

# AN ROINN OIDEACHAIS

(Department of Education).

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INTERMEDIATE CERTIFICATE EXAMINATION, 1957.

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## MATHEMATICS (Arithmetic).

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TUESDAY, 4th JUNE.—MORNING, 10 TO 12.

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All questions to be answered.

Mathematical Tables may be obtained from the Superintendent.

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1. A man buys 8 tons 13 cwt. of coal at £9 12s. 6d. per ton; find the cost of the coal.

If he sells half of it at £10 14s. per ton and the rest of it at £10 6s. per ton, find the percentage profit which he makes on the whole transaction.

[25 marks.]

2. (a) Find the value of  $(8\frac{1}{3} - 5\frac{2}{3}) \div 1\frac{1}{3}$ .

Find the least common multiple and the greatest common measure of 840, 504, 315.

(b) Express 8s. 6d. as a percentage of 13s. 3d., correct to two significant figures.

[25 marks.]

3. (i) A savings certificate increases in value from £1 to £1 5s. 6d. in six years. What rate of simple interest would give the same increase in the same time?

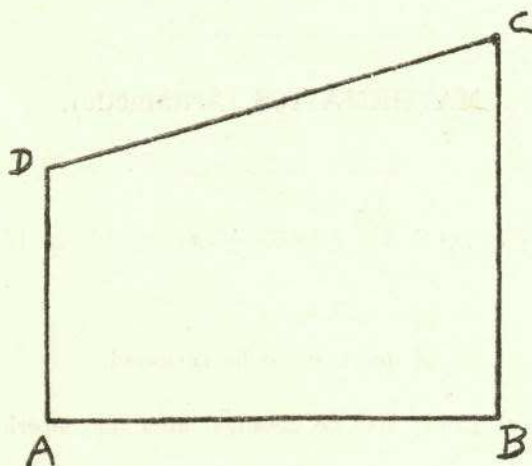
(ii) Find the compound interest on £160 for 2 years at 5% per annum.

What sum of money would amount to £2,646 in 2 years at 5% per annum compound interest?

[30 marks.]

4. ABCD represents a field drawn to a scale of 1 inch to 100 yards.  $AB=2.4$  in.,  $BC=2$  in.,  $AD=1.3$  in., and the angles at A and B are right angles. Find the area of the field in acres.

Find also the radius of a circular field of the same area. (Take  $\pi=3\frac{1}{7}$ , and give your answer correct to the nearest yard).



[30 marks.]

5. From the formula  $V = \sqrt{\frac{\rho y}{r} \cdot \frac{T}{273}}$  calculate the value of  $V$ , correct to three significant figures, when  $\rho=1.013 \times 10^6$ ,  $y=1.4$ ,  $T=285$ ,  $r=.001293$ .

[30 marks.]

6. A cylindrical tank standing upright is full of petrol. The internal diameter of the tank is  $2\frac{1}{2}$  feet, and its internal height is 5 feet. Find how many gallons it contains, correct to the nearest gallon.

If 100 litres of petrol are drawn off, how far (to the nearest inch) will the level of the petrol fall?

[See Tables, p. 33.]

[30 marks.]

7. A bus leaves  $A$  at 2 p.m. and travels to  $B$  at a steady speed of 20 m.p.h. A motorist leaves  $A$  on the same journey at 2.15 p.m. travelling at 40 m.p.h., but when he has covered 25 miles he returns to  $A$  at 40 m.p.h.; after a delay of 10 minutes at  $A$  he starts off again and travels to  $B$  at a steady speed of 50 m.p.h. and reaches  $B$  at the same time as the bus. Find by means of a graph

(i) the distance from  $A$  to  $B$ ,

(ii) the times at which the motorist and the bus are six miles apart.

[30 marks.]