ASTB PREP TEST

Dear OSO,

This preparation package will greatly assist you in preparing your aviation candidates for the ASTB. The key word in the previous sentence is assist. You cannot simply give them these documents and expect them to pass. You first must understand everything being taught and be able to explain it to a confused applicant intelligently. The best way to ensure you understand is to take these prep tests yourself. After doing so, you may notice there is no spatial apperception review. You may also notice a question that refers to a mechanical comprehension hand out. It is imperative that your applicants receive this handout (it has an F-18 on the cover) and the spatial apperception class that is included with it. They can then test themselves on spatial apperception with the *ARCO Military Flight Aptitude Test Book* I am sure you are familiar with (other than spatial apperception, the ARCO book is relatively worthless.) In addition, you may be able to purchase or request from your district MCFOP fund a flight simulator for your lap top that will aid you in explaining spatial apperception. I have included some simple directions for you to follow; they are listed below.

1. As I already mentioned, take the prep tests yourself. Work out any of your misunderstandings and then ensure you are able to explain each answer correctly.

2. When you give the applicant the preparation package ensure it has the following:

   a. Math Section, including answer sheet as the applicant can grade them self without compromising the exercise.

   b. Mechanical Comprehension Guide.

   c. Spatial apperception class.

   d. Mechanical Comprehension Section, **not** including answer sheet.

   e. Aviation and Nautical Information Section, **not** including answer sheet.

3. Once they have completed the prep tests they should schedule a time to review them with you. You should go over any questions they answered incorrectly or guessed at. An answer that is correct through guessing will do them no good come ASTB time. I am sure you can be trusted to not hand out the answers to the Mechanical and Aviation and Nautical Information Sections just as you can be trusted not to hand out the actual answers to the actual test! It would be too easy for the applicant who has not yet been "transformed" to simply study those answers and not do the research for their own answers.

4. Finally, you're welcome. If used properly this guide will be a great aid to your aviation applicants. However, nothing short of hard work on their part and yours will ensure a passing grade. Should you have any questions, please contact Captain Joseph Spampinato at 814-237-8578.

J.M. Spampinato

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The purpose of this take home prep-test is to give you a taste of the skills you will need to master to pass the ASTB. It is imperative that you read each question carefully both now and when you take the actual exam because the questions below resemble those found on the exam. If you do not read each question carefully when you take the exam you may get an answer wrong because it was so similar (in other words, subtly different) to one found below.

Math Test

1. What is the total number of degrees in the three angles of a triangle?
   - a. 100
   - b. 120
   - c. 180
   - d. 90

2. $(0.2)^2 =$
   - a. 0.02
   - b. 0.4
   - c. 0.2
   - d. 0.04

3. 300% is the same as
   - a. 3
   - b. .03
   - c. .3
   - d. 300

4. A marine fired X rounds of ammunition, gave 2X to his buddy, and had 27 remaining in a magazine. If this accounted for 120 rounds in all, then X =
   - a. 120
   - b. 31
   - c. 93
   - d. 30
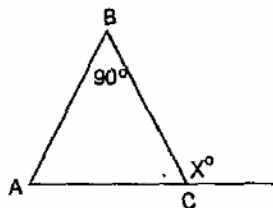
5. In the figure above, if ACD is a straight line and AB = BC, then X =
   - a. 135
   - b. 145
   - c. 90
   - d. 180

ASTB PREP TEST

6. Which is true?
   a. 2/25 > 1/10
   b. 1/10 > 3/30
   c. 2/28 < 3/35
   d. 5/13 = 4/5

7. $X/4 + X =$
   a. 2x/4
   b. x/4
   c. 5x/4
   d. 4x

8. $X - X/2 =$
   a. X/2
   b. 2x
   c. 4x
   d. 3x/2

9. Perimeter of a rectangle is 180 feet the width is ½ of the length, what is the length?
   a. 90
   b. 30
   c. 60
   d. 100

10. If 3 times x exceeds 1/3 of y by 9, which of the following is the equation that shows the relationship between x and y?
    a. 3x > 1/3y + 9
    b. 3x - 1/3y = 9
    c. x - 3y = 3
    d. 9x > y + 27

11. The average of 1/25 and 1/100 is
    a. 1/50
    b. 1/20
    c. 5/100
    d. 1/40

12. The destruction of a particular bridge requires 3 ½ tons of C-4 explosive. How many tons of C-4 would be required to destroy 1/3 of the bridge?
    a. 1
    b. 1 1/6
    c. 1 1/3
    d. 2 ¼

$$3\frac{1}{2} \times \frac{1}{3} \qquad \frac{3\frac{1}{2}}{1} = \frac{X}{\frac{1}{3}}$$

13. If $\frac{Y * Y * Y}{Y + Y} = 2$, then Y =
    a. 0
    b. 1
    c. 2
    d. 4

14. $74 - (12 - 20) =$
    a. 82
    b. 42
    c. 56
    d. 66

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15. If 100 times x is between 50 and 100, then x could be
    a. .50
    b. .25
    c. .75
    d. 1.00

