An Introduction to the Royal New Zealand Air Force Aircrew Selection Tests

Like many employers, the RNZAF uses aptitude tests in its selection procedures. In fact, the RNZAF has been using aptitude tests for aircrew selection since World War II.

Aptitude tests provide reliable and objective information about the likelihood of future job success. This ensures that applicants are offered trades that match their abilities. Many people, however, are understandably uneasy about sitting tests like ours.

This handout is designed to help you prepare for the initial aircrew aptitude tests that we use in our recruiting centres.

The tests will be similar to those featured in this handout. Each test will have its own instructions and will have a few practice examples for you to do before the main test begins. On your testing day we would like you to work QUICKLY and ACCURATELY throughout each test.

What to Do Beforehand?

You should find a quiet place - free from noise or interruption, and work through this handout. Read all the instructions carefully before you attempt each practice test. Work through each one as quickly and accurately as you can. This practice before the real tests will give you a general idea of the types of questions that will be asked, as well as boost your self-confidence. If you find that you struggle with the questions, you may need to check out other sources such as revision books, teachers, and peers.

Beginning the Test Session

Before the first test is given, you will be required to fill in a sheet giving your permission for the results of the aircrew tests to be used by RNZAF Recruiting Officers and RNZAF Psychologists to determine your suitability for your respective choice of trade/branch.

On the top of each answer sheet, details of your name, age, the date of testing, and the branch you are applying for, will be requested.

The testing session will then begin. Listen carefully to the instructions. If you are unsure about any of the instructions, do not be afraid to ask questions. Read each of the test questions thoroughly before answering. Because each test has a time limit, work QUICKLY and ACCURATELY.

What Sort of Tests Will You Be Sitting?

You will be required to sit three initial aircrew tests:

- General Maths
- Maths Reasoning
- Instrument Comprehension
General Maths

This test examines your ability to do basic algebra and trigonometry - most of which you will have covered at the fifth and sixth form level. Practice calculations manually as you will NOT be able to use calculators during the test. Here are some practice questions:

1. \((2x + 5)(x - 7) =\)
   A  \(2x^2 + 9x - 35\)
   B  \(2x^2 + 2x - 2\)
   C  \(2x^3 - 2x + 2\)
   D  \(2x^2 - 9x - 35\)
   E  \(2x^2 - 2x + 35\)

2. \(W = s^3t^2:\) If \(s = -2\) and \(t = 4\), then \(W =\)
   A  96
   B  -128
   C  -96
   D  8
   E  128

3. Reduce this fraction: \(\frac{5b^2xz}{40b^3xy}\)
   A  \(\frac{bxz}{b^2xy}\)
   B  \(\frac{1}{y}\)
   C  \(\frac{b}{8by}\)
   D  \(\frac{z}{b^2y}\)
   E  \(\frac{z}{8by}\)

4. A circle has a diameter of 8 cm. If \(\pi = \frac{22}{7}\), what is the area of the circle? (to 1 decimal place)
   A  43.1cm\(^2\)
   B  14.2cm\(^2\)
   C  50.3cm\(^2\)
   D  25.1cm\(^2\)
   E  201.1cm\(^2\)

5. If \(8x = 512\), then \(x =\)
   A  64
   B  3
   C  8
   D  0
   E  2

6. In the right angled triangle ABC, where AB is the hypotenuse, the sine of angle \(\angle ABC =\)
   A  \(\frac{BC}{AB}\)
   B  \(\frac{AB}{BC}\)
   C  \(\frac{AC}{AB}\)
   D  \(\frac{BC}{AC}\)
   E  \(\frac{AC}{BC}\)
Maths Reasoning

This test measures your ability to solve time-speed-distance problems common in aviation. Again, practice calculations manually as you will NOT be able to use calculators during the test.

Here are some practice questions:

1. An aircraft is to fly to a point 1500km from its base and then return. Because of a prevailing wind, the return trip will require one-third more petrol than the outgoing trip. If the petrol needed for the round trip is 525 gallons, how many gallons will be required for the outgoing trip alone? Assume a linear relationship between fuel consumption and aircraft speed.

2. An aircraft has enough petrol to go 675 km without refuelling when its tanks are 75 percent full. How many km could it go without refuelling when its tanks are half full?

3. If a mile is equal to 1.6 kms, how many miles are there in 80 kms?

4. An aircraft flew 750 km in 2.5 hours and then returned to its starting point by a route 120 km longer in 3.5 hours. What was its average speed for the entire trip?

5. An aircraft flew 1,500 km to its target at the rate of 200 km per hour and returned to its base at the rate of 250 km per hour. It used 120 gallons of petrol per hour when flying at the rate of 200 km per hour and 150 gallons when flying at the rate of 250km per hour. How many gallons of petrol did the aircraft start its flight with if it still had 100 gallons of petrol when it returned?

6. In order to work out the true air speed of an aircraft, pilots must increase the indicated air speed by 2 percent (assume it is not cumulative) for every 500 feet of altitude. If the indicated air speed at 6,000 feet is 200 km per hour, what is the true air speed?

7. If two aircraft started at the same time fly towards each other from bases 600 km apart, the first at an average ground speed of 200km per hour and the second at an average ground speed of 250km per hour, how many minutes will it take for them to meet?
This test looks at your ability to interpret information displayed on aircraft instruments. As with the other tests, previous flying experience or knowledge of aircraft instruments is not a prerequisite.

There are two parts to this test:

- Part A presents you with a panel of six aircraft instruments and asks you to select the statement that best describes what is happening with the plane.

- Part B presents you with two instruments and asks you to select the picture of the plane displaying that orientation.

Due to the detailed nature of the instructions for this test, there are no specific examples provided in this handout. However, familiarity with such instruments as a compass, an artificial horizon, an altimeter, and suchlike, will aid you in preparation for this test.
Answers

How did you get on?

Here are the answers to the GENERAL MATHS questions you attempted:

1. D
2. B
3. E
4. C
5. A
6. C

Here are the answers to the MATHS REASONING questions you attempted:

1. 225 gallons
2. 450km
3. 50 miles
4. 270 km ph
5. 1900 gallons
6. 248 km ph
7. 80 mins

You should now understand what kinds of questions are asked in the GENERAL MATHS test and the MATHS REASONING test. If you are still not sure about them, read the instructions again and have another go at the problems above.

If you are having trouble working them out, or require more practice examples, get hold of a Sixth Form Certificate or Bursary Mathematics Revision Book from your school or local bookshop.

GOOD LUCK!

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