

A.A.C. JUDGE'S HOME STUDY COURSE

NOTE: this course is intended to be completed by all people intending to be judges at competitions of the Australian Aerobic Club or its chapters. It is a basic course only, intended to prepare a judge in the practical aspects of judging and knowledge of the AAC rules as they would be applied specifically on the judging line. The answers to all questions will be found in the Australian Aerobic Club Contest Rule Book as amended. The course does not follow the rule book in a logical order. It is suggested that you read the Contest Rules thoroughly before attempting to answer the Home Study Course. It is designed to test your knowledge and application of the rules rather than your ability to follow the Contest Rule Book as you answer the questions.

This course does not cover the procedural aspects relating to the administration of contests or knowledge of the rules regarding the design or checking of Free Programmes. These are areas which Chief Judges and Contest Directors would be expected to be familiar with and are covered by an advanced course which will be supplied separately to this course. However at the time of revising this course the ARESTI Catalogue has seen major revision.

Note: Once the preparatory course is completed further judge training and experience should be obtained at coaching sessions at local Chapter practice days.

The types of questions in this course are of the following broad types

- * Fill in the blanks
- * Multi choice a,b,c,d (note only one answer is correct in each case – please circle your answer)
- * True/False
- * Write a short answer in a few sentences

The type of question being asked will generally be fairly obvious to the person completing the course. After completion, please send for marking to

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Pass rate is 80%. Good luck!

1. What are the dimensions of the Aerobatic Zone?

- A. 1000m.(X axis) by 900m.(Y axis).
- B. 900m.(X axis) by 900m.(Y axis).
- C. 1000m.(X axis) by 850m.(Y axis).
- D. 1000m.(X axis) by 1000m.(Y axis).

2. Give the width of the buffer zone outside of the Aerobatic box into which a competitor is allowed to go before being given a Line Infringement penalty.

- A. 25m.
- B. 40m.
- C. 50m.
- D. 75m.

3. The correct criterion for giving a line infringement is

- A. a single infringement is given for a figure if the fuselage of the aircraft is seen by the line judge to have crossed the line being observed even if this occurs more than once in that single figure
- B. an infringement is given for each occasion the fuselage of the aircraft is seen by the line judge to have crossed the line being observed even if this occurs more than once in a single figure

4. List the height limitations on contest flights by competition category.

CATEGORY	UPPER LIMIT	LOWER LIMIT
ENTRY LEVEL	_____ft	_____ft
GRADUATE	_____ft	_____ft
SPORTSMAN	_____ft	_____ft
INTERMEDIATE	_____ft	_____ft
ADVANCED	_____metres	_____metres
UNLIMITED	_____metres	_____metres

5. What is the majority required for an altitude height infringement to be sustained

- A. two thirds majority
- B. all judges must agree
- C. simple majority

6. What is the majority required for an infringement of the lower disqualification level

- A. two thirds majority
- B. all judges must agree
- C. simple majority

7. In all aerobatic judging, a score of between 0 to 10 is given for each figure, in increments of 0.5. List the seven conditions under which a zero score would be given.

- a)
- b).....
- c)
- d).....
- e)
- f).....
- g)

8. How is a judge’s 0 score altered when it is in the minority?

- A. If a judge’s score of 0 is in the minority, then that judge must mark up to at least the lowest score of the other judges.
- B. If a judge’s score of 0 is in the minority, then the score remains at 0 for that judge
- C. If a judge’s score of 0 is in the minority, then his score is adjusted to the average of the scores of the other judges who gave a score other than 0.

9. Does the Chief Judge’s score count in normal circumstances?

- A. Yes
- B. No.

10. What notation is used on the score sheet to get a score for a figure not seen by you, the judge?

- A. A - Average
- B. US – Un Sighted
- C. NS – Not Sighted
- D. 0 – zero

11. By how much is the score reduced for:-

- A. each 5 degree deviation from a 45 degree line.points
- B. each 5 degree deviation from all other programmed directions of flight?points

12. A pilot performs an avalanche i.e. a flick roll on top of a loop. On completion of his flick roll it appears to you that he has under rolled by 15 degrees. What would be the highest score he could be given for this figure?

