

- (vii) The sum of the interior angles of a parallelogram is equal to four right angles.
- (viii) The opposite angles of a parallelogram are equal and the opposite sides are equal.
- (ix) Of all straight lines that can be drawn to a given straight line from an external point, the perpendicular is the shortest.
- (x) In any right-angled triangle the square on the side opposite the right angle is equal in area to the sum of the squares on the sides containing the right angle (Pythagoras' theorem).

OPTIONAL ADDITIONAL ELEMENTARY MATHEMATICS FOR STANDARD VI
ADVANCED PUPILS.

1. *Algebra*.—
 - (a) Compulsory prescription for S. VII—viz., equations, symbolic formulæ, substitutions, the four rules.
 - (b) More difficult simple equations.
 - (c) Easy fractions.
 - (d) Easiest binomial factors.
2. *Practical Geometry*.—The compulsory prescription in practical geometry for S. VII.

STANDARD VII (FORM III).

The aims in this class should be (a) to enable the pupils to perform readily and accurately all the arithmetical calculations commonly needed in farm and commercial occupations; (b) to make the pupils acquainted with the manner in which arithmetic is used in the ordinary affairs of life; and (c) to give the pupils some knowledge of algebra as generalized arithmetic and of the practical uses of geometry.

1. *General Arithmetic*.—Extended long tots and calculations involving the use of larger numbers than in previous standards. H.C.F. and L.C.M. more fully treated. Vulgar fractions, but no involved calculations or complicated fractions. Decimals completed. The meaning of a recurring decimal.

2. *Business Arithmetic*.—Including that prescribed for previous classes—

- (a) Simple stocks and shares.
- (b) Compound interest, to find only interest and amount over short periods.
- (c) More difficult example of rates and taxes, of profit and loss, and of trade discount.
- (d) Simple cash accounts and balance-sheets.
- (e) Conversion of pounds shillings and pence to dollars, and to francs, and *vice versa*.
- (f) Simple methods of "costing."
- (g) The meaning of the following terms and forms should be understood: Invoice, promissory note, bills of exchange, banker's discount, cheque, bank-note.

3. *Farm and Industrial Arithmetic*.—Simple problems relating to value of wool-clip, comparison of value of dairy cows, cost of fencing, strength of dipping and spraying mixtures, measurement and cost of timber for various operations.

4. *Mensuration*.—As prescribed for previous classes, but with more difficult examples. Mensuration of the circle, cylinder, and of trapezium and triangle, as used in the calculation of areas of paddocks from surveyor's field-book entries, and in calculating the capacities of, say, a tank or a sheep-dip. Measurement and cost of timber.

5. *Metric Measurements*.—Common metric measures of length, weight, volume, capacity, simply treated in relation to the practical