16. The average temperature during a four day period was 73°. If the temperature on the first three days was 75, 74, and 70, what was the temperature on the fourth day?
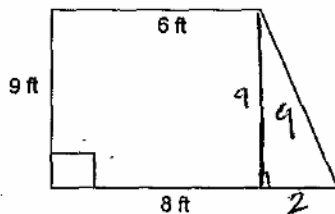   a. 75
    b. 72
    c. 71
    d. 73

    $$\frac{75 + 74 + 70 + x}{4} = 73°$$

    $73 \times 4 = 292$
    -219
    3

    75
    $+70$
    74
    219

17. If 20% of a number is 2.5, what is the number?
    a. 25
    b. 12.5
    c. 1.25
    d. 10

    2.5
    $\times 5$
    12.5

18. What is the area, in square feet, of the figure shown above?
    a. 32
    b. 54
    c. 63
    d. 72

    $9^2 + 2^2 = c^2$
    $81 + 4 =$
    $\sqrt{85} = c$

19. The equation $x = \frac{1}{2} t(y-z)$ is equivalent to the equation y =
    a. $\frac{1}{2}t(x + z)$
    b. $\frac{1}{2}x + zt$
   c. $2x/t + z$
    d. $2x/t - z$

20. Two expeditionary airfields with the same length are 100 feet wide and 200 feet wide, respectively. If a total of 360,000 square feet of aluminum alloy paneling is required to construct both airfields, what is their length?
    a. 1000
    b. 12000
    c. 3600
    d. 1200

    $100x + 200x = 360,000$
 $300x = 360,000$

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21. Two ammo cans contain various numbers of live bullets and blank bullets. Ammo can X contains 60 live bullets and 30 blank bullets, ammo can Y contains 90 live bullets and 30 blank bullets. If one bullet is selected randomly from each ammo can, which bullet would most likely be a blank?
    a. The one selected from ammo can Y
    b. The one selected from ammo can X
    c. It cannot be determined from the information given.
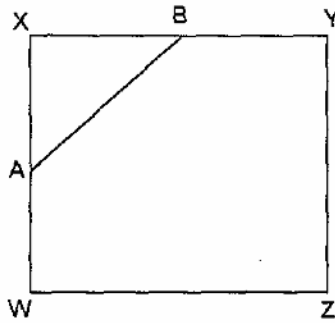
22. In square WXYZ above, AX = 1, YZ = 2 and XB = BY. What is the perimeter of polygon WABYZ?
    a. 10
    b. $8 + \sqrt{2}$
    c. 8
    d. $6 + \sqrt{2}$

23. While assaulting a fortified machine gun bunker, a Marine fired 2000 rounds during two engagements. If he fired 800 rounds more in his first engagement that in his second, how many rounds did he fire during his first engagement?
    a. 1200
    b. 600
    c. 2000
    d. 1400

24. A square tarp is x feet on a side. If 4 feet of another tarp is sewn across one end so that the tarp will cover a fighting position, then the area of the tarp after the addition is made, in square feet, must be
    a. $x^2 + 4x$
    b. $x^2 + 4$
    c. $x^2 + 16$
    d. $16x + 4$

25. It will take 4 hours, 32 minutes, 30 seconds to dig one part of a mortar pit. If the other part will take three quarters the time, how long will the second part take?
    a. 2 hours, 24 minutes, 22.5 seconds
    b. 3 hours, 46 minutes, 36 seconds
    c. 3 hours, 24 minutes, 22.5 seconds
   d. 1 hour, 56 minutes, 39 seconds

ASTB PREP TEST
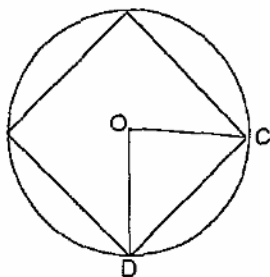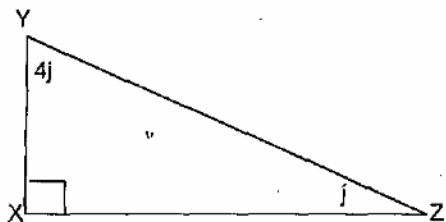
26. In right triangle XYZ above, ∠ Y =
    a. 72 °
    b. 54 °
    c. 18 °
    d. 22 °

27. In the figure above, if O is the center of the circle and all the sides of the polygon are equal what is the measure of ∠ COD?
    a. 60 °
    b. 90°
    c. 120 °

28. At a "mess night" there are only captains, 2nd lieutenants, and 1st lieutenants (sounds like a damn good time.) If the total number of 2nd lieutenants and 1st lieutenants is 30, the total number of 2nd lieutenants and captains is 45, and the total number of 1st lieutenants and captains is 35, what is the total number of company grade officers (2ndLts, 1stLts, and Capts are company grade officers) at the mess night?
    a. 110
    b. 55
    c. 60
    d. 220

29. What is the closest approximation to (0.0010197)(5001)(42.974)?
    a. 1000
    b. 28
    c. 215
    d. 74

30. There are exactly four times as many V-22s as CH-53Es in a marine expeditionary composite squadron. Which of the following can be the total number of V-22s and CH-53Es in the squadron?
    a. 35
    b. 63
    c. 39
    d. 41

31. 6 M-16s and 4 pistols cost J dollars. 4 M-16s and 6 pistols cost T dollars which of the following represents the cost of one M-16 and one pistol?
    a. 10(J + T)
    b. 1/10(J + T)
    c. 2/3J + 2/3T
    d. 2/3(J+T)

$$6m + 4p = J$$
$$4m + 6p = T$$
$$\overline{10m + 10p = J + T}$$
$$\qquad\qquad\quad 10$$

