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(Department of Education).

INTERMEDIATE CERTIFICATE EXAMINATION, 1950.

ELEMENTARY MATHEMATICS (Algebra).

FOR GIRLS ONLY.

TUESDAY, 13*th JUNE*.—MORNING, 10 TO 12.

Six questions may be answered.

All questions carry equal marks.

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1. Find the value of

$$\frac{x^3+a^3}{a(x^2-ax+a^2)}+\frac{a(x^2+ax+a^2)}{x^3-a^3}$$

when $x=5$ and $a=3$.

2. Solve the equations :

(i) $5-\{4(x-1)-2x+1\}=0$;

(ii) $\begin{cases} x+y=3 \\ 5x-3y=-1. \end{cases}$

Or

2. A girl spends 9s. 9d. in buying Christmas cards, some at 3d. each and the rest at 4d. each. She spends 6s. $10\frac{1}{2}$d. in posting the whole lot at $2\frac{1}{2}$d. each. How many cards of each kind did she buy ?

3. Find the factors of :

(i) $4x^2-7x-15$;

(ii) $2a^2+6ac-ab-3bc$;

(iii) $(a-2b)^2-(2a-7b)^2$;

(iv) $(a+1)^2-(a+1)-6$.

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4. If eggs cost x pence per dozen, find

(i) the cost in pounds of y dozen,

(ii) how many eggs can be bought for z pence,

(iii) the profit in pence and the percentage profit made by selling p eggs for q pence.

Or,

4. Express each of the following by an algebraic equation:

(i) twice the square of a certain number is equal to nine times that number diminished by 10;

(ii) the square of the sum of two numbers added to the square of their difference is equal to twice the sum of their squares.

Show that the numbers 2 and $2\frac{1}{2}$ satisfy the equation in (i).

5. Find, correct to *one* decimal place, the values of x which satisfy the equation $x^2-10x-7=0$.

Or,

5. Solve the equation

$$\frac{2}{x+1}+\frac{3x}{x+2}+\frac{6x^2}{x^2+3x+2}=3.$$

6. Using the same axes and the same scales draw the graphs of $y=x^2$ and $y=3x+2$ for values of x from $x=-2$ to $x=+4$.

Find from your graphs, as accurately as you can, the values of x for which x^2 is equal to $3x+2$.