Name:__

Study Guide for Intro To Tech 6/7

Directions: Update your Table of Contents of your engineering notebook. Make sure that all of your papers are glued in and if any are missing make sure that you come to Mr. Sabol for copies. 95% of the answers to the following questions are in your engineering notebook. The remaining 5% are from class discussion, labs, or projects.

1.   How much does one square inch of air weigh under standard conditions?(Page 12)__

2.   Who was responsible for spin stabilization on early rockets? (Pages 40-43)__

3.   What are the 4 ways that you can change the pressure of air? (Page 12)__

4.   When do we use the International Phonetic Alphabet? (Page 29)__

5.   Which control method did the early flight inventor Otto Lilienthal use? (Page 30-31)__

6.   What are the 3 axis of flight?   (Page 14)__

7.   What are the movements on the 3 axis of flight called? (Page 14)__

8.   Which control surfaces on the airplane make it move along the 3 axis of flight? (Page

        14)__

9.   Which famous battle was raging when Francis Scott Keys wrote the national anthem?

        (Pages 40-43)__

10. State Bernoulli's law. (Pages 18-23)__

11. Draw a diagram showing Bernoulli's law and how it explains lift. (Pages 18-23)__

12. Identify the following achievements of the SR-71 Blackbird: (SR-71 Blackbird Lab in

Google Classroom) How high did it fly?__ What was it used for?__ How fast was it?__ Who

was the first female crew member of this aircraft?__

13. Which aircraft hold the fastest coast to coast time record of 90 minutes (over 2,000 mph?

(SR-71 Blackbird Lab in Google Classroom)__

14. How did the Wright brothers generate more lift for their Flyer? (Page 30-31)__

15. In which country was the first hot air balloon invented? (Page 30-31)__

16. Which country was the first to use rockets in battle? (Pages 40-43)__

17. Identify the major problem in early flight? (Page 30-31)__

18. Which profession did the Wright brothers practice before creating the Flyer? (Pages 30-

31)__

19. Some aircraft are outfitted with Fowler flaps. These go outward and downward. This

causes the wing area to __ and the camber of the wing to __. (MSFSx flight training)

20. Which scientist laid the foundation for modern American rocketry? (Pages 40-43)__

21. Some dates are important for us to remember because they are moments in time that

changed the way we do things. What was the date of the first flight of the Wright Flyer?

(Page 30-31)__

22. What is the angle of attack?__ What are the parts of an airfoil?__ (MSFSx flight training)

23. What happens when your angle of attack is too great?__ How can a pilot "break" this

effect?__ (MSFSx flight training)

24. Identify the 4 forces of flight? Which are natural forces? Which are artificial? How can

they be increased or decreased? (Page 17)__

25. Why did the Wright brothers choose Kitty Hawk, NC for their testing grounds? (Pages 30-

31)__

26. What is the purpose of numbers on a runway? What do they mean? (Page 35)__

27. Which part of a spinning propeller has the highest rotational speed? Why are the tips of

most propellers painted? (MSFSx flight training)__

28. Which laws of motion apply to flight? (Pages 47-49)__

29. What are the parts of the airplane?__ What are their locations on the plane.__ How do

you know the left from the right side of the airplane?__ (Page 10-11)

30. Define the following words and know how they apply to flight: AGL (Page 27)__, Altitude

(Page 27)__, control system (Page 50)__, guidance system (Page 50)__, pitch (Page

14)__, yaw (Page 14)__, roll (Page 14)__, Wernher von Braun (Pages 40-43)__,

Charles Lindbergh (Page 36)__, supersonic(Page 50)__.

31. Study the instrument panel of the aircraft. Know where to find and to read the main
     instruments.

        Practice reading the magnetic compass (Page 35)__, airspeed indicator

        (Page 28)__, attitude indicator (Page 32)__, altimeter (Page 27)__

32. Write the International Phonetic Alphabet below. You must spell them correctly. (Pages
        29)__

33. How do you calculate the apogee of a rocket using the tangent tables? (Google Classroom
Apogee Practice and Tangent Table)
        Baseline of 75 feet and a launch angle of 35 degrees=__feet. ?

        Baseline of 100 feet and a launch angle of 61 degrees=__feet. ?

        Baseline of 25 feet and a launch angle of 60 degrees=__feet.

34. What is the formula for calculating speed?   (Page 33)__.

        Calculate: D= 300 miles, T=6 hours; What is the speed of the object?__

                T=2.5 hours, S=100 mph; What is the distance traveled?__

                S=500 mph, D= 250 miles; How long to complete the flight?__

35. What are the 3 things that the JSF must be able to do? (Google Classroom Battle of the X

Planes video questions) __

36. Which planes will the JSF eventually replace?   (Google Classroom Battle of the X Planes

video questions) __

37. What does the "X" in X Plane mean?   (Google Classroom Battle of the X Planes video

questions) __

38. Which famous aircraft were designed and built by Lockheed-Martin?   (Google Classroom

Battle of the X Planes video questions) _

39. What was the purpose of the $25,000 Orteig Prize for the first solo flight between New York

and Paris? (Page 36)__

40. Identify and describe all of Newton's Laws of Motion. Be sure to have at least an example

of each law. (Pages 47-49)__

41. Constructed Response: Your constructed response will be completed before the semester

exam testing day. You will use Google Docs to complete the constructed response. The word

bank below are ALL the words that must be used correctly and in context in your constructed

response.

Word Bank:

Vertical Axis   Longitudinal Axis   Lateral Axis

Pitch   Roll   yaw

Elevator   horizontal stabilizer   vertical stabilizer

Yoke   rudder pedals

"What are the 3 axis of flight on any aircraft? What are the names of the movements along

those 3 axis? What are the control surfaces of any aircraft that controls the movement along

the 3 axis of flight? Describe what the pilot does to manipulate or move the control surfaces

from inside of the cockpit.