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(Department of Education.)

INTERMEDIATE CERTIFICATE EXAMINATION, 1946.

ELEMENTARY MATHEMATICS (Algebra). FOR GIRLS ONLY.

WEDNESDAY, 12th JUNE.—MORNING, 10 TO 12.

Six questions may be answered.

All questions carry equal marks.

1. Show that the two expressions $7(x+y)+3(2x-3y)$ and $4(x-y)+5(x+y)$ are equal to one another when $x=\frac{3}{4}y$.

2. Write the following expression in its simplest form :

$$56 \left(\frac{5x-1}{8} - \frac{3x-2}{7} + \frac{x-5}{4} + \frac{1}{2} \right).$$

What is the value of x when the expression is equal to $22x$?

3. There are 350 people at a concert : some pay 1s. each and the rest 1s. 6d. each. The takings amount to £19 5s. How many bought 1s. tickets ?

4. Factorize the following :

(i) $x^2+10x-24$;

(ii) a^2-ac-b^2+bc ;

(iii) $x^2-2xy+y^2-a^2$.

5. A train goes from A to B at 40 miles per hour, and from B to C at 30 miles per hour. It is delayed for half an hour at B, and the whole journey takes 6 hours. On the return journey the train goes at 40 miles per hour from C to B and at 30 miles per hour from B to A, and does not stop at B. The return journey takes 5 hours. How many miles from A to B and from B to C ?

6. Solve the following equation :

$$\frac{3x+4}{2x-24} = \frac{7x-44}{3x+4}$$

7. The length of a degree of longitude in latitude x° is $\left(69 - \frac{x^2}{100}\right)$ miles approximately. Find approximately

(i) the length of a degree of longitude in latitude 53° ,

(ii) in what latitude the length of a degree of longitude is 65 miles.

8. Find the roots of the equation

$$4x^2 = x + 1,$$

correct to two decimal places.

9. The following table gives approximate values of x^3 for certain values of x :

$x =$	0	0.4	0.6	0.8	1	1.2	1.4	1.6	1.8	2
$x^3 =$	0	0.06	0.22	0.51	1	1.73	2.74	4.10	5.83	8

Plot the graph of x^3 from $x=0$ to $x=2$ on as large a scale as possible.

Find from your graph as close an approximation as you can to the value of the cube root of 7.