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32. At most less than one third the rounds in Private Banotz's magazines are tracers. If there are 150 rounds in his magazines, the number of tracers <u>must be</u>
    a. > 50
    b. = 50
    c. < 50
    d. 150

33. Two F-18s are catapulted off an aircraft carrier and fly on courses that diverge at a 60 ° angle. If each flies at a constant rate of 500 mph, after how many hours will the fighters be 1200 miles apart?
    a. 2 2/5
    b. 2
    c. 1 1/5
    d. 2 ½
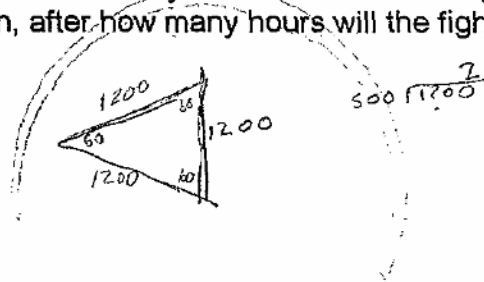
Question 34 refer to the following definition.

For all real numbers x and y, $x * y = y(x + 1)$.

34. If $-4 * j = -6$, then j =
    a. -6
    b. 6
    c. 2
    d. 4

35. What is the formula for volume of a cube?

36. What is the formula for area of a square, triangle, and a rectangle?

37. What is the formula to find the hypotenuse of a triangle?

38. What is the square root of .09?
    a. .3
    b. .03   By the way, what is the symbol for square root?
    c. 3
    d. .09

39. If a fuel mixture requires 3 ½ gallons of gasoline how many gallons would be needed for ¼ of the mixture?
    a. 7/8
    b. 3/8
    c. 3/5
    d. 1

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40. If 35% of X is 3.5 what is X?
   a. 20
   b. 30
   c. 10
   d. 15

41. There are 3 times as many red balls as blue balls, how many balls can there be?
   a. 13
   b. 9
   c. 10
   d. 16
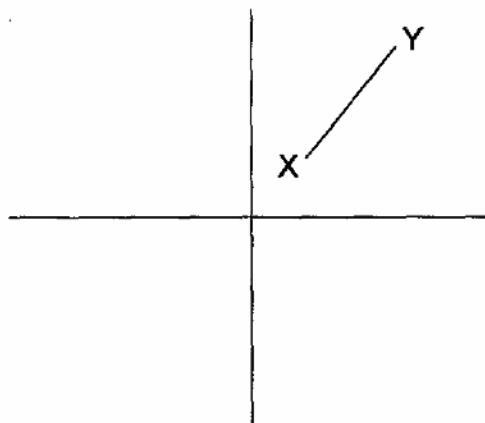
42. The coordinates of point X are (1,2), the coordinates of point Y are (4,6). What is the length of line XY?
   a. 6
   b. 4
   c. 5
   d. 10

43. $\dfrac{x^2-x-2}{(x+1)} =$ a. x+1
   b. x-2
   c. x+2
   d. x^2

44. The volume of cube A to the volume of cube B is 8:1. If an edge of cube C is twice as long as an edge of cube A, what is the ratio of the volume of B:C?
   a. 8:1
   b. 1:64
   c. 2:1
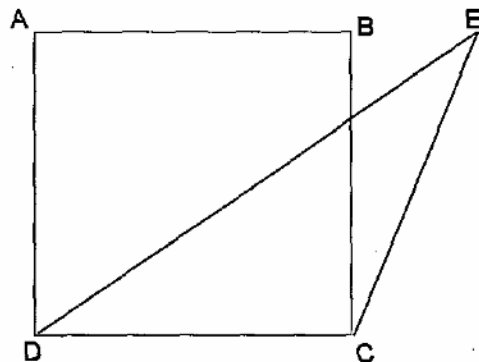   d. 1:8

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1432.678

45. In the number above, what are the values for the following:
   - a. Tens _____
   - b. Units _____
   - c. Hundreds _____
   - d. Thousands _____
   - e. Tenths _____
   - f. Thousandths _____
   - g. Hundredths _____

46. In the diagram above, the area of rectangle ABCD is 10 and the distance from point D to point A is 5. If point E is the same height (measured from the level of line DC) as points A and B, what is the area of the triangle CED?
   - a. 5
   - b. 10
   - c. 2
   - d. 22
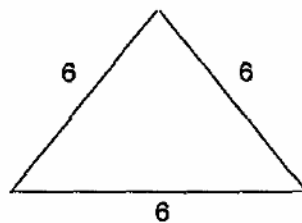
47. What is the area of the triangle shown above?
   - a. 36
   - b. 6
   - c. 18$\sqrt{3}$
   - d. 9$\sqrt{3}$

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Mathematical Section Answer sheet

|							
1.	C	14.	A	27.	B	39.	A
2.	D	15.	C	28.	B	40.	C
3.	A	16.	D	29.	C	41.	D
4.	B	17.	B	30.	A	42.	C
5.	A	18.	C	31.	B	43.	B
6.	C	19.	C	32.	C	44.	B
7.	C	20.	D	33.	A	45.	a. 3 b. 2 c. 4 d. 1 e. 6 f. 8 g. 7
8.	A	21.	B	34.	C	46.	A 47. D
9.	C	22.	D	35.	Base*Width*Height		
10.	B	23.	D	36.	Sq=side^2 Tri=1/2base * height Rec=length * width		
11.	D	24.	A	37.	$a^2 + b^2 = c^2$		
12.	B	25.	C	38.	.3		
13.	C	26.	A				

