

EXAMINATION FOR STATE SCHOLARSHIPS.

MATHEMATICS.

WEDNESDAY, 16TH DECEMBER, 1936—Morning, 9.30 to 12.

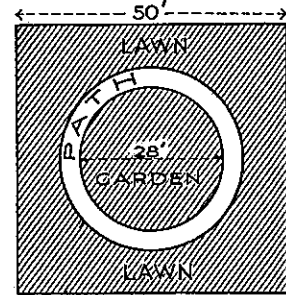
(TWO HOURS AND A-HALF ALLOWED.)

1. $5,573,612 - (78,936 + 254,65 + 1,864,435 + 989 + 549,667)$.
2. (a) $1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 \times 9$.
- (b) The area of Queensland is 670,500 square miles. Fifty-three per cent. of this is within the Tropics. How many acres are there not within the Tropics?
- (c) Your school "goes in" at 9.30 a.m. and "comes out" at 4 p.m. If you have 10 minutes "play-time", and $1\frac{1}{2}$ hour for "lunch" every day, what time do you spend "in school" during an ordinary school week?
- (d) A farmer ploughs a furrow a furlong long. The average width of a furrow is 1 ft. 2.4 in. How many furrows will he complete when he has ploughed an acre?
- (e) A boy had to find .6375 of a sum of money, but by mistake he found .6735 of the sum, and was out £1.13s.9d. in his answer. What was the sum of money?
- (f) A quart of milk weighs 2.56 lb. A jug when empty weighs 1.35 lb. The jug holds $1\frac{3}{4}$ pts. of milk. Find its weight when full of milk.
3. (a) A small plot $5\frac{1}{2}$ yds. square yielded 140 lb. of potatoes. A field, 3 acres in area, produced 23 tons of potatoes. Which was the more productive, the field or the plot? Show how you arrive at your conclusion.
- (b) If it cost £122.10s. to fence a rectangular field 40 rods by 30 rods, how much will it cost to fence a field 90 rods square?
- (c) A girl used the following recipe for making chocolate:- 5 lb. cocoa; 20 oz. icing sugar; $1\frac{1}{2}$ oz. vanilla; 2 cups of milk. She wishes to use only 2 lb. of cocoa. What weight of each of the other ingredients should she use? (Assume that a gallon of milk weighs 10 lb. and that a cup holds half-a-pint.)
- (d) In 1912, a footrunner in Sydney ran 130 yards in 12 seconds. In 1936, a footrunner in Berlin ran 100 metres in 10.4 seconds. A metre measures 39.37 inches. Which runner attained the greater average speed, and by what distance per second?
4. (a) A man deposited £60.19s. in the Commonwealth Savings Bank on the 24th March, 1936, and withdrew £50 on the 3rd May, 1936. What interest would be due to him on the 30th June, 1936? (The Bank allows interest at the rate of 2 per cent. per annum, but does not pay interest on part of a pound, or for part of a calendar month.)
- (b) A farmer sold a team of horses, but did not receive his payment, £98, until 1 year 11 months after the sale. At the time of the sale, he had a cash offer of £90 for them. If he had accepted the cash offer and invested the money at 3 per cent. per annum, simple interest, would he have been better or worse off, and by how much?
5. Measure the paper on which this Examination test in Mathematics is printed. If the Government Printer cuts the paper used for the test from large sheets 59 in. by 39 in., how many of these sheets would be required to print Mathematics papers for 7040 candidates?

2.

6. A rectangular sheet of tinfoil 15 ft. long and $54\frac{1}{2}$ in. wide is folded into the form of a pipe of the same length as the sheet of tinfoil. To make the joint, one edge overlaps the opposite edge half an inch. Find, to the nearest pound, the weight of water the pipe holds when full.
(1 cub.ft. of water = $6\frac{1}{4}$ gals. 1 gal. weighs 10 lb.)

7. The figure is the plan of a square enclosure. The lawn has an area of $1537\frac{1}{2}$ sq.ft.



Find -

- The total area of the enclosure;
- The area of the garden;
- The area of the path;
- The width of the path.

8. (a) Subtract $a + b \times a + b$ from $(a + b) \times (a + b)$.

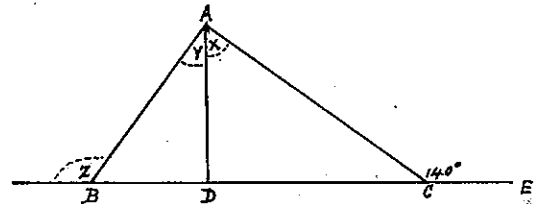
(b) If $V = R^2 \times \frac{22}{7} \times H$, find a formula for H.

(c) Tin cost p pence per lb., and copper cost q pence per lb. If equal weights of tin and copper are used to form a mixture, what weight of the new mixture can be made by spending $\pounds x$?

9. (a) On your paper mark three points A, B, C, each $1\frac{1}{2}$ inches from the other two. Now describe a circle with its circumference passing through A, B, and C.

(b) A motorist travelled due South for 27 miles, and then due West for the same distance. If he then travelled $27\sqrt{2}$ miles in a North-Westerly direction, how far in a straight line was he away from the starting point?

(c) The triangle ABC has a right angle BAC, and AD is drawn perpendicular to BC. If the angle ACE contains 140° , find the size of the angles marked x , y , and z in the figure.



10. ATTEMPT ONE ONLY OF THE FOLLOWING:-

(a) A workman receiving 2s.4d. an hour made an article weighing 20 lb. in 16 hours. The material, 10% of which was wasted in the working, cost 9d. a lb. At what price must the article be sold to give 12 $\frac{1}{2}$ % profit on the total cost?

OR

(b) Green cane costs 7s. a ton to cut, and burnt cane is cut for 15% less. A farmer has 140 acres of cane which average 25.5 tons to the acre. What would it cost to cut his cane if 84% of the crop is burnt? (Answer to the nearest £.)

OR

(c) A butter factory sends overseas a consignment of 350 tons of butter which is sold in London at 1s.1 $\frac{1}{2}$ d. per lb. Expenses are 3d. a lb. If the English pound is worth £1.5s.2d. of Australian money, find the net value of the consignment in Australian money.