AN ROINN OIDEACHAIS
(Department of Education).

BRAINNSE AN MHEADHON-OIDEACHAIS
(Secondary Education Branch).

INTERMEDIATE CERTIFICATE EXAMINATION, 1937.

MATHEMATICS (Arithmetic).

FRIDAY, 18*th JUNE*.—Morning, 10 a.m. to 12 noon.

The total number of questions answered should not exceed *six*.

Mathematical Tables may be obtained from the Superintendent.

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1. Show that

$$2\tfrac{1}{6}\times\frac{3}{16}+\frac{4\tfrac{1}{3}}{3\tfrac{7}{15}}-\frac{3\tfrac{2}{9}}{4\tfrac{8}{27}}\times\frac{7}{8}=1.$$

Find the first five figures of the square of 4789608.

[30 marks.]

2. If £1=4·97 dollars, find the value of
   (i) £319 14s., in dollars, to the nearest dollar ;
   (ii) 697 dollars, in pounds, to the nearest pound.

[30 marks.]

3. Express
   (i) 100 kilograms in lbs. ;
   (ii) an acre in sq. metres.
Answer to the nearest unit in each case.

[30 marks.]

4. Every year whose number is divisible by 4 is a leap year unless that number is also divisible by 100. When the number is divisible by 100 the year in question is a leap year only when the number is divisible also by 400. Using that basis calculate the average number of days in a year.

[30 marks.]

46

5. The surface ($4\pi r^2$) of a sphere is 1 square foot ; find its volume ($\frac{4}{3}\pi r^3$) to the nearest cubic inch.

[32 marks.]

6. A commercial traveller is paid £3 10s. per week together with a commission of 5% on the value of all orders secured by him. Find, to the nearest £1, the average weekly value of the orders which he obtained when he earned £500 per annum.

Would his income have been greater or less if he had received 8% commission on his orders without any weekly sum in addition ?

[33 marks.]

7. A, B, C walk at 4, $4\frac{1}{2}$, 5 miles per hour respectively. They start from the same point to walk round a track, C walking in the opposite direction to A and B. C meets A one minute after meeting B. Find the length of the track in yards.

[35 marks.]

8. Use the Tables to calculate the values of
   (i) $97.74 \times (2.807)^3$;
   (ii) $\log_{10}0.2 \div \log_{10}0.3$.

[35 marks.]

9. American Savings Bonds increase $33\frac{1}{3}\%$ in value in ten years. The interest is compounded semi-annually. Find the rate per cent. per annum, as accurately as possible by using the Tables.

[35 marks.]