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Mechanical Comprehension Test

This section of the test requires you to first read all the study guides supplied to you. In addition, you must know the mechanics of flight (What makes a plane fly?). Once you have read the study guides take the test. Again, be careful to read the questions carefully and select the best answer.
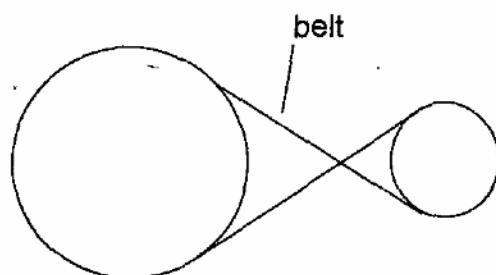
belt

1. The wheels above are connected by a belt. As the wheel on the left makes one revolution, the wheel on the right makes
   a. less than one revolution
   b. exactly one revolution
   c. more than one revolution

2. If the wheel on the left turns clockwise, in which direction does the wheel on the right turn?
   a. Clockwise
   b. Counterclockwise

3. A woman sits in a dragster at the beginning of a race. As the light turns green she steps on the accelerator. At the moment the dragster begins to accelerate what is her weight pushing into the seat relative to while the car was stationary?
   a. Less than while stationary
   b. The same as while stationary
   c. More than while stationary

4. If you had to swim across a fast moving stream exactly perpendicular to the banks, when you arrived at the far bank where would your position be relative to where you started across?
   a. Upstream from where you started
   c. Directly across from where you started
   b. Downstream from where you started

ASTB PREP TEST
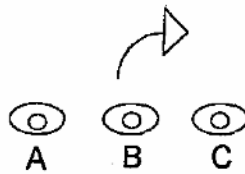
5. If the three squad leaders above are to stay on line, which of them must turn most slowly?
    a. Squad leader A
   b. Squad leader B
    c. Squad leader C
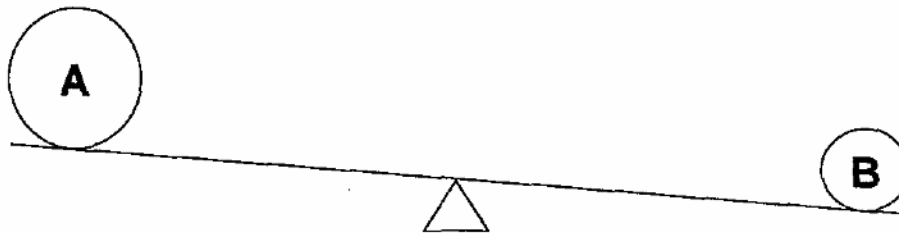
6. In order to balance the scale above, the fulcrum should be moved
    a. toward A
    b. toward B
    c. in either direction

7. If the scale in question 6. was balanced before you moved the fulcrum, which of the balls is more dense?
    a. Ball A
    b. Ball B
    d. They have the same density.
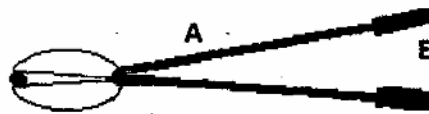
8. Where would it be best to hold a pruners' handles while trying to cut a branch?
    a. A
    b. B
    c. It does not matter

ASTB PREP TEST
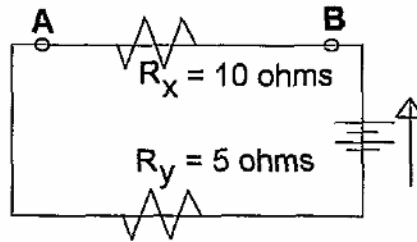
For questions 9,10, and 11 refer to the above diagram.

9. If the current leaves the battery in the direction shown, what is the direction of the current in resistor X?
    a. A
    b. B
    c. There is no current in the resistor

10. The voltage drop is greater across which resistor?
    a. R_x
    b. R_y
    c. It is the same across either resistor.

11. Where is the current greater in this circuit?
    a. Greater at A than B
    b. Greater at B than A
    c. The same at A and B

12. X, which has a negative charge, is positioned between a positive charge (A) and a negative charge (B). In which direction will X move?
    a. A
    b. B
    c. Remain where it is.

13. In a stream water flows through narrow and wide sections. In which section does the water flow fastest?
    a. Narrow section
    b. Wide section
    c. The same through either section

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14. At what point is the velocity of a bullet fastest?
    a. When it leaves the muzzle
    b. When it reaches the top of its arc
    c. When it hits the target

15. The rate of heat exchange is faster between
    a. an ice cube and 100 ° glass of water
    b. an ice cube and 40 ° glass of water
    c. none of the above

16. If both glasses of water in question 15 were 40 ° and glass A was ½ full while glass B was ¾ full, which glass would melt the more ice in a given amount of time?
    a. A
    b. B
    c. They would melt an equal amount of ice.

