

AN ROINN OIDEACHAIS

(Department of Education.)

BRAINNSE AN MHEADHON-OIDEACHAIS

(Secondary Education Branch).

INTERMEDIATE CERTIFICATE EXAMINATION, 1939.

MATHEMATICS (Arithmetic).

FRIDAY, 16th 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.

1. Express

(i) £38 14s. 9d. as a decimal of £83 6s. 8d.

(ii) 3 days 19 hours 21 mins. as a decimal of a week.

[30 marks.]

2. A bankrupt owes £268 10s. and his assets are £38 10s. Find, to the nearest penny, the rate in the £1 which he can pay. What sum of money remains undistributed after this dividend has been paid?

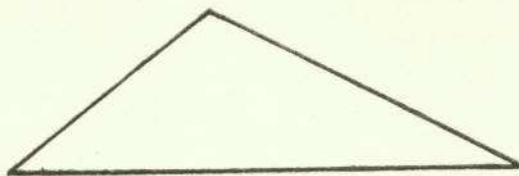
[30 marks.]

3. Find, to three significant figures, the value of

$$\frac{1}{(17.69)^2} - \frac{1}{(82.31)^2}.$$

[30 marks.]

4. The figure represents the plan of a field on a scale of 1 cm. to 100 yards.



Find the area of the field in acres, to the nearest $\frac{1}{10}$ acre.

[30 marks.]

5. What sum at compound interest will amount to £325 at the end of the first year and to £338 at the end of the second year? What will be the amount at the end of the third year?

[32 marks.]

6. The level of the water in a cylindrical vessel, internal diameter 18 inches, is raised 1.86 inches approximately when an iron cube is completely immersed in it. Find the length of the side of the cube.

[33 marks.]

7. The circumferences of the large and small wheels of a four-wheeled vehicle are 10 ft. $3\frac{1}{2}$ ins., and 7 ft. $8\frac{1}{2}$ ins. What is the least distance in which each will have turned an exact number of times? In what distance will a small wheel have made 12 revolutions more than a large one?

[35 marks.]

8. Use the formula $V=14d^2\sqrt{H}$ to find V when $d=12$ and $H=0.7$; and to find d when $V=1,500$ and $H=0.9$.

[35 marks.]

9. Show that a number which is a perfect square cannot end in 2, 3, 7, or 8 but that a perfect cube can end in any digit. Prove that 492,172,800 is neither a perfect square nor a perfect cube.

What year in the present century is a perfect square?

[35 marks.]