- A. 8.5
- B. 7.5
- C. 7.0
- D. 6.5

13. (a) Give a definition in your own words of 'Positioning'

.....

.....

.....

(b) When calculating a position score, figures should be positioned in the performance zone where clarity of execution and geometry are at their greatest. It would be appropriate to deduct between 0.5 and 1 point for any such misplaced figure, depending on the severity of the misplacement

- A. True
- B. False

14. In all aerobic judging some figures or parts of figures are to be judged on aircraft attitude, some on aircraft track. Below are listed some ARESTI System (Condensed) Figures or component parts of figures. Next to each figure write the correct number to designate the appropriate criteria as shown below.

- 1. Graded on track of aircraft ie aircraft flight path.
- 2. Graded on aircraft attitude.

A	1.1.1. - Normal horizontal flight.	
B	1.1.2. - Inverted horizontal flight	
C	1.6.1. - 90 degree climbing.	
D	1.6.3. - 90 degree descending.	
E	1.2.1. - 45 degree climbing.	
F	1.2.3. - 45 degree descending.	
G	7.1.1 - Inside loop	
H	Quarter loop pull ups or push ups to the vertical	
I	The 5/8 loop in a 1/2 Reverse Cuban	
J	The looping sections of a horizontal	
K	The 45 degree lines in a horizontal 8	

15. ARESTI System (Condensed) Family 2.1.-2.2. figures (horizontal turns) are scored according to the following criteria:- The turn should be started and completed at the same altitude, and should be performed at a constant bank angle and rate of turn. The angle of bank must be no more than 90 degrees and no less than 60 degrees. If the angle of bank is less than 60 degrees, there will be a corresponding reduction of the score.

- A. True. These are the criteria used for the grading of this family.
- B. False. The radius of the turn must also be constant, so that a 360 degree turn will be a perfect circle.

16. In grading a rolling turn, look up the following catalogue numbers and describe the attitude of the aircraft at different points in the turn ie degrees of turn from the beginning of the figure. Note that a rolling turn is **NOT** judged on its position at the cardinal points, these are only used as reference points.

	Upright at (degrees)	Inverted at (degrees)
eg 2.7.1
2.9.1
2.10.2
2.14.1

17. ARESTI System Catalogue Family 2.3.-2.15. are rolling turns. The correct criteria to be applied are

- A. The figure is zeroed if there is a stoppage of the roll
TRUE / FALSE
- B. The figure is downgraded cumulatively by 1 point per 5 degrees off in roll or turn at the end of each cardinal point
TRUE / FALSE
- C. Each variation in roll rate is penalised by 2 points
TRUE / FALSE
- D. Where there are opposite rolls, if the roll is not completed before reversal there is a downgrading of 1 point per 5 degrees but no further downgrading for the deviation at the beginning of the next roll
TRUE / FALSE
- E. The figure must be wind corrected for the turn so that the flight path over the ground describes a perfect circle
TRUE / FALSE
- F. Finish must be downgraded 1 point per 5 degrees off the correct axis
TRUE / FALSE

18. Figures which require a transition from one plane of flight to another, e.g. a stall turn when the aircraft goes from horizontal to vertical and then back to horizontal flight again, are given a higher score if the quarter loops at the beginning and end of the figure have the same radius.

- A. True. All part loops of any one figure should have the same radius except Family 1 figures and where indicated in Family 8. figures.
- B. False. The radii will vary according to the speed of the aircraft.

19. ARESTI System (Condensed). Family 5. figures are stall turns or hammerheads. Choose which of the following statements are correct with regard to the judging criteria for this family.

- A. Transition from level flight to the vertical must be flown in a reasonable quarter circle.
TRUE / FALSE
- B. Entry and recovery should be at the same altitude.
TRUE / FALSE
- C. The length of the vertical line dependant upon the capability of a particular aerobatic aeroplane should not be considered in judging this figure.
TRUE / FALSE
- D. The rate of rotation at the apex of a stall turn will be considered.
TRUE / FALSE
- E. The vertical part of the figure will be scored on attitude and track of the aircraft.
TRUE / FLASE
- F. The aircraft must pivot around a point within 1/2 a wingspan of its C of G remaining within the vertical geometric plane and without rotation around the longitudinal axis.
TRUE / FALSE