17. Did you read the mechanical comprehension hand out your selection officer gave you?
    a. No, but I will now.
    b. No! What hand out?
   c. Yes, and I understood everything.
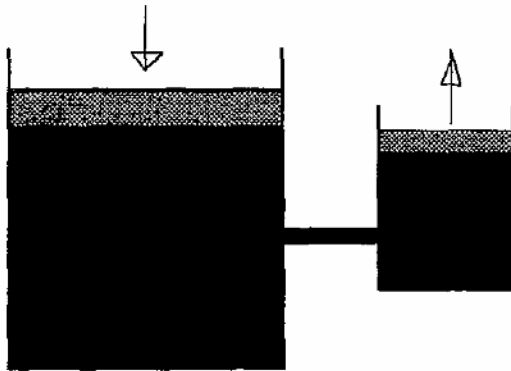
18. If the large piston has 2 times the surface area of the small piston, how far must the large piston be pushed down to raise the small piston 1 inch?
    a. 1 inch
    b. 2 inches
    c. ½ inch

ASTB PREP TEST

For questions 19 through 22 refer to the diagram below.

System A   System B
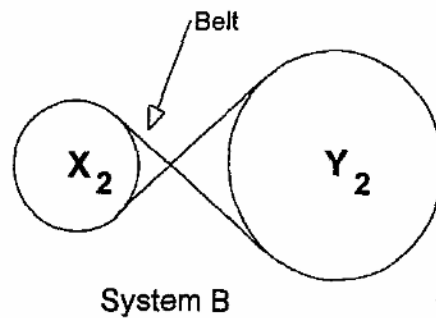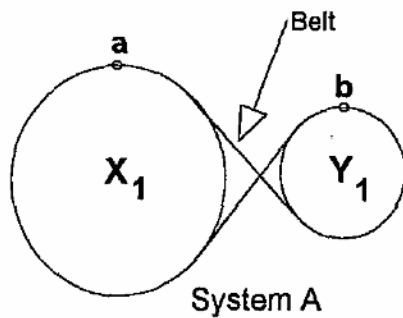
19. When wheels X are turned at the same speed, which turns wheels Y faster?
    a. Wheel X_1
    b. Wheel X_2
    c. They turn wheels Y at the same speed.

20. Imagine if wheels X were the front sprocket of a bicycle and wheels Y the rear sprocket. Which system would be hardest to pedal up a hill?
    a. System A
    b. System B
    c. They would have the same difficulty.

21. If wheel X_1 is exactly twice the size wheel Y_1 and wheel X_1 is turned one time, how many times will wheel Y_1 turn?
    a. One turn
    b. Two turns
    c. One half turn

22. In system A, as wheel X_1 makes one revolution, point A
    a. travels a greater distance than point B
    b. travels a smaller distance than point B
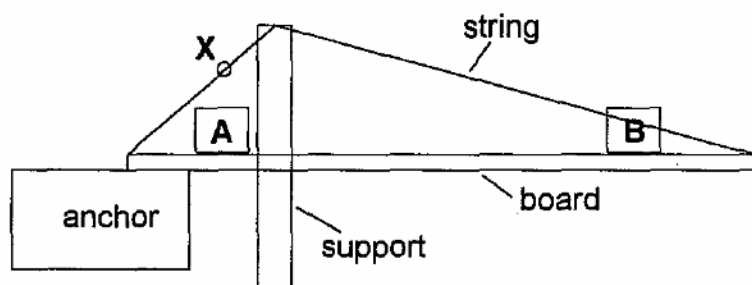   c. travels the same distance as point B
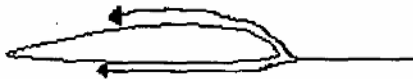
23. Above is a cross section of a wing. Air travels over it and under it. As the wing moves through the air the speed relative to the foil is
    a. greater above the wing
    c. below the wing
    d. the same above and below the wing

ASTB PREP TEST
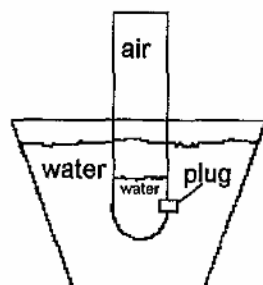
24. When the plug in the tube is removed, water flows
    a. into the tube
    b. out of the tube
    c. neither way

25. For which position of the weight is the tension on the string at point X greater?
    a. A
    b. B
    c. It is the same for each position

26. When is it more difficult to hold an inflated beach ball under water?
    a. Close to the surface
    b. Down deep
    c. The difficulty is the same at either depth

27. When is the same beach ball seem more buoyant?
    a. Close to the surface
    b. Down deep
    c. The buoyancy is the same at either depth

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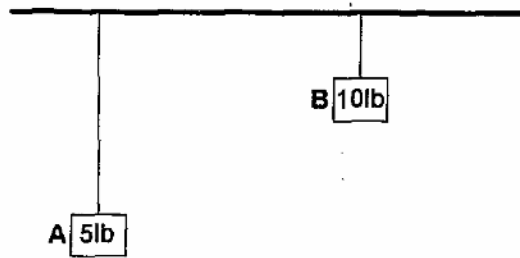
28. Which weight exerts less pull on the horizontal bar from which the weights hang by strings?
    a. A
    b. B
    c. Each weight exerts the same pull on the bar.
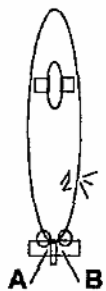
29. A submarine is traveling through the ocean when its outer hull cracks and air pushes out of its lower right side. In which direction must the rudder be turned to ensure the submarine remains on its heading?
    a. A
    b. B

30. If the board to the left was placed in water in what orientation would it float?
    a. A higher than B
    b. B higher than A
    c. Perfectly level
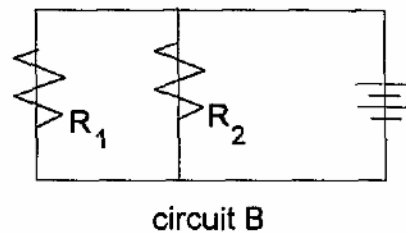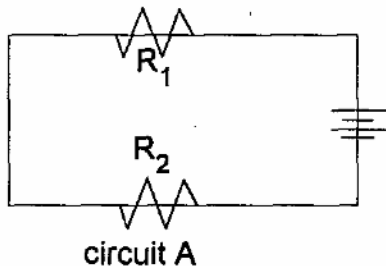
circuit A

circuit B

31. If two resistors and a battery are arranged in each of the above circuits. Which circuit arrangement has greater resistance?
    a. Circuit A
    b. Circuit B
    c. They have the same resistance.

