

# AN ROINN OIDEACHAIS

(Department of Education).

## BRAINSE AN MHEÁN-OIDEACHAIS

(Secondary Education Branch).

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LEAVING CERTIFICATE EXAMINATION, 1928.

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### MATHEMATICS.

#### ARITHMETIC—Paper B.

FRIDAY, 15th JUNE.—MORNING, 10.30 A.M. TO 12 NOON.

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Five questions may be answered.

1 (a) or 1 (b) may be answered, but not both.

Mathematical Tables may be obtained from the Superintendent.

1 (a). Evaluate by logarithms  $\sqrt{\frac{(\frac{1}{4})^9 \times 10 \cdot 144 \times \cdot 308}{250 \times \cdot 000414}}$  and verify the result by direct calculation.

[29 marks.]

Or

1 (b). Show that any vulgar fraction can be expressed either as a terminating or as a repeating decimal.

Reduce  $\cdot 02\dot{2}\dot{7}$  to a vulgar fraction, explaining each step of the process.

Simplify 
$$\frac{3 \cdot \dot{1}\dot{2} - 2 \cdot \dot{3}\dot{1}}{\cdot \dot{8}\dot{1}}$$

[29 marks.]

2. Assuming that £1 = 124 francs, give a graphical method for converting "francs per kilogram" into "pence per lb." and vice-versa. Use the method to express

(i) a cost of 2s. 4d. per lb. in francs per kilogram ;

(ii) a cost of 3.75 francs per demi-kilo. in pence per lb.

(Indicate clearly the positions of the readings on the graph).

[29 marks.]

3. A, B and C were partners in business. A's capital was  $\frac{2}{3}$  of B's, and B's was  $\frac{4}{7}$  of C's. A's capital was employed for 8 months, B's for 9 months and C's for 10 months. The net gains were £2,674; what should be the share of each?

[29 marks.]

4. A sports-field is composed of a rectangle 110 yards in length, and two semi-circular ends. The perimeter of the field is 440 yards. A running-track round the field on the outside is 15 ft. wide: find the cost of covering the track with cinders at 1s. 6d. per sq. yd.

[30 marks.]

5. A shopkeeper has been selling an article at a profit of  $37\frac{1}{2}$  per cent. The cost price is reduced by two pence and he reduces his selling price by two pence, thereby increasing his profit to 40 per cent. At what price is he now selling the article?

[31 marks.]

6. Find, in yards, the radius of a circle whose area is half an acre. Find also, in acres, to three places of decimals, the area of an inscribed equilateral triangle.

[32 marks.]

7. A, B and C follow the same route at 3, 4 and 5 miles an hour; they set out from the same place at 1, 2 and 3 o'clock respectively; when B overtakes A he sends him back with a message to C; when will C get the message?

[32 marks.]

8. Explain why the interest on the interest of the true present worth is equal to the difference between the interest and the true discount.

The interest on the true discount of a sum is £1 15s. The interest is  $\frac{21}{30}$  of the discount. Find the sum. [35 marks.]