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(Department of Education.)

INTERMEDIATE CERTIFICATE EXAMINATION, 1943.

ELEMENTARY MATHEMATICS (Algebra).
FOR GIRLS ONLY.

WEDNESDAY, 9th 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. Express in simplest form the expression :

$$(3x + 7)(4x - 5) - (4x - 5)(2x - 3) - (2x + 1)^2.$$

2. Solve the following equation and verify your result :

$$\tfrac{3}{4}(x-4) - \tfrac{1}{2}(16-x) = \tfrac{2}{3}(x-6).$$

3. Express as a single fraction in simplest form :

$$\frac{4}{2x-1} - \frac{1}{x-1}$$

For what value of x will that expression be equal to $\dfrac{1}{x+1}$?

4. Factorise fully each of the following :

    (i) $p^2 + 8pq - 20q^2$;

    (ii) $x(x+z) - y(y+z)$;

    (iii) $(a+1)^3 + (a-1)^3.$

5. ABCD is a rectangle in which AB$=a$ inches, BC$=b$ inches. Points E, F, G, H are marked on the sides AB, BC, CD, DA, respectively, such that AE$=$CG$=3$ inches, BF$=$DH$=2$ inches. Express the area of EFGH in terms of a, b.

What is the area of EFGH when $a=12, b=7$?

6. Solve the equation $x^2 - 4x = 10$, giving the values of the roots to *two* places of decimals.

7. A girl cycled from A to B at the rate of 12 miles per hour and from B to C at the rate of 8 miles per hour, and the whole journey took 3 hours. When returning, she cycled from C to B at 12 miles per hour and from B to A at 9 miles per hour, and the time taken was 2 hours 50 minutes. Find the distance between A and B and the distance between B and C.

8. x is a positive whole number such that

(i) $5x$ is greater than 13, and (ii) $16-3x$ is greater than 3. Write down the four smallest values of x which satisfy (i) and all the values of x which satisfy (ii).

What values of x satisfy both (i) and (ii) ?

9. Draw the graph of x^2 from $x=0$ to $x=5$.

Use your graph to find approximately the value of $\sqrt{14}$.