

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 10)___
2. Who was responsible for spin stabilization on early rockets? (Pages 38-41)___
3. What are the 4 ways that you can change the pressure of air? (Page 10)___
4. When do we use the International Phonetic Alphabet? (Page 23)___
5. Which control method did the early flight inventor Otto Lilienthal use? (Wright Brothers

Video Questions)___

6. What are axes 3 axes of flight? (Page 20)___
7. What are the movements on the 3 axes of flight called? (Page 20)___
8. Which control surfaces on the airplane make it move along the 3 axes of flight? (Page 20)___
9. Which famous battle was raging when Francis Scott Keys wrote the national anthem?
(Pages 38-41)___
10. State Bernoulli's law. (Pages 11-16)___

11. Draw a diagram showing Bernoulli's law and how it explains lift. (Pages 11-16)___
12. Identify the following achievements of the SR-71 Blackbird: (SR-71 Blackbird Lab in Google Classroom pages 18 -19) 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 pages 18-19)___
14. How did the Wright brothers generate more lift for their Flyer? (Wright Brothers Video Questions)___
15. In which country was the first hot air balloon invented? (Wright Brothers Video Questions)___
16. Which country was the first to use rockets in battle? (Pages 38-41)___
17. Identify the major problem in early flight? (Wright Brothers Video Questions)___
18. Which profession did the Wright brothers practice before creating the Flyer? (Wright Brothers Video Questions)___
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 38-41)___

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?

(Wright Brothers Video Questions)___

22. What is the angle of attack?___ What are the parts of an airfoil?___ (page 17 and MSFSx flight training)

23. What happens when your angle of attack is too great?___ How can a pilot “break” ?___

(Page 17and 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 24)___

25. Why did the Wright brothers choose Kitty Hawk, NC for their testing grounds? (Wright Brothers Video Questions)___

26. What is the purpose of numbers on a runway? What do they mean? (Page 31)___

27. Which part of a spinning propeller has the highest rotational speed? Why are the tips of most propellers painted? (pages 4-5)___

28. Which laws of motion apply to flight? (Pages 48)___

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 4-5)

30. Define the following words and know how they apply to flight: AGL (Page 27)__, Altitude (Page 27)__, control system (Page 49-50)__, guidance system (Page 49-50)__, pitch (Page 20)__, yaw (Page 20)__, roll (Page 20)__, Wernher von Braun (Pages 38-41)__, Charles Lindbergh (Page 28)__, supersonic(Page 49-50)__.

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

Practice reading the magnetic compass (Page 42)__, airspeed indicator

(Page 33)__, attitude indicator (Page 36)__, altimeter (Page 27)__

32. Write the International Phonetic Alphabet below. You must spell them correctly. (Page 23)__

33. How do you calculate the apogee of a rocket using the tangent tables? (Google Classroom Apogee Practice and page 45 Tangent Table)

The baseline of 75 feet and a launch angle of 35 degrees=__ feet. ?

The baseline of 100 feet and a launch angle of 61 degrees=__ feet. ?

The baseline of 25 feet and a launch angle of 60 degrees=__ feet.

34. What is the formula for calculating speed? (Page 32)__.

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 was 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 48)___

41. Constructed Response Requirements: (Page 20 or Google Classroom Notes)

- a. Your constructed response will be completed before the semester exam testing day.
- b. You must use standard punctuation, mechanics, spelling, etc.
- c. You will use Google Docs to complete the constructed response.
- d. You will use Arial FONT with a text size of 14.
- e. You will double space your essay.
- f. You will indent each paragraph.
- g. The word bank below are ALL the words that must be used correctly and in the 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 axes of flight on an aircraft? What are the names of the movements along those 3 axes? What are the names of the parts of the airplane that controls the movement along the 3

axes of flight? Describe what the pilot does to manipulate or move the control surfaces from inside of the cockpit.”