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ground

32. The lever above is anchored just to the left of point A. If one were to raise it one inch measured from point A to the ground, point B would rise
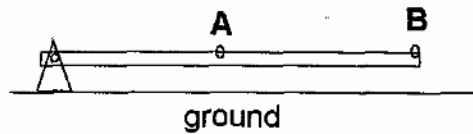   a. less than one inch
   b. one inch
   c. more than one inch
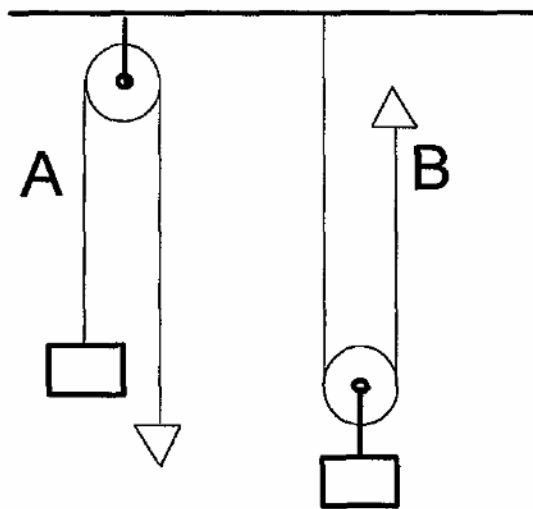
33. In which case is more force needed to raise the weight?
   a. A
   b. B
   c. The force is the same in each case.
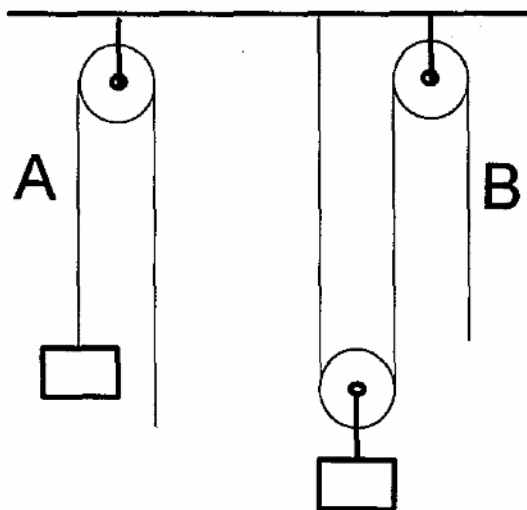
34. Which system requires more rope to be pulled to lift the weight the same distance?
   a. A
   b. B
   c. They require the same amount of rope.

18

ASTB PREP TEST

A (2 lb)

B (1 lb)
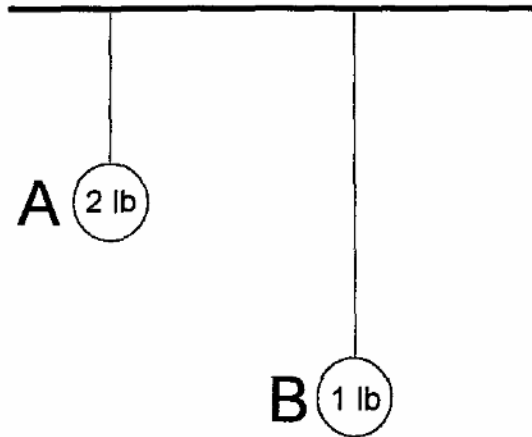
35. Which pendulum takes less time to make one swing?
   a. A
   b. B
   c. Each takes the same time to make one swing.

36. If pendulum A was the same length as pendulum B, which pendulum would take more time to make one swing?
   a. A
   b. B
   c. Each would take the same time to make one swing.

ASTB PREP TEST

Mechanical Section Answer sheet

1.	C	13.	A	25.	B
2.	B	14.	A	26.	B
3.	C	15.	A	27.	B
4.	B	16.	B	28.	A
5.	C	17.	C	29.	A
6.	B	18.	C	30.	B
7.	B	19.	A	31.	A
8.	B	20.	A	32.	C
9.	A	21.	B	33.	A
10.	A	22.	C	34.	B
11.	C	23.	A	35.	A
12.	A	24.	A	36.	C

