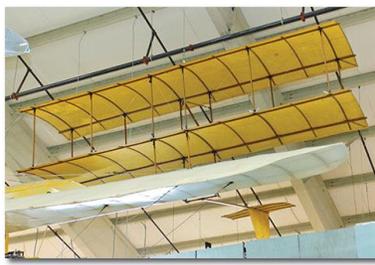




SOAR for Science



Airplanes, Forces, and Motion

Grade 3-5 Student Notebook 2018-2019

Name: _____

KWL Chart

BEFORE YOUR MUSEUM VISIT: Write three things you **KNOW** about the science of flight in the first box.

Write three things you **WANT TO KNOW** about the science of flight in the second box.

AFTER YOUR MUSEUM VISIT: Write three things you **LEARNED** about the science of flight in the third box.

What I Know about the Science of Flight

What I Want to Know about the Science of Flight

What I Learned about the Science of Flight

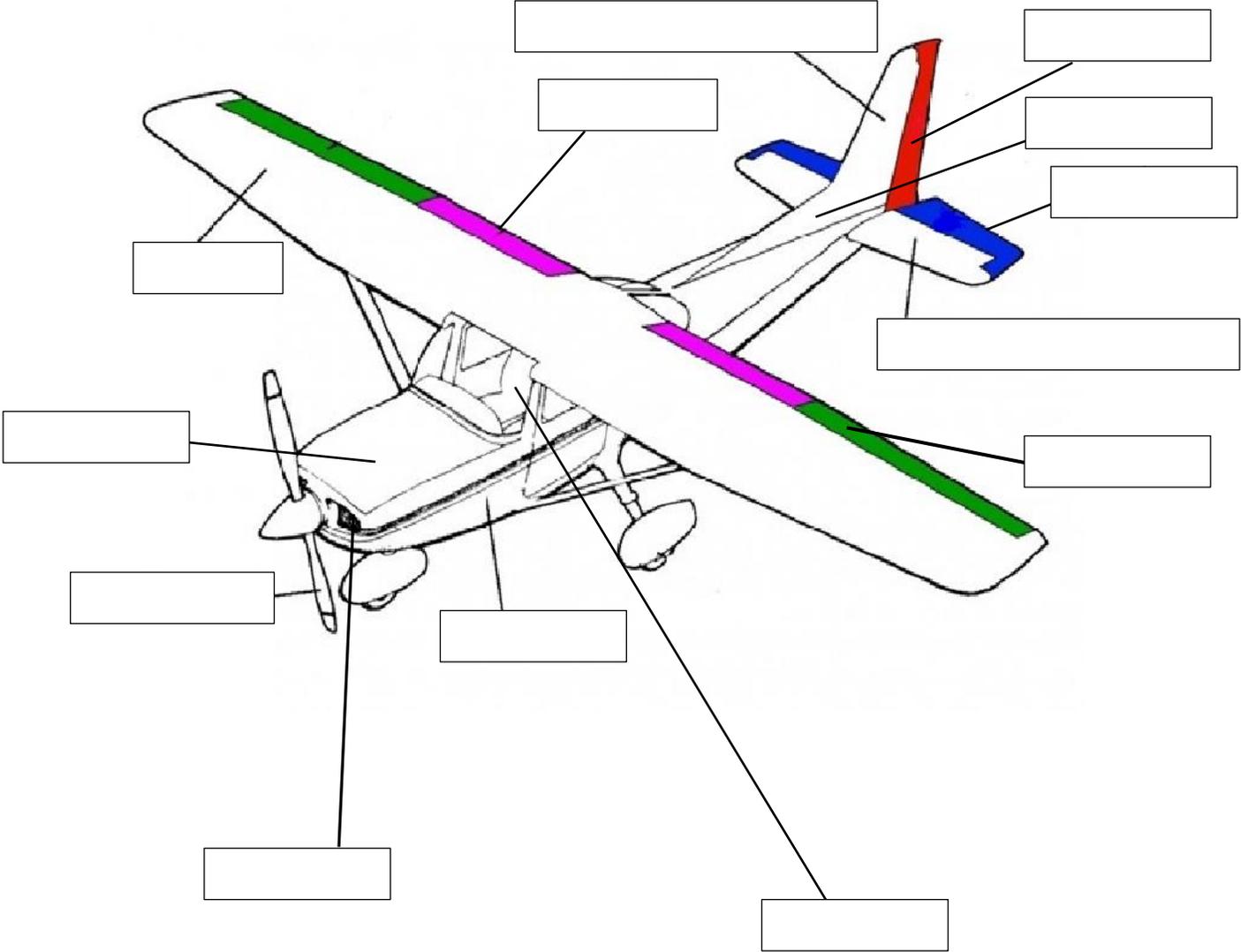
My Class's Questions

BEFORE YOUR MUSEUM VISIT: Working together as a class, write three questions to bring to the museum about the science of flight and write them in the boxes below.

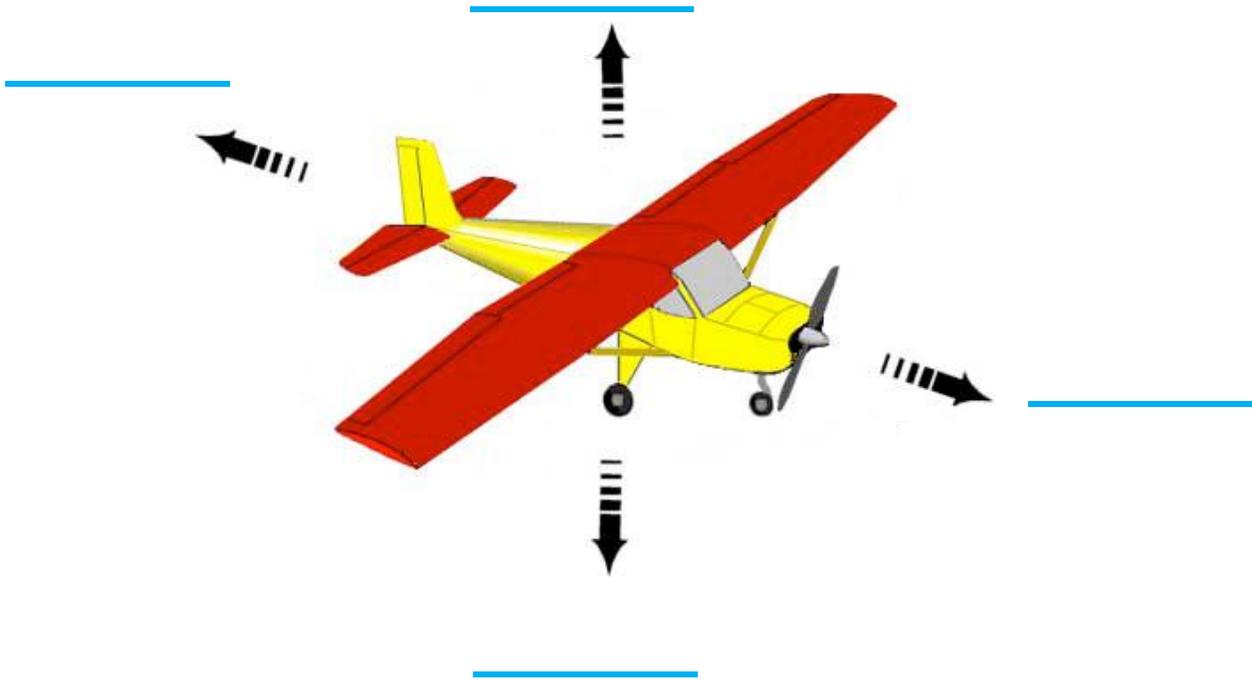
AFTER YOUR MUSEUM VISIT: Working together as a class, write the answers to your three questions based on what you learned at the museum.

