

INTERMEDIATE CERTIFICATE EXAMINATION, 1968

MATHEMATICS (Arithmetic)

WEDNESDAY, 12th JUNE - MORNING, 10 to 12

All questions to be answered

Mathematical Tables may be obtained from the Superintendent.

1. £850 is invested at 5% per annum compound interest. Find the amount after three years giving your answer correct to the nearest pound. (25 marks)

2. A lawn measuring 50 feet by 32 feet is to be sown with seed at the rate of $1\frac{1}{2}$ oz. per square yard.

- (i) What weight of seed is required?
 (ii) If seed costing 5s. 4d. per lb. is mixed with an equal weight of seed costing 8s. per lb. and used to sow the lawn, calculate the cost of seed per square yard of lawn. (25 marks)

3. (i) If $E = \frac{a(r^n - 1)}{r - 1}$ give a rough estimate of E when $a = \frac{1}{5}$, $r = -0.22$ and $n = 14$.

(ii) $T = R \sqrt{\frac{n-2}{1-R^2}}$, Evaluate T correct to two places of decimals given that $n = 8$, and $R = 0.8$. (30 marks)

4. A dealer buys 30 dozen articles at 16s. per dozen and also pays an import tax of 6d. in the pound on the buying price. Find the total cost of the articles.

Some of the articles are sold at 2s. 0d. each and the remainder at 1s. 8d. each. If the ratio of the number sold at 2s. 0d. each to the number sold at 1s. 8d. each is 1 to 7 find the percentage profit. (30 marks)

5. (i) If the length of the circumference of a circle is increased from 6π inches to 8π inches by how many inches is the length of the radius increased?

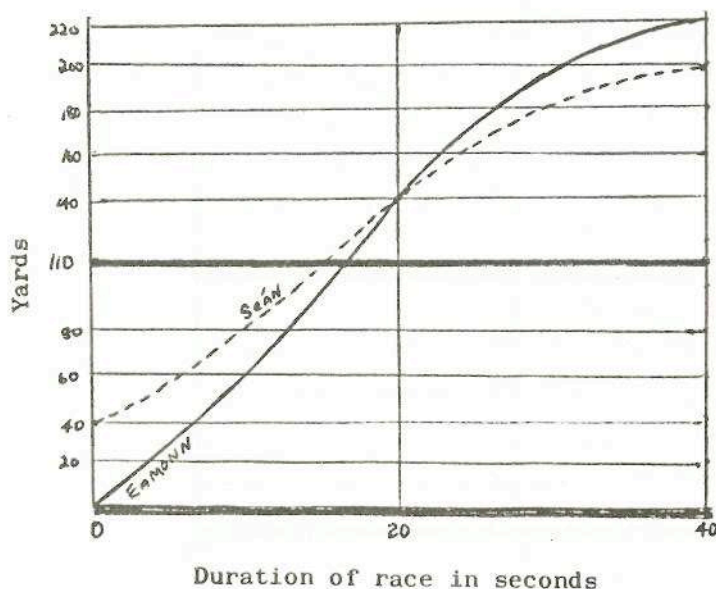
(ii) The surface area of a solid cube is 86.64 square inches. Calculate the area of the largest circle which can be drawn on one face of the cube, giving the answer correct to three significant figures. (Take $\pi = \frac{22}{7}$).

(iii) A rectangular sheet of paper measuring 11 inches by 7 inches is just large enough to be wrapped once round a solid cylinder so that the pair of shorter edges just meet. Calculate the diameter of the cylinder and the volume of that part of the cylinder which the paper enfolds. (Take $\pi = \frac{22}{7}$). (30 marks)

6. In Belgium the currency in use is the franc and £1 is worth 140 francs.

- (i) Find in shillings the cost of a book whose price is 308 francs.
 (ii) A train journey of 160 miles in Ireland costs £2.10s.3d. A train journey of 90 kilometres in Belgium costs 135 francs. Using the approximation 1 kilometre = 0.625 miles, find in pence correct to one place of decimals the average cost of travel per mile in the case of the specified journeys in each country. (30 marks)

7. The diagram is a graph of a 220 yard race between two boys, Eamonn and Sean. Study the graph and then answer these questions:



- (i) Who won the race?
 (ii) What was the duration of the race?
 (iii) For how many seconds of the race was Sean ahead of Eamonn?
 (iv) Which half of the distance, the first or the second, took the longer time?
 (v) What was Sean's average speed in feet per second?

(30 marks)