ASTB PREP TEST

Aviation and Nautical Information Test
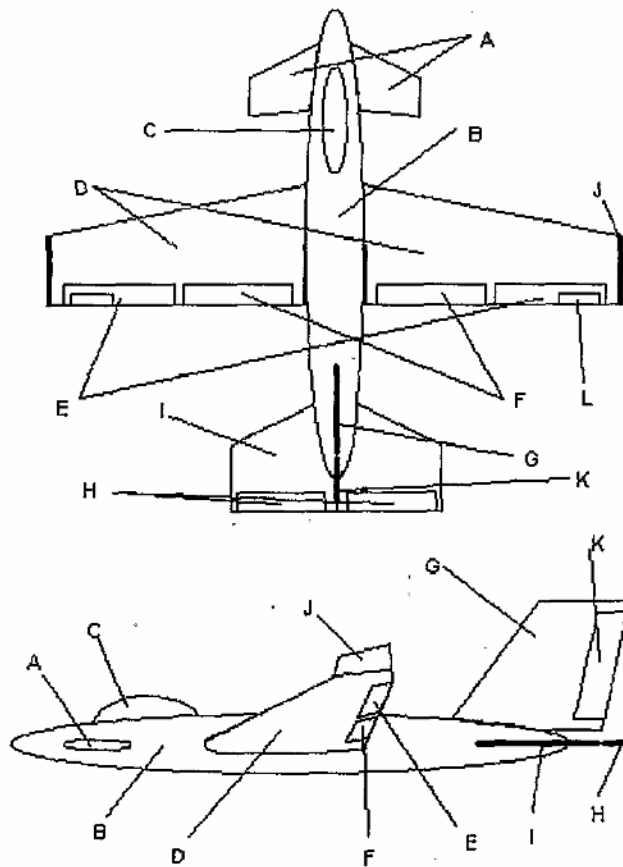
Match the parts of the plane to the left with their corresponding letters.

1. Fuselage _____

2. Canard _____

3. Wing _____

4. Cockpit _____

5. Flap _____

6. Aileron _____

7. Winglet _____

8. Vertical stabilizer _____

9. Horizontal stabilizer _____

10. Elevator _____

11. Rudder _____

12. Trim tab _____

13. Which of the control surfaces above is the primary surface for turning an airplane?_____

14. Which of the control surfaces above is the primary control for altitude? _____

15. The primary purpose of part J is to
   a. provide better control
   b. improve stability
   c. decrease drag

16. The wings of the airplane are angled upward. What is this called?
   a. Upward angulation
   b. Dihedral
   c. Stablerization
   d. Convexation

What purpose does such a wing position serve?

ASTB PREP TEST

17. What causes the sonic boom when a supersonic jet breaks the sound barrier?

18. Who is the Father of the Navy?
    Hint: He is famous for having said the following:
    "I have not yet begun to fight."
    --1779, Battle between the Bonhomme Richard and H.M.S. Serapis
    "Men mean more than guns in the rating of a ship."
    "He who will not risk cannot win."
    "I wish to have no connection with any ship that does not sail fast, for I intend to go in harm's way."
    <u>For questions 19 through 22 refer to the diagram below.</u>

B

A
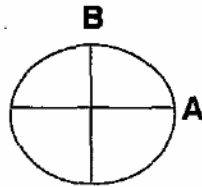
19. In the diagram of the earth above, which line represents latitude?

20. From where is latitude measured?
    a. Prime meridian
    b. Equator
    c. International date line

21. Which line represents longitude?

22. From where is longitude measured?
    a. Prime meridian   Where is it located? Hint: Look on a globe.
    b. Equator
    c. International date line

Match the nomenclature of the boat to the left with the corresponding letters.
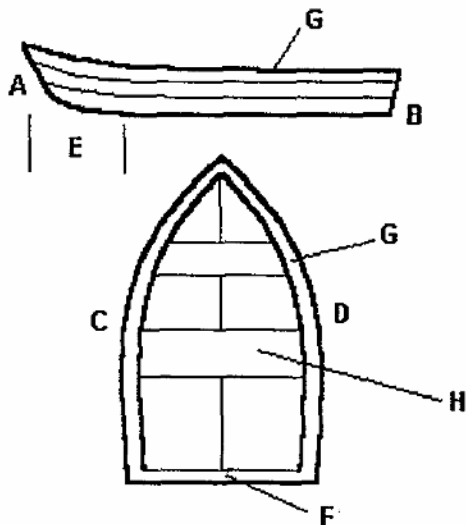
23. Bow _____

24. Gunwale _____

25. Thwart _____

26. Port _____

27. Stern _____

28. Stem _____

29. Transom _____

30. Starboard _____

ASTB PREP TEST

31. If Navy ensigns and lieutenants are company grade officers, commodores and admirals are what type of officers?
    a. Color officers
    b. Field grade officers
    c. Flag officers
    d. Banner officers

32. Is an F-14 Tomcat's wings fixed or variable sweep? Why?

33. Where is the most stable place to stand in a row boat?

34. The aerodynamic effect that occurs near the ground is called?

35. Define the following aviation related words. Look in a dictionary for most of them.

    Camber

    Angle of attack (regarding wings)

    Aspect ratio and the difference between High and low Aspect ratio

    Fly-by-wire

    Yaw

    Trim and its purpose

    Auto rotation

36. What are the colors of the lights on each side of a boat or ship?

37. What type of aircraft is an F-14?
    a. Bomber
    b. Interceptor
    c. Attacker
    d. Intruder

38. F-14s have two individuals in them during flight. The pilot and the naval flight officer (NFO). In an F-14 another name for the NFO is what? Hint: Watch TOP GUN find out what Goose's job is.

39. What is the Bonhomme Richard and what country did it serve?

ASTB PREP TEST

40. What is compass deviation?

41. What is the difference between neap tide and spring tide?

42. When is the moon at its perigee?

43. What is the difference between a Yawl and a Sloop?

44. Read about the beginnings of the manned space program. It would not hurt to watch *The Right Stuff* and *Apollo XIII*. Pay attention to the names of people.