Question 1
Answer
Question 2
Answer
Question 3
Answer

Parts of an Airplane Vocabulary



The Four Forces of Flight



Answer the following questions with either **PUSH** or **PULL**:

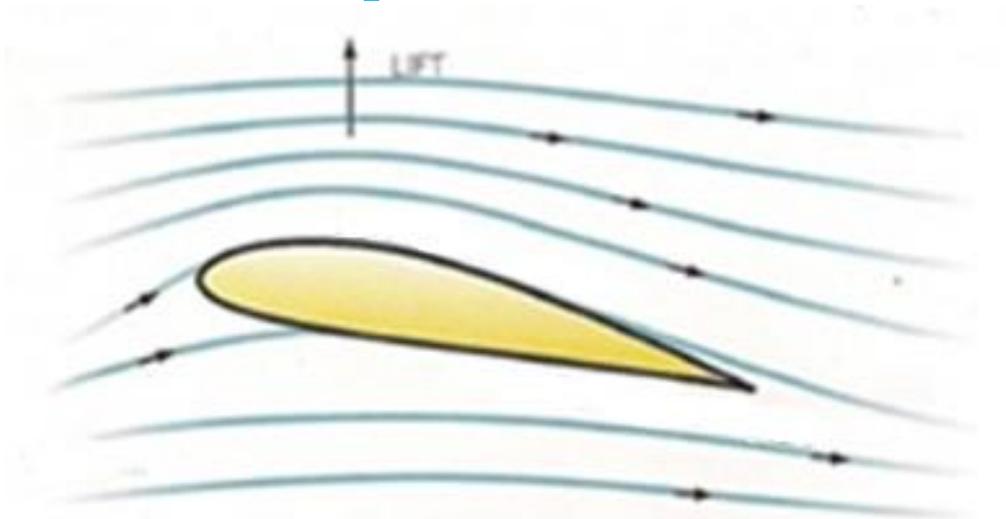
Weight (Gravity) is what type of force? _____

Drag is what type of force? _____

Thrust is what type of force? _____

Lift is what type of force? _____

How do airplanes create lift?



1. _____ **The shape of an airplane's wing**
2. _____ **For every action, there is an equal and opposite reaction**
3. _____ **When air moves faster, it has less pressure**

Key Points Review

1. An airplane's wings create the push force of _____
2. _____ is the measurement of the force of gravity, which pulls an airplane down toward the ground.
3. The push force of _____ is created by an airplane's jet engine or propeller.
4. The pull force of _____ opposes the motion of an airplane as it moves through the air.

Focused Experiment

DURING YOUR MUSEUM VISIT: Using your knowledge of the science of flight, build and fly a straw glider, and then make a change to its design with the goal of increasing your flight distance.

Step 1: Create a glider from the provided materials. Your glider should look exactly like the sample glider on your table.

Step 2: Take your glider into the hangar for your **First Flight**. Record your distance on the line labeled **First Flight Distance**.

Step 3: Answer the questions in the boxes and show this page to your teacher.

Step 4: Take your glider into the hangar for your second flight. Record your distance in the box labeled **Second Flight Distance**.

Step 5: Answer the **Conclusion Questions** below.

First Flight Distance: _____ **Feet**

What did your glider do while in the air?	What did you change about your glider?	What force(s) did your change effect?
<input type="checkbox"/> Turned right <input type="checkbox"/> Turned left <input type="checkbox"/> Flew up <input type="checkbox"/> Flew down <input type="checkbox"/> Flew straight		<input type="checkbox"/> Drag <input type="checkbox"/> Weight <input type="checkbox"/> Lift

Second Flight Distance: _____ **Feet**

CONCLUSION QUESTIONS:

1. Why did you think your change would increase your glider's flight distance?

2. If you could make another design change to your glider, what would it be?