20. **In the performance of a stall turn (ARESTI CAT Family 5) at the top of the vertical line the pilot performs the stall turn in a downwind direction. This makes the stall turn look like it has been “flown over the top”, pivoting around a point which is outside $\frac{1}{2}$ a wingspan of the centre of gravity of the aircraft. How should you score this as a judge?**
- A. Don't downgrade the manoeuvre as the pilot cannot do anything about the wind and the criteria do not mention wind correction in the performance of stall turns
 - B. Apply the normal downgrading criteria of a point per half wingspan that the point around which the aircraft pivots is distant from the wingtip
 - C. Apply the normal downgrading criteria of a point per wingspan that the point around which the aircraft pivots is distant from the wingtip
21. **Considering the performance of both Family 5 and Family 6 figures and the phenomenon of “torquing off” ie rotating around the roll axis of the aircraft during the performance of the manoeuvre at the top of the vertical**
- A. No penalty is to be applied as this is generally a characteristic of the aircraft
 - B. The normal penalty of one point per 5 degrees would be applied to this error in both Family 5 and Family 6 figures
 - C. The penalty should be applied to Family 5 but not Family 6 figures
 - D. The penalty should be applied to Family 6 but not Family 5 figures
22. **During the performance of a tail slide (ARESTI CAT. Family 6.) a pilot flies the vertical up line inclined at 10 degrees off the vertical and torques off 10 degrees while the aircraft is sliding backwards. Considering this alone, what would be the highest score possible for this figure?**
- A. 7.0
 - B. 6.0
 - C. 4.0
 - D. 8.0
23. **If during the above figure the slide was less than $\frac{1}{2}$ the fuselage length, what would you score this figure?**
- A. 2.5. The competitor should receive some credit for the rest of the figure.
 - B. 0. It did not meet the required criteria.
24. **Family 7.1.-7.10. are loops. Choose which of the following statements are correct with regard to the judging criteria for this family.**
- A. All full loops must begin and end at the same altitude.
TRUE / FALSE
 - B. Variations in angular velocity in a loop (ie the rate at which the aircraft goes around the loop) must be downgraded.
TRUE / FALSE
 - C. Any roll before or after a half loop in Family 7. must be performed IMMEDIATELY before or after the half loop is completed.
TRUE / FALSE
 - D. Sharp corners in square or 8-sided loops will be scored higher than those figures flown as hesitation loops.
TRUE / FALSE

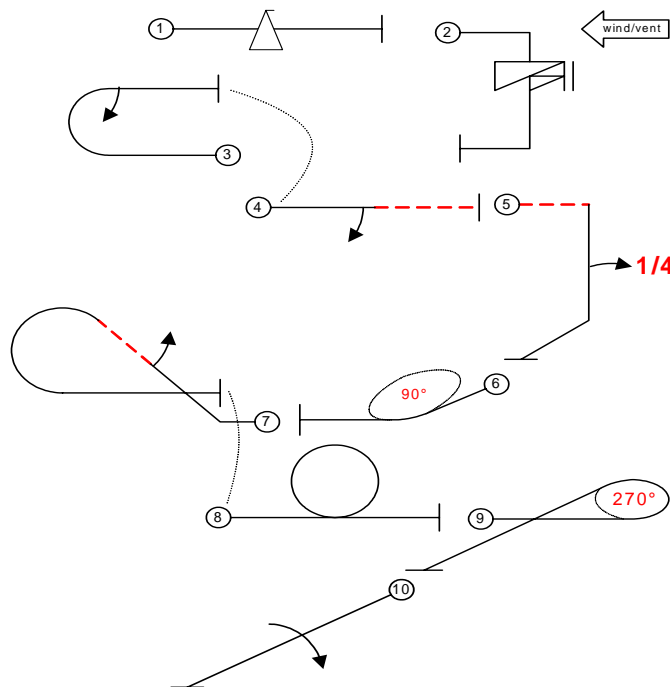
25. a) In relation to family 7.19 to 7.22 the pilot is required to make the top and bottom of the $\frac{3}{4}$ loop correspond to the entry and exit altitudes
A. True
B. False
- b) In relation to family 7.19 to 7.38 the pilot is required to make the entry & exit radii identical to the $\frac{3}{4}$ loop radii
A. True
B. False
26. Family 8. figures are combinations of lines, angles and loops. Which of the following statements are correct for this Family?
- A. For figures 8.1.-8.28., the radii of the part loops from and to the horizontal at the start and finish of the figures, and the half loop in the middle should all be of the same radii.
TRUE / FALSE
- C. For figures 8.1.-8.48., if there is a rotation on the straight line connecting loops and/or part-loops, it must be performed in the centre of this line.
TRUE / FLASE
- D. The longer the length of the line before and after the rotation, the higher the score.
TRUE / FALSE
27. What is the deduction for a line drawn between the two looping portions of family 8.49, 8.50 and 8.56
- A. 1 point
B. Minium 2 points
28. For hesitation rolls, the pause at each point should be definite, the rate of roll should be the same between hesitations and the pauses of equal duration.
- A. True
B. False
29. When judging ARESTI. Cat. Family 9.9. (Positive flick rolls) a definite break and a positive recovery should be seen. The rate of rotation IS a criterion.
- A. True
B. False
30. For ARESTI. Cat Family 9.10. (Negative flick rolls) the criteria for judging are the same as for Family 9.9. except that the nose of the aircraft MUST move in the direction AWAY from the cockpit at the initiation of the flick.
- A. True
B. False
31. The absence of a distinct horizontal line between figures will result in the score being reduced by:-

