



Headquarters Air Cadets Examination

Leading Cadet
Principles of Flight
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Serial: 51

1. Use black or dark blue pen, NOT pencil.
2. Mark one answer per question with a cross.
3. If you wish to change an answer, cancel the original mark and mark another single answer.

☒ A selected answer.

☒ A cancelled answer.

Mark:

Name and Initials _____

Date of Exam _____

Date of Birth _____

Squadron/Unit _____

Wing _____

1 Newton's 3rd law states that:

- a ☐ Weight equals lift during flight.
- b ☐ Every action has an equal and opposite reaction.
- c ☐ Every object has weight.
- d ☐ Every force causes an object to move.

2 To fly, an aircraft must generate lift to oppose its:

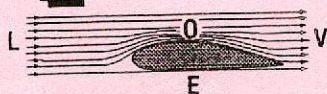
- a ☐ Drag
- b ☐ Weight
- c ☐ Inertia
- d ☐ Thrust

3 For air moving in a smooth streamline flow, if the air is made to speed up, what happens to the pressure of the air where it is flowing faster?

- a ☐ It increases
- b ☐ It fluctuates wildly
- c ☐ It decreases
- d ☐ It remains constant

4 Where is the air pressure lowest in this diagram of an aerofoil in an airflow?

- a ☐ V
- b ☐ E
- c ☐ O
- d ☐ L



5 What is the chord line of a wing section?

- a ☐ A curved line following the mean camber of the wing from the leading edge to the trailing edge
- b ☐ A straight line joining the leading edge to the trailing edge
- c ☐ The line at which the wing is set to the fuselage
- d ☐ A line through the leading edge, parallel to the thrust line

6 What is the force called that drives an aircraft forwards?

- a ☐ Weight
- b ☐ Drag
- c ☐ Lift
- d ☐ Thrust

7 If you doubled the airspeed the drag would increase by a factor of?

- a ☐ 4
- b ☐ 8
- c ☐ 6
- d ☐ 2

8 Each of the three axes of an aircraft pass through the aircraft's:

- a ☐ Wings
- b ☐ Centre of gravity
- c ☐ Cockpit
- d ☐ Engine bearings

9 Which axis runs from nose to tail in an aircraft?

- a ☐ Bilateral
- b ☐ Normal
- c ☐ Lateral
- d ☐ Longitudinal

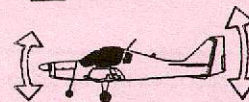
10 This aircraft is flying towards you. What angle is the arrow pointing to?

- a ☐ Dihedral angle
- b ☐ Cohedral angle
- c ☐ Lift angle
- d ☐ Anhedral angle



11 What sort of movement is shown in the diagram?

- a ☐ Pitching
- b ☐ Yawing
- c ☐ Rolling
- d ☐ Swinging



12 A pilot selects full flap when coming into land. This will?

- a ☐ Reduce the angle of approach and improve the forward vision
- b ☐ Increase the angle of approach and improve forward vision
- c ☐ Decrease the angle of approach and reduce the landing run
- d ☐ Increase the angle of approach and increase the landing run

- 13 On this cross-section of a wing, which arrow points to a slot?

- a ☐ U
b ☐ R
c ☐ S
d ☐ T



- 14 Name the three forces acting on a glider in a steady flight?

- a ☐ Drag, weight and lift
b ☐ Drag, thrust and lift
c ☐ Thrust, weight and lift
d ☐ Drag, weight and thrust

- 15 A glider with a gliding angle of 1 in 40 is in still air and flying over level ground. What distance will the aircraft travel from a height of 1640 feet (0.5 kilometre) before reaching the ground.

- a ☐ 10 kms
b ☐ 40 kms
c ☐ 80 kms
d ☐ 20 kms

- 16 A helicopter generates lift by using

- a ☐ Spinning blades
b ☐ The tail rotor
c ☐ The engine exhaust
d ☐ The torque reaction

- 17 The lift of a helicopter blade can be increased by?

- a ☐ Pointing the nose into wind
b ☐ Decreasing the pitch angle
c ☐ Increasing the pitch angle
d ☐ Slowing the rotor head down

- 18 Tilting the rotor disc of a helicopter forward will make the helicopter:

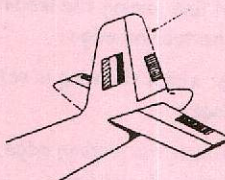
- a ☐ Hover
b ☐ Travel backwards
c ☐ Travel forwards
d ☐ Climb

- 19 For a particular aircraft, which of these will reduce the stalling speed?

- a ☐ A reduction in weight
b ☐ A reduction in power
c ☐ Putting the aircraft into a turn
d ☐ Raising the flaps

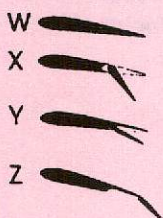
- 20 On this diagram what does the arrow point to?

- a ☐ Fuselage
b ☐ Aileron
c ☐ Rudder
d ☐ Fin



- 21 Which of the following is a simple flap?

- a ☐ W
b ☐ Z
c ☐ Y
d ☐ X



- 22 The point on a wing at which all the lift is said to act is called:

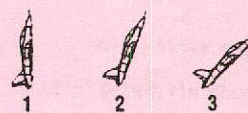
- a ☐ Centre of pressure
b ☐ Dynamic centre
c ☐ Pressure point
d ☐ Static point

- 23 Which of these statements, about the airflow over the wing of an aircraft just beyond the point of stall is true?

- a ☐ It becomes very smooth
b ☐ It stops completely
c ☐ It speeds up tremendously
d ☐ It becomes turbulent

- 24 At position 1, the aircraft is climbing vertically. To make the aircraft move to position 2 and then to position 3, the pilot must move the control column:

- a ☐ To the left
b ☐ To the right
c ☐ Back
d ☐ Forward



- 25 On this cross-section of a wing, which arrow points to a flap?

- a ☐ T
b ☐ S
c ☐ U
d ☐ R

