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(Department of Education.)

INTERMEDIATE CERTIFICATE EXAMINATION, 1944.

ELEMENTARY MATHEMATICS (Algebra).

FOR GIRLS ONLY.

WEDNESDAY, 14th JUNE.—MORNING, 10 TO 11.30.

Six questions may be answered.

All questions carry equal marks.

Mathematical Tables may be obtained from the Superintendent.

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1. $A=x^2+3y+y^2$; $B=x^2+xy-y^2$; express the value of A^2-B^2 in simplest form in terms of x and y.

2. Solve the equations:

(i) $(x+\frac{3}{2})^2-(x-\frac{1}{2})^2=2x+5$;

(ii) $\left.\begin{aligned} 4x-5y&=10(x+y) \\ 3x&=5(1-y) \end{aligned}\right\}$

3. A man did $\frac{2}{3}$ of a journey at the rate of 8 miles an hour and the remainder of it at 10 miles per hour. If he had done the whole journey at 9 miles an hour it would have taken him 10 minutes less. Find the length of the journey.

4. Solve the equation $\dfrac{x^2-2x+4}{x-1}-\dfrac{x^2-4}{x+1}=0$.

Verify your solution.

5. Factorise

(i) $ac+bd-bc-ad$;

(ii) $6a^2-5ab-6b^2$;

(iii) $x^2+4xy+4y^2-p^2+2pq-q^2$.

6. A and B each bought a horse and sold them again. A made a profit of £15 and B a profit of £16. If each had got the price that the other did get, A would have had a profit of 10% and B a profit of 50%.

Find the cost price of each horse.

7. Solve the equation $5x^2=6x+9$ and calculate the values of the roots to *two* places of decimals.

8. A sheet of paper was 20 ins. long and 18 ins, wide. A border x ins. wide all round was then cut off and the area of the border was 20% of that of the original sheet. Find the value of x.

9. Solve graphically the following :

A left a house at 8 a.m. walking at the rate of $3\frac{1}{2}$ miles per hour. B followed him from the same place at 9.30 a.m., cycling at 10 miles an hour.

(i) At what time did B overtake A ?

(ii) How many miles from the house were they at that time ?

(iii) At what time while cycling was B two miles behind A ?