- A. One for each of the figures concerned.
 - B. Two for the following figure only.
 - C. Two for the preceding figure only.
 - D. No point reduction for either figure.
- 32. In a figure with a flick roll on a climbing vertical line, the competitor performs the flick immediately on reaching the vertical and projects the vertical line after the roll. How many penalty points must be deducted for this?**
- A. 1 point for a visible variation.
 - B. 3 points because the proportion of the length of line before and after is more than 1:2.
 - C. 4 points: 3 points because the proportion of the length of line before and after is more than 1:3 and an additional point for no line before or after the roll
 - D. 2 points only because this is all one must deduct if there is no line before or after.
- 33. The altitude at the beginning and end of the ARESTI Cat. Family 8. figures does not have to be the same.**
- A. True
 - B. False
- 34. How would you score a contestant's flick roll if the nose did not definitely break the line of flight indicating that it had not been fully stalled.**
- A. Zero.
 - B. Deduct 1 point.
 - C. Deduct 2 points.
 - D. Consult with the other judges and the chief judge at the debriefing.

35. **ARESTI.** Catalogue Family 9.11 and 9.12 are spins which can be added to certain basic Family 1 and 8 figures. Choose which of the following statements are correct concerning the judging of Family 9.11 and 9.12 figures.

- A. The horizontal line preceding the spin is graded on aircraft attitude.
TRUE / FALSE
- B. The aircraft must first stall and begin rotation.
TRUE / FALSE
- C. When the aircraft stalls, the nose will fall through the horizon and the wing should simultaneously drop in the direction of the spin.
TRUE / FALSE
- D. The vertical line projected after rotation has ceased, should be held for two seconds.
TRUE / FALSE
- E. After rotation is stopped, the vertical down line must be exactly 90 degrees and projected momentarily before completion of the basic figure
TRUE /FALSE
- F. The attitude of the aircraft during the spin is also considered.
TRUE / FALSE
- G. A zero mark will be given if the aircraft never stalls and the entry is flicked or barrelled.
TRUE /FALSE

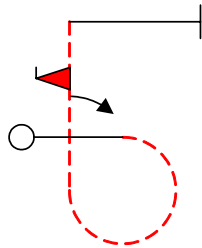
The following questions 36-39 are based on the judging of this typical Sportsman Sequence



36. **The contestant flies figure #1 before entering the box, flies figure #2 partly outside and partly inside the box and the remainder of the sequence inside. How would you score the contestant?**

- A. A zero would be given for figure #1 because it was flown completely outside the box.
- B. A zero would be given for #1 and #2 because they were flown outside the box.
- C. A zero would be given for figure #1 but figure #2 would be scored. However a boundary penalty would be given for figure #2.
- D. Both figures would be scored but two boundary penalties would be awarded.

