# COMMON EXAMINATION FOR ENTRANCE TO PUBLIC SCHOOLS AND ROYAL NAVAL COLLEGE, DARTMOUTH.

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## SUBJECT—ALGEBRA.

[45 *minutes.*]

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

### A.

I. When $b = 1\frac{1}{2}$, $c = 6$, $y = 0$, $z = -4$, find the values of :—

(i) $3c - 4b$ ; (ii) $2b^3 - 3yz$ ; (iii) $(c - z)(y - c)$.

II. Simplify :—

(i) $(4t^2)^3 \div (2t^2 \times 4t^3)$ ;

(ii) $7(6y - 4z) - 5(5y - 3z)$ ;

(iii) $1 - \frac{9 - 4r}{24} - \frac{1 + 4r}{6}$.

III. (i) What must be added to $2x - y$ to make $2y - x$ ?

(ii) How many yards of cloth at 7*s.* 6*d.* per yard can be bought for £$n$ ?

IV. Solve the equation :—

$$x - \frac{x - 1}{3} = \frac{2x - 1}{5} + 4.$$

Check your answer.

V. The length of a rectangular sheet of paper is three times its width. If the length is reduced by 5 inches and the width is increased by 3 inches, the length will be twice the breadth. Find the width of the original sheet.

[P. T. O.

B.

[*Begin a new sheet.*]

VI. Solve the equations :—

$x = 21 + \frac{1}{3}y$ ; $y = \frac{1}{5}x + 7$.

VII. Factorize :—

(i) $18t^3 - 2t$ ; (ii) $9 - 3z - 2z^2$.

VIII. Solve the equation :—

$$x + \frac{4}{x} = 8$$

correct to one place of decimals.

$\sqrt{12} = 3 \cdot 46$.

IX. The diagram represents the travel graph of a motor cyclist P who left a town A at 1 p.m. and travelled along a road running north, and also the complete travel graph of a motor cyclist Q, travelling on the same road.

(i) State the various speeds at which P and Q travelled.

(ii) State the time at which Q started and his distance from A at this time.

(iii) At what time, and how far from A, did Q pass P?