AN ROINN OIDEACHAIS

(Department of Education.)

INTERMEDIATE CERTIFICATE EXAMINATION, 1945.

ELEMENTARY MATHEMATICS (Algebra).
FOR GIRLS ONLY.

TUESDAY, 12*th JUNE.*—Morning, 10 to 11.30.

Six questions may be answered.

All questions carry equal marks.

Mathematical Tables may be obtained from the Superintendent.

---

1. Write down algebraic expressions for

    (i) the number of hours it takes a car to travel a miles, if it goes b miles every c hours ;

    (ii) the number which is $p\%$ greater than another number q ;

    (iii) the number which, when divided by x, gives a quotient y and a remainder z.

2. What is the value of x if $\dfrac{4x-2}{7}$ exceeds $\dfrac{5x-7}{24}$ by 4 ?

If x has this value show that the first expression is equal to three times the second.

3. Solve the equations :
$$x = 3y - 2,$$
$$9y = 4x - 7.$$
and verify your solution.

4. Simplify the expressions $1 - \dfrac{6}{x-1} + \dfrac{12}{x-2}$ and $1 + \dfrac{6}{x+1} - \dfrac{12}{x+2}$, and thus obtain their product in its simplest form.

5. Solve the following question graphically :—
A and B are motorists who are travelling from Dublin to Cork. A, who travels at 36 miles an hour, passes Naas at 12 o'clock (noon). When 24 miles out from Naas he has a break-down which delays him 15 minutes ; he then proceeds on his journey, travelling now at 30 m.p.h. B, who travels all the time at 48 m.p.h. passes Naas at 1 o'clock. At what time and how far from Naas will B be when he

    (a) overtakes A,

    (b) is 20 miles ahead of A ?

6. Factorize the following :—

      (i) $ax-bx-az+bz$;

      (ii) $a^2b^2+3ab-54$;

      (iii) $x^2+6xy+9y^2-p^2+2pq-q^2$.

7. Find the roots of the equation $x^2-5x+3=0$ to two places of decimals.

8. The lengths of the two sides and of the diagonal of a rectangle are $4x+19$, $3x-2$ and $5x+15$ feet respectively ; find the value of x.

9. A and B spent thirty shillings between them on apples and pears. A bought x apples and y pears, while B bought y apples and x pears. The apples cost 3d. each and the pears 6d. each. If A had to pay two shillings more than B, find the value of x and of y.