37. **If a contestant flew figure #6 and turned the wrong way so that he exited into wind and then completed the sequence, how would you score this sequence?**
- A. Score figure #6. zero.
 - B. Score Figures #6, 7, 8, 9 and 10 all zero.
 - C. Score Figures #6, 7, 8 and 9 zero.
 - D. Score all the figures as the pilot has the option of rolling either way.
38. **At the judges' debriefing it was stated by 3 of the 5 judges that the contestant had flown below 1500ft. during figure #5. The contestant's score for the flight would be:-**
- A. Reduced by 10 points.
 - B. Zeroed.
 - C. Zeroed for figure #5. only
 - D. A penalty of 100 points would be awarded if he did not go 200ft. lower than the lower limit of 1500ft.
39. **After judging the above Sportsman's sequence you have noted that 4 figures were flown out of position. The highest positioning grade that you could award is:-**
- A. 4.0
 - B. 6.0
 - C. 8.0
 - D. 10.0
40. **Please refer to the following figure**



- A. the vertical roll must be performed as soon as the vertical is reached;
TRUE/FALSE
- B. the radius of the 3/4 loop may be different from the radius of the 1/4 loop at the top of the vertical line
TRUE/FALSE
- C. according to the rules regarding multiple rolls on a line this figure would be
LEGAL/ILLEGAL

41. While not specifically referred to as such in the Contest Rules some interruption penalties in aerobic competition are referred to as Programme Interruptions or “technical breaks” (term not in the rules). Specifically programme interruptions occur where a programme is interrupted

A. in order to make a change of direction between two figures of more than 45 degrees

TRUE/FALSE

B. in order to regain height, in the case of height difficulties

TRUE/FALSE

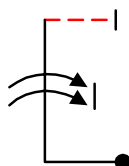
C. when there is an addition of a figure to a sequence, all subsequent figures correctly flown will be marked. If a figure is zeroed then repeated after an interruption to reposition, this will result in an additional interruption penalty.

TRUE/FALSE

Note:

A trap for young players! If a roll is added to a vertical or 45 degree line within a zeroed figure in order to come out in the right direction this is not regarded as addition of a figure. The figure is only regarded as being an additional one if added to regain the correct direction of flight after the aircraft returns to the horizontal.

42. Consider the following figure;



How many points would you deduct for the following faults.

A. the line before the roll up is twice the length of the line after the roll on the vertical up line.

.....points

B. there is no line before the roll but a clearly definable line after.

.....points

C. there is no line before or after the roll

.....points

D. the line before the roll is estimated to be 5 times the length of the line after the roll

.....points

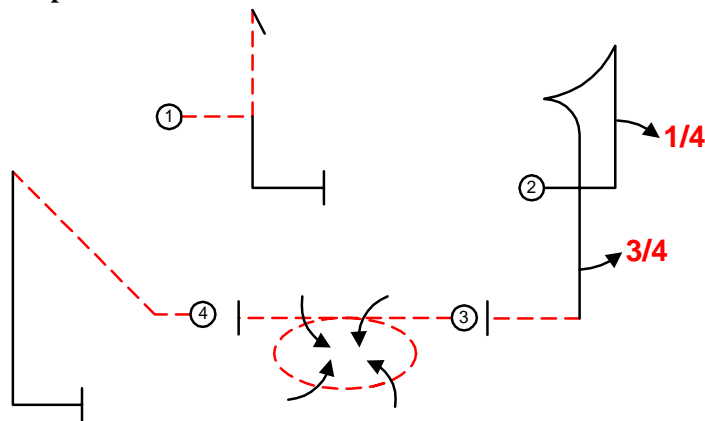
E. there is a clearly definable line before the roll but no line after.

.....points

F. the radius of the quarter loop at the top of the vertical line is half the size of the radius of the quarter loop at the bottom

.....points

43. Consider how you would score a pilot performing the following sequence of figures under the different scenarios posed.



Scenario A: The pilot performs the $\frac{3}{4}$ roll on the downline in figure 2 in the wrong direction but still pushes out inverted. Realising he is now flying out of the manoeuvre 180 degrees in the wrong direction he wing dips, then comes back into the box, rolls inverted, then wing dips again, then flies 3 and 4 in the right direction.