45. Who is Alan Shepard, John Glen, Yuri Gagarin?

46. Get a beginner sailing book from the library and learn the simple "rules of the road" for right-of-way amongst ships.

47. Drive by an airport at night. What are the colors of the lights on the taxi-ways?

48. What are the nicknames of the following aircraft?
    F-14   C-130
    F-18   A-6
    AV-8B   EA-6B

49. On an aircraft, long wings when compared to shorter wings result in which of the following?
    a. Shallower glide angle
    b. Faster roll rate
    c. Greater speed

50. How are runways numbered?

51. Which of the following launch vehicles were not in the U.S. program:
    a. Redstone   d. Columbia
    b. Atlas   e. Delta
    c. Challenger   f. Titan

52. Why does a pilot dump fuel prior to an emergency landing?
    a. Fire hazard
    b. Maneuverability
    c. To harm the environment
    d. In hope that doing so will correct the problem

53. Select all of the characteristics out of the list below for a warm front.
    a. Hard, short period rain
    b. Steady, long period rain
    c. Fog
    d. Strong winds

54. Explain what compass deviation is.

55. Which type of air is "lighter"
    a. Humid or dry air?   _____
    b. Cold or warm air?   _____

56. All other things being equal, when is actual air speed faster than indicated air speed?
    a. High altitude
    b. Low altitude

57. If a plane is in straight and level accelerated flight, its
    a. propulsion is less than drag.
    b. propulsion is equal to drag.
    c. propulsion is greater than drag.

58. When land navigating, if you use the surrounding terrain to guide you along your way, you are using terrain association. When you rely solely on the information given by your compass it is called dead reckoning. In which of the two scenarios is the pilot of the plane using dead reckoning?

    a. The pilot is flying through solid cloud cover and not able to see any terrain features. In order to fly the plane, she uses the information supplied by the gauges and indicators inside the cockpit.

    b. The pilot is flying in clear skies and often uses the horizon line and surrounding land features to monitor altitude, ground speed and general heading.

59. Why do pilots prefer to land into the wind?
    a. To have the wind in their hair to remind them of how glamorous being a pilot is
    b. To accelerate just before touching down
    c. To reduce ground speed
    d. To decrease lift

60. When is a plane more likely to stall?
    a. In straight and level flight
    b. In a great degree of bank turn
    c. In a gentle turn
    d. While on the ground idling

ASTB PREP TEST

Aviation and Nautical Information Section Answer Sheet

1.	B	11.	K	22.	A, Greenwich, England
		12.	L		
2.	A	13.	E, aileron	23.	A
3.	D	14.	H, Elevator	24.	G
4.	C	15.	C	25.	H
5.	F	16.	B, to improve stability.	26.	C
6.	E	17.	An abrupt pressure change across the shock wave.	27.	B
7.	J	18.	John Paul Jones	28.	E
8.	G	19.	A	29.	F
9.	I	20.	B	30.	D
10.	H	21.	B	31.	C

32. Variable sweep.
1. Swept position--reduce drag at high speed
2. Extended position
   a. To provide decreased ground speed during landing
   b. To provide increased lift at low speed

33. Bottom center   34. Ground effect

35. Camber--curvature of the top of a wing or airfoil.

Angle of attack--angle formed by the chord line of the wing and the oncoming airflow.

Aspect Ratio--the ratio of the distance between the wing tips of an airplane to its average wing width.

Fly-by-wire--control linkages between the cockpit and the planes control surfaces are electronic rather than mechanical.

Trim tabs--small control surfaces that permit the pilot to balance control forces in steady flight to relieve pressure on the aircraft's controls and thus, pilot fatigue.

Autorotation--a maneuver used by helicopter pilots to make an emergency landing when he or she has lost engine power during flight.

36. Port = red   Starboard = Green   37. B

ASTB PREP TEST

38. Radar Intercept Officer (RIO)

39. Sailing ship, United States

40. The error of a magnetic compass due to local magnetism. It is dependent upon your heading.

41. Spring tide The large rise and fall of the tide at or soon after the new or full moon.
    Neap tide   Those tides midway between spring tides that attain the least height.

42. The moon is at perigee when it is closest to the earth.

43. Yawl--double mast sailing vessel where the mizzen or rear mast is aft of the rudder post.
    Sloop--a single mast sailing vessel.

44. Pretty motivating eh?

45. Alan Shepard--First American in space.
    John Glen--U.S. Marine. 149 combat missions WW II and Korean War. Five Distinguished
            Flying Crosses. First to fly supersonic across the U.S. First American to orbit the
            earth in space in the Project Mercury Gemini capsule Friendship 7.
    Yuri Gagarin--Russian Cosmonaut. First man in space.

46. Ahoy mate!

48. F-14 -- Tomcat   C-130 -- Hercules
    F-18 -- Hornet   A-6 -- Intruder
47. No, the blue ones.
    AV-8B -- Harrier   EA-6B -- Prowler

49. A

50. With the first two numbers of their compass heading (ie. 360° would be 36)

51. E   52. B increase maneuverability by reducing landing weight

53. B, C

54. Compass deviation is the difference between your desired grid or map heading and the heading
    you must follow on your compass due to the effects of local magnetism. **It is dependent upon
    your heading.**

55. a. Humid   b. Warm

56. A   57. C

58. A   59. C

60. B