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(Department of Education)

INTERMEDIATE CERTIFICATE EXAMINATION, 1959.

**ELEMENTARY MATHEMATICS (Algebra).**  
**FOR GIRLS ONLY.**

MONDAY, 8th JUNE.—MORNING 10 TO 12.

All questions to be answered.

All questions carry equal marks.

1. (a) Simplify :

$$3x(x-3)-(x-3)(x+2)-(2x+1)(x-5).$$

(b) Find the value of

$$\frac{3(x^2+x-2)-2(x^2-3x+2)}{x-1}$$

when  $x = -5\frac{2}{3}$ .

2. Factorise :

(a)  $x^2-2x-15$ ,

(b)  $(2a+b)(c-d)-(a-2b)(c-d)$ ,

(c)  $(3a+b)(3a-b)+2b-1$ ,

(d)  $8a^3-27$ .

3. (a) Solve the equation

$$\frac{1}{2}(2x+3)-\frac{1}{3}(2x-1)=1 \text{ and}$$

verify your solution.

(b) If  $\frac{1}{a} + \frac{1}{b} = \frac{1}{c}$ , show that

$$(i) c = \frac{ab}{a+b}; \quad (ii) a = \frac{bc}{b-c}.$$

4. A girl spent a certain amount of money in buying tea at 8s. per pound. If she had spent a quarter of the money in buying tea at 6s. per pound and the remainder in buying tea at 4s. 6d. per pound, she would have got 8 pounds more. How much money did she spend ?

5. (i) What number must be added to  $x^2-3x$  to complete the square ?

(ii) Find, correct to two places of decimals, the values of  $x$  which satisfy the equation  $x^2-3x-3=0$ .

6. Calculate the values of  $2x^2$  when  $x = -2, -1\frac{3}{4}, -1\frac{1}{2}, -1, -\frac{1}{2}, 0, \frac{1}{2}, 1$  and use these values to draw a graph of  $2x^2$ . Using the same axes and the same scales, draw a graph of the expression  $1-3x$ . Find from the graphs the roots of the equation  $2x^2+3x-1=0$ .