

**COMMON EXAMINATION FOR
ENTRANCE TO PUBLIC SCHOOLS.**

SUBJECT—ALGEBRA.

[45 minutes.]

[N.B.—All boys MUST do A before going on to B, but are recommended to do as much of B as they can.]

A.

I. When $x = 7$, $y = 3$, $z = 0$, $r = 1\frac{1}{2}$, $t = -3$, find the values of :—

(i) $3y^2 + 5xz$; (ii) $4rt^2$; (iii) $(y - t)(x + 2t)$.

II. Simplify :—

(i) $(4a^3)^2 \div 2a^2$; (ii) $6(3p + q) - 9(2p - q)$;

(iii) $c - \frac{4b - 9c}{6} + \frac{8b - 3c}{3}$.

III. (i) How many articles at $1\frac{1}{2}d$. each can be bought for n shillings?

(ii) For a concert, $10a$ people buy two-shilling tickets, $15b$ people buy one-shilling tickets and $20c$ people buy sixpenny tickets. How much money is paid altogether? Give the answer (i) in shillings, (ii) in £.

IV. Solve the equation :—

$$\frac{2x}{5} = 8 - \frac{x - 9}{3}.$$

Check your result.

V. A cyclist rides from P to Q a distance of x miles at 9 miles an hour and returns from Q to P at 8 miles an hour. Find in minutes how long he takes for each journey.

B.

[Begin a new sheet.]

VI. Solve the equations :—

$$2(2x - 1) = 3y, \quad 3(9 - x) = 2y.$$

VII. Factorise :—

(i) $x^2 + 5xy - 14y^2$; (ii) $4z^3 - z$;

(iii) $6ab - 9a - 4b + 6$.

VIII. Solve

$$x = \frac{12}{x + 6},$$

correct to one place of decimals.

[P. T. O.]

IX. The diagram shows the graph of $\frac{1}{2}(x^2 - 5x + 4)$ for values of x from -1 to $+6$. Use it to answer the following questions :—

- (i) What is approximately the smallest value of $\frac{1}{2}(x^2 - 5x + 4)$?
- (ii) What is the value of x for which $x^2 - 5x + 4$ has its smallest value?
- (iii) Solve the equation, $x^2 - 5x + 4 = 0$.
- (iv) Find approximately the values of x for which $x^2 - 5x + 4$ is equal to 2.

DIAGRAM FOR QUESTION IX.

[This diagram need not be shown up.]

