

11.—ALGEBRA, C.

1. Extract the cube root of $+27x^3 + 216 + 342x^2 + 171x^4 - 27x^5 - 109x^3 - 108x$.

OR, find the value of $\left(\frac{x-a}{x-b}\right)^3 - \frac{x-2a+b}{x+a-2b}$ when $x = \frac{a+b}{2}$.

2. Simplify $\frac{5}{2b+2} - \frac{3}{4b-4} + \frac{11}{6-6b^2}$.

OR, Given $12 \{3x - .25(x-4) - .3(5x+14)\} = 47$, find x .

3.
$$\left. \begin{aligned} \text{Given } \frac{x}{a} - \frac{y}{b} &= 1 \\ \frac{x}{b} + \frac{y}{a} &= \frac{a}{b} \end{aligned} \right\} \text{ find } x \text{ and } y.$$

4. The sum of the digits of a number less than 100 is 6; if the digits be reversed the resulting number will be less by 18 than the original number; find it.

5. Given $\frac{5x-1}{x+1} = \frac{3x}{2}$, find x .

OR, find the highest common factor and lowest common multiple of $(3x^3 - 7x^2y + 5xy^2 - y^3)$, $(x^2y + 3xy^2 - 3x^3 - y^3)$, and $(3x^3 + 5x^2y + xy^2 - y^3)$.

12.—GEOMETRY, C.

[Only five questions to be answered. Shortest form of proof preferred, providing every statement is proven by reference to Euclidean propositions.]

1. If the middle points of adjacent sides of any quadrilateral be joined, the figure thus formed is a parallelogram.

2. Find the locus of a point which is always equidistant from two given points. OR, Prove Prop. 7 of Euc. II.

3. Write down in algebraic formulas the enunciations of Euclid II, from Prop. 2 to Prop. 10 on the supposition (a) that a is equal to one-half the whole line and x the distance of the point of unequal section from the middle of the line, or (b), that m is the greater and the lesser segment of the line.

4. Divide a given straight line into two parts so that the rectangle contained by the whole and one part may be equal to the square on the other part.

5. Three times the sum of the squares on the sides of a triangle is equal to four times the sum of the squares on the medians.

6. The straight line drawn at right angles to a diameter of a circle at one of its extremities is a tangent to the circle.

7. Find the locus of the middle points of equal chords of a circle.

GRADE B. (XI.)

1.—ENGLISH LANGUAGE, B.

1. Give a short account of the life of the author of the Sketch Book. Name his principal writings in the order of their publication, or State in brief what you know of the life and writings of the author of the Lady of the Lake.

2. Write notes on any ten of the following: Sarcophagus, Yule log, Mausoleum, Linsey-woolsey, Mistletoe, Peter Stayvesant, Hendrick Hudson, Harp of the North, the Bleeding Heart, Ben-Shie's Boding Scream, Red Streamers of the North, The River Demon, To Wear the Spurs of Knight.

3. Name your favorite sketch and give a short outline of it.

4. Quote favorite passages containing not less than twelve lines from the Sketch Book; or two stanzas from either the "Boat Song" or the "Hymn to the Virgin," in the Lady of the Lake.

5. Tell the story of Blanche of Devan, or describe the appearance of Malcolm Graeme.

2.—ENGLISH GRAMMAR, B.

1. Describe the changes that our language underwent during the Middle English period.

2. Write a note on the Gerund; its uses, origin and forms, comparing it with the participle and the abstract noun in *ing*. Give the syntax of: *Generally speaking*, the roads are rough.