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(Department of Education.)

BRAINNSE AN MHEADHON-OIDEACHAIS
(Secondary Education Branch).

INTERMEDIATE CERTIFICATE EXAMINATION, 1941.

MATHEMATICS (Arithmetic).

WEDNESDAY, 18th 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. Simplify

$$\frac{17\frac{2}{3} + 19\frac{1}{3} - 26\frac{1}{8}}{14\frac{1}{8} - 8\frac{3}{8} - \frac{7}{8}}$$

[30 marks.]

2. Find the cost of $79\frac{1}{2}$ tons at £3 14s. 6d. per ton.

If $2\frac{1}{2}\%$ discount be allowed, what is the actual amount
payable?

[30 marks.]

3. Express, correct to three decimal places in each
case:—

(i) 13s. 9½d. as a decimal of £1;

(ii) 12 cwts. 3 qrs. 7 lbs. as a decimal of 2 tons
5 cwts.;

(iii) 3.87 square centimetres as a decimal of a
square inch.

[30 marks.]

4. A sum of £1,095 was deposited in a bank on 8th April, 1941. If simple interest be allowed at the rate of 1% per annum, what is the earliest date on which there will be at least £1,100 to the credit of the depositor?

[30 marks.]

5. The population of a certain town decreased by 10% in one year and decreased a further $12\frac{1}{2}\%$ the following year. The population was then 14,553. What was the population at the beginning of the two-year period? What was the percentage decrease for the whole period of two years?

[30 marks.]

6. By using the Tables, or otherwise, calculate, to three significant figures in each case, the value of

(i) $(.6039)^3$;

(ii) $\sqrt{67.35} \times \sqrt{.09628}$

[35 marks.]

7. Show that each of the following statements is *incorrect* :

(a) The cost of 9 tons 15 cwts. 2 qrs. at £3 15s. per ton is £37 13s. $1\frac{1}{2}$ d.

(b) A speed of 30 miles per hour is equivalent to 22 feet per second.

(c) A boy who was 5,229 days old on 16th June, 1941, was born on a Saturday.

(d) If a man walks into town at 4 miles per hour and back again at 3 miles per hour, his average speed for the whole journey is more than $3\frac{1}{2}$ miles per hour.

[35 marks.]

8. A cylindrical measure is 9 inches high and $5\frac{1}{2}$ inches in diameter (internal measurements). How many such measures could be completely filled from a 10 gallon jar full of water? Find also, to the nearest inch, the height to which the water remaining in the jar would rise if put into a similar measure.

[35 marks.]

9. The following table shows approximately the Simple and Compound Interest on £100 at 5% per annum over a number of years:—

Number of Years	0	5	10	15	20	25	30
Simple Int. in £s.	0	25	50	75	100	125	150
Compound Int. in £s.	0	28	63	108	166	235	333

(i) Verify, by calculation, the figure for the Compound Interest for 5 years.

(ii) Illustrate the table by means of a graph, using the same axis for Simple and Compound Interest, and use it to find approximately

- the difference between the Simple and Compound Interest for 12 years,
- the number of years for which the Compound Interest exceeds the Simple Interest by £50,
- the number of years for which the Compound Interest is double the Simple Interest.

[35 marks.]