Lesson Title – Aircraft Landing Friction Activity

Grade Level – 2/3

Standards:

2.PS3.2 Make observations and conduct experiments to provide evidence that friction produces heat and reduces or increases the motion of an object.

2.ETS1.2 Develop a simple sketch, drawing, or physical model that communicates solutions to others

Materials – supplies to make a paper airplane (notebook paper, construction paper, cardstock, masking tape, scotch tape, ruler, scissors, pencils, pennies for weight, etc.)

Surfaces for testing –suggestions: tile, grass, concrete, asphalt, wood, sand

Phenomenon: Show students a video of an F-35 jet launching from an aircraft carrier. (Bring the students' attention to the landings.)

Engage: Briefly explain the concept of friction.

Question: Which surface will create the greatest amount of friction?

Procedure:

1. Partners will make a paper airplane of their choice.
2. Test the airplane several times to insure that it will fly 6ft. and land successfully. Adjust airplanes as needed.
3. Put a mark (starting line) on the floor 6ft. away from the surface you wish to test.
4. Students will stand behind the starting line and launch the airplane so that the airplane lands on the tested surface. Students will repeat 2 more times

and record the data from each trial. (Students should measure from the beginning of the tested surface to where the plane landed.)

5. Continue the process for each type of surface.
6. When all surfaces have been tested, discuss the results.

Reflection:

- What made your plane slow down?
- Which surface did your plane travel the greatest distance?
- Which surface did your plane travel the least distance?
- What modifications could you make to your plane to increase or decrease the amount of friction?

Extension:

- Allow students to complete their modifications and retest.
- Allow students to use other objects (cars, marbles, golf balls, tennis balls, etc.)

Name _____ Date _____

Aircraft Landing Friction Activity

Directions: You and a partner should design a paper airplane that will be able to fly at least 6 feet. Be creative with your design!

Sketch your design

Record Your Data

Surface	Trail #1	Trial #2	Trial #3	Observations
grass	*2 ft*	*2 ft 2 in*	*1 ft 9 in*	