Manoeuvre Number zeroedbreaks

Scenario B: The pilot performs the $\frac{3}{4}$ roll on the downline in figure 2 in the wrong direction. He then performs a further $\frac{1}{2}$ roll on the same down line before coming out in the right direction inverted then continues onto 3 & 4

Manoeuvre Number zeroedbreaks

Scenario C: The pilot performs the $\frac{3}{4}$ roll on the downline in figure 2 in the wrong direction still pushing out inverted. Realising he is flying out of the manoeuvre 180 degrees in the wrong direction he then cleverly performs a 180 degree level inverted turn then continues onto 3 & 4.

Manoeuvre Number zeroedbreaks

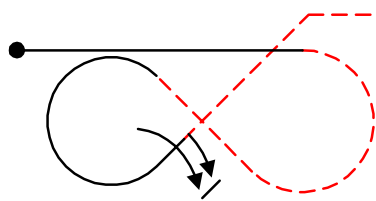
Scenario D: The pilot performs the $\frac{3}{4}$ roll on the downline in figure 2 in the wrong direction but still pushes out inverted. Realising he is flying out of the manoeuvre 180 degrees in the wrong direction he wing dips, then comes back into the box upright, wing dips again, then rolls inverted, then flies 3 and 4 in the right direction.

Manoeuvre Number zeroedbreaks

Scenario E: The pilot performs the $\frac{3}{4}$ roll on the downline in figure 2 in the wrong direction but still pushes out inverted. Realising he is now flying out of the manoeuvre 180 degrees in the wrong direction he wing dips, then comes back into the box, wing dips, then repeats manoeuvre 2 this time flying the figure correctly and ending in the right direction, then continues onto 3 & 4.

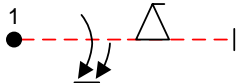
Manoeuvre Number zeroedbreaks

44. Answer the questions about the following figure



- A. the tops of the part loops, the entry and exit horizontal lines must all be performed at the same altitude:
TRUE/FALSE
- B. The 45 degree lines are judged on flight path:
TRUE/FALSE
- C. The 1/8 loop at the end of the figure can be a different radius to the radii of the 2 loops within the horizontal 8:
TRUE/FALSE
- D. The 1½ roll must be centred on the 45 degree line:
TRUE/FALSE

45. In the following figure the snap must be flown



- A. To the left
- B. To the right
- C. The same direction as the slow roll
- D. The opposite direction as the slow roll

46. In which of the Family 8. subfamilies are the radii of the part loops of the figures not required to be the same as each other?

Subfamilies

47. The duration of the pauses in a climbing vertical hesitation roll must increase as the aircraft slows down

- A. True.
- B. False.

48. In unlinked rolls, where the symbols are drawn pointing in the same direction, the rolls should flow from one type to the other with no perceptible pauses.

- A. True.
- B. False.

49. Prescribe the point reductions (if any) for the following faults in aerobatic figures. Note if the whole figure is zeroed.

- A. flicked spin entry
.....
- B. penduluming (ie tucking under of the nose of the aircraft past the vertical after falling through) in a tail slide without torquing off the correct plane of flight
.....
- C. no line between figures;points off for **each** figure
.....
- D. showing a line before the roll in a roll off the top
.....
- E. 20 degrees off the vertical in a vertical line
.....
- F. stoppage of the roll in a rolling circle
.....
- G. failure to create a recognisable pause in a hesitation roll
.....
- H. stall turning around a point one wingspan distant from the wingtip with torquing around by 10degrees.
.....
- I. 45° angle of bank only in a steep turn
.....
- J. only 10 degree change in angle of attack at commencement of an inside flick roll
.....
- K. displacement of the roll axis of the aircraft vertically or horizontally in the performance of a flick roll
.....
- L. stopping a flick roll 60 degrees short
.....
- M. three variations in roll rate in a rolling circle
.....
- N. over flicking a flick roll by 20 degrees then correcting back to the finish point
.....
- O. in a 3 of 4 hesitation roll the aircraft is 10 degrees over on the first point, 15 degrees over on the second point but on line at the end
.....

50. What penalty would be applied if a pilot, after choosing to fly the optional safety manoeuvres does not fly them continuously on the same axis and within the performance zone.

- A. No deduction
- B. 30 points for each and every figure flown incorrectly
- C. 50 points for each and every figure flown incorrectly