

Candidate's Index Number.....  
(BOLD FIGURES)

Candidate's Name and Initials.....  
(BLOCK CAPITALS)

Name of Examination Centre.....

# ROYAL AIR FORCE

## EXAMINATION FOR THE ENTRY OF APPRENTICES, AIRCRAFT/ADMINISTRATIVE

9th February, 1960

### (I) MATHEMATICS

	Time allowed	Marks obtained
Section I	30 minutes	
Section II	1 hour	
Total	1 hour 30 minutes	

### INSTRUCTIONS

1. DO NOT TURN OVER OR OPEN THIS BOOK UNTIL YOU ARE TOLD.
2. Write your index number, name and examination centre in the spaces at the top of this page.
3. This examination paper is in two sections. Do not start either section until told to do so. You will be allowed 30 minutes for Section I and 1 hour for Section II.
4. Answer as many questions as you can, working quickly but carefully. Do not worry if you cannot answer all the questions in the time allowed.
5. Show all your working in the space below the questions and write the answer on the line provided. Make any alterations clearly.
6. When told to do so start working Section I. If you have time, check over your working.
7. Do not turn to Section II until told to do so, but then work through the questions until told to stop. If you have time, you may check over your working in Section II, BUT YOU MUST NOT TURN BACK TO SECTION I.

## SECTION ONE

Attempt **ALL** questions.

Read each question carefully.

All questions carry equal marks.

Do not waste time on any question you cannot do but go straight on to the next one.

Work quickly and carefully.

Logarithm tables are **NOT** to be used in this section.

You have 30 minutes for this section. **BEGIN.**

<p>Bring</p> <p style="text-align: center;">1</p> <p>1 sq yd 5 sq ft to square inches</p>	<p>Multiply</p> <p style="text-align: center;">2</p> <p>706 by 105</p> <p>_____</p> <p>_____</p> <p>=====</p>	<p>Divide</p> <p style="text-align: center;">3</p> <p>50,176 by 196</p>																																																												
<p style="text-align: center;">4</p> <p>Find the sum of the difference between 97 and 29 and half the product of 18 and 46.</p>		<p>Subtract</p> <table style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;"><math>\pounds</math></td> <td style="text-align: center;"><math>s</math></td> <td style="text-align: center;"><math>d</math></td> </tr> <tr> <td style="text-align: center;">76</td> <td style="text-align: center;">1</td> <td style="text-align: center;">4</td> </tr> <tr> <td style="text-align: center;">36</td> <td style="text-align: center;">18</td> <td style="text-align: center;">10</td> </tr> <tr> <td colspan="3" style="text-align: center;">-----</td> </tr> <tr> <td style="text-align: center;"><math>\pounds</math></td> <td></td> <td></td> </tr> <tr> <td colspan="3" style="text-align: center;">=====</td> </tr> </table>	$\pounds$	$s$	$d$	76	1	4	36	18	10	-----			$\pounds$			=====																																												
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gal	qt	pt	gills																																																											
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12

Find the value of

$$17.95 - 25.99 + 8.09$$


---

13

Multiply

$$.045 \text{ by } 29.06$$


---

14

Divide

$$.0834 \text{ by } 6.95$$


---

15

Convert:

 $\frac{3}{8}$  to a decimal fraction
 

---

16

Find the value of

$$1.76 \div .025 \times .5$$


---

In the next four questions give your answer in the lowest terms and as a mixed number when the answer is greater than one.

17

$$\frac{17}{20} - 4\frac{1}{5} + 3\frac{1}{4}$$


---

18

$$9\frac{1}{2} \times 1\frac{7}{11}$$


---

19

$$2\frac{1}{5} \div 5\frac{3}{4}$$


---

20

$$\frac{2}{3} \text{ of } 5\frac{1}{4}$$

$$\left(\frac{2}{3} + \frac{5}{12}\right)$$


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END OF SECTION ONE

Check over your work in this Section until time is up.

**DO NOT TURN OVER UNTIL YOU ARE TOLD**

## SECTION TWO

Attempt **ALL** questions.

Read each question carefully.

**Do not waste time on any question you cannot do but go straight on to the next one.**

Work quickly and carefully.

You have 1 hour for this section.

**DO NOT TURN BACK TO SECTION ONE. BEGIN.**

21

Given that one statute mile = 5,280 feet and one nautical mile = 6,080 feet express a distance of  $16\frac{1}{2}$  nautical miles in statute miles.

Answer.....

22

A cylindrical pipe with a bore of 5 inches is 8 ft long and its walls are  $\frac{1}{4}$  inch thick. Find the weight of this piece of piping if it is made of a metal 7.2 times as heavy as water.  
(1 cu ft of water weighs 62 $\frac{1}{2}$  lb)

Answer.....

23

(a) From the formula  $F = \frac{1}{3}C + 32$  transpose for C.

Answer.....

(b) Simplify:—

$$\frac{7ax + 7bx}{x^2R^2 - b^2}$$

Answer.....

24

Solve for P and Q :—

$$2P - 7Q = 5 = 4P + Q$$

Answer.....

25

Solve :—

$$24A^2 + 17A - 20$$

Answer.....

26

Using your mathematical tables find the value of :—

(a)  $0.00052 \div 0.007503$

Answer.....

(b)  $\sqrt[3]{0.000314}$

Answer.....

27

An aircraft carries 2,000 gallons of fuel of which 10 per cent. is always kept in reserve. Cruising at 200 miles per hour the aircraft consumes 96 gallons of fuel per hour. By reducing its speed by 12 per cent. the fuel consumption is reduced by 84 per cent. Calculate how much the range is increased or decreased when the aircraft flies at the reduced speed.

*Answer*.....

28

Use your tables to find:

(a) the angle  $X$  when (i)  $\tan X = 2.6051$  (ii)  $\sin X = .9511$  (iii)  $\cos X = .4384$

*Answer*.....

(b) the value of  $A$  such that

$$\frac{\sin A}{4.69} = \frac{\sin 36^\circ}{7.85}$$

*Answer*.....

29

Two boxes A and B contain packets of cartridges. The total number of packets in the two boxes is 28. Five packets were transferred from box B to box A, and box A then had three times as many packets as box B. Calculate the number of packets each box originally contained.

Answer.....

30

A meteorological balloon is observed from a point distant 800 yds in a horizontal direction. During one minute its angle of elevation is observed to increase from  $38^\circ$  to  $45^\circ$ . Assuming that the balloon is ascending vertically, find its average rate of climb in feet per second.

Answer.....