

# Grade 7 Science – Introduction Videos

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

## Tacoma Narrows Video

<https://www.youtube.com/watch?v=KVc7oBKzq9U>

While watching the video, answer the questions.

1. The Video starts out talking about the construction of what bridge?

Golden Gate bridge in San Francisco, California

2. What year was it finished?

1937

3. How many cars cross it each day according to this video?

100 - 150,000 cars per day

4. Where is Tacoma Narrows?

Washington State (just north of San Francisco)

5. What happened soon after it was opened?

undulating during wind

6. What was the bridge nicknamed?

Gallopny Gertie

7. On November 7, 1940, what happened?

the undulating changed to a twisting motion  
the wind caused oscillation that caused:

8. What did engineers do to figure out the cause?

scale models in wind tunnels  
computer models

9. When did the scientists discover the cause?

1992 52 years later Von Carman vortex  
Resonance

## How Airplanes are Made

<https://www.youtube.com/watch?v=KVe7oBKzq9U>

1. What does the video suggest airplanes are essentially?

"pressurized cylinders zooming through the air 10 km above the ground."

2. What are some of the things that the engineers have to consider when designing a new airplane?

take into account the desired passenger capacity  
- how and where parts will be sourced and produced  
- the range and speed of the plane  
- passenger comfort  
- requirements for landing and navigating airports  
- flight controls, fuel efficiency

3. What do they use to test the aircraft parts?

wind tunnel  
computer models  
scale models  
shoot dead ducks

4. What do they do to test engine's ability to withstand birds hitting it in flight?

shoot dead ducks into engines

5. What is carbon fiber?

carbon tape composite infused

6. What kind of testing is done on the new prototype testing?

test flights by in flight testing  
① loaded & seasons + tested to limits  
- cold weather / hot weather / high altitude  
- water on runway  
- wing bending stress  
- engine failure  
- tail scraping on low speed take off  
- test flight

7. How many Airbus 350's can be produced per month?

10 / month

1 every 2 days

8. What are some of the Experts?

- air traffic control experts - seat experts - wing flap experts  
- wind tunnel engine model experts - carbon fiber recycling expert