8. The length of one side of a rectanglar field is 572 yards, and the area of the field is 50 acres 2 ro. 32 feet. Find the length of the other side, and of the diagonal. (20)

Algebra.

1. State the rule for removing brackets from algebraical expressions. Simplify $2\,[4\,x - \{2\,y + (2\,x - y) - (x + y)\}]$ (5)

2. Resolve into elementary factors:—

(a).... $4\,x^2 + 8\,x + 3$. (3)

(b).... $12\,x^2 - 5\,x - 2$. (3)

(c).... $5\,(x^2 - y^2) + 3\,(x + y)^2$. (4)

3. (a) Find the G. C. M. of:—

$6\,x^2 + 13\,x + 6$ and $8\,x^2 + 6\,x - 9$. (5)

(b) Find the L. C. M. of:—

$4\,(a^3 - ab^2)$, $\times$ $12\,(ab^2 + b^3)$ and $8\,(a^3 - a^2\,b)$. (5)

4. Extract (a) the Square Root of:—

$9\,x^2 + 12\,x^3 + 22\,x^2 + 12\,x + 9$. (10)

(b) the Cube Root of:—

$a^3 - 36\,a^2\,b + 54\,ab^2 - 27\,b^3$. (10)

5. Solve the following equations:—

(a).... $\dfrac{x-1}{2} - \dfrac{x-3}{4} + \dfrac{x-5}{6} = 4$. (5)

(b).... $x + 1 - \dfrac{x^2+3}{x+2} = 2$. (5)

(c).... $\dfrac{1}{27}(2\,x + 7) - \dfrac{1}{15}(2\,x - 7) = 1\dfrac{5}{6} - \dfrac{1}{20}(3\,x \times 4)$. (10)

(d).... $\dfrac{x-4}{x-5} - \dfrac{x-5}{x-6} = \dfrac{x-7}{x-8} - \dfrac{x-8}{x-9}$. (15)

6. A is twice as old as B, twenty-two years ago he was three times as old. Required A's present age. (10)

7. A garrison of 1000 men was victualed for 30 days; after ten days it was reinforced and then the provisions were exhausted in 5 days. Find the number of men in the reinforcement. (10)

Geometry.

Answer any five.

1. Define the following ten terms.—*Alternate angles, adjacent angles, vertical angles, segment of a circle, quadrilateral, parallelogram, rectangle, rhombus, right angle circle.* (20)

2. Draw the figures of the 4th, 8th, and 24th propositions in Book I., the 11th in Book II., and the 9th in Book III. (20).

3. Give the general enunciation of the 5th proposition in each of the Books. Enunciate also the proposition you consider the most difficult in Books I and II. (20)

4. Prove that, if the squares described upon two sides of a triangle be equal