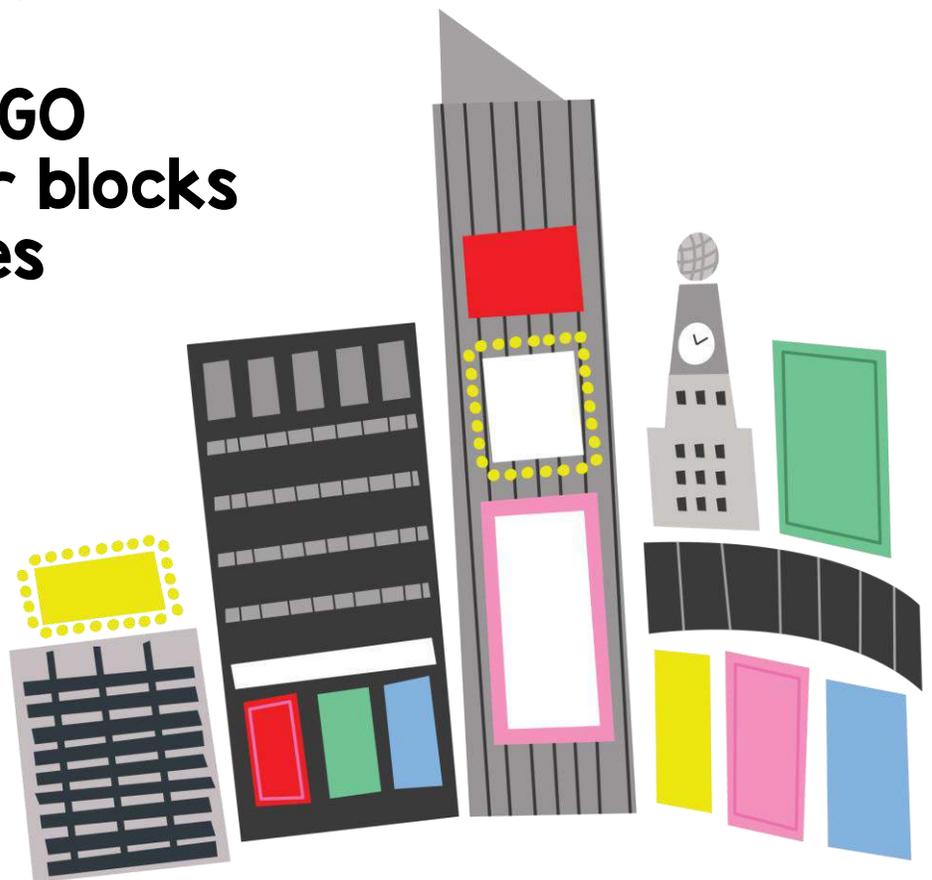
TEST	How many cups did Red knock over?
1	
2	
3	
TOTAL CUPS KNOCKED OVER	

# STEM BINS TASK CARDS

Use the following **STEM Bins** task cards of famous New York landmarks for additional engineering challenges. Students may work with partners or in centers to construct the landmarks out of **STEM Bins** or any building materials that you have on hand.

## SUGGESTED BUILDING MATERIALS:

- Building Bricks/LEGO
- Wooden planks or blocks
- Linking/snap cubes
- Base ten blocks
- Magnetic blocks



# George Washington Bridge



©Brooke Brown

# Times Square



©Brooke Brown

# Empire State Building



©Brooke Brown

# Central Park



©Brooke Brown

# Rockefeller Center Tree



©Brooke Brown

# New York Public Library



©Brooke Brown



**Statue  
of  
Liberty**

©Brooke Brown

**Manhattan  
Skyline**



©Brooke Brown

**Grand Central  
Terminal**



©Brooke Brown

**Brooklyn Bridge**



©Brooke Brown

**Metropolitan  
Museum of Art**



©Brooke Brown



**Chrysler  
Building**

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# credits

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