# AN ROINN OIDEACHAIS
## (Department of Education)

### INTERMEDIATE CERTIFICATE EXAMINATION, 1960.

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

*TUESDAY*, 14*th JUNE.*—MORNING, 10 TO 12.

*All* questions to be answered.

All questions carry equal marks.

1. Simplify :
   (i) $(a-b)^2 - a(a-2b)$,
   (ii) $\dfrac{x}{3} + \dfrac{2x}{5} - \dfrac{4x-5}{10}$ .

2. Solve the equations :
   (i) $3x(x-2) - 2(x+3)(x-3) = (x-4)^2$,
   (ii) $\dfrac{3}{2x} - \dfrac{5}{3x} = 1$.

Verify your solutions.

3. (*a*) Factorize :
   (i) $3a^2 + ab - 2b^2$,
   (ii) $5x^3 - 20xy^2$.
   (*b*) Find the quotient when the product of $x^2 - 4x + 3$ and $2x^2 + 3x - 2$ is divided by $2x^2 - 7x + 3$.

4. (*a*) Find the values of $x$ and $y$ which satisfy the simultaneous equations :
$$3x - 6y = 17,$$
$$2x + y = 3.$$
   (*b*) A girl, who cycles at a speed of 12 miles per hour and walks at a speed of 3 miles per hour, cycles from A to B and then walks from B to C, the whole journey from A to C taking 30 minutes. If she had walked from A to B and cycled from B to C, she would have done the whole journey in 45 minutes. Find the distance from A to B and from B to C.

5. If $s = t(u + \frac{1}{2}ft)$, find (i) the value of $u$ when $s=100$, $t=10$, $f=-2$, (ii) the values of $t$ when $s=3$, $u=4$ and $f=-2$.

6. Calculate the values of $x^2 - 2x - 2$ when
$$x = -1, \ -\tfrac{1}{2}, \ 0, \ \tfrac{1}{2}, \ 1, \ 1\tfrac{1}{2}, \ 2, \ 2\tfrac{1}{2}, \ 3,$$
and use these values to draw a graph of $x^2 - 2x - 2$.
   Find from the graph (i) the value of $x^2 - 2x - 2$ when $x = 2 \cdot 9$, (ii) the roots of the equation $x^2 - 2x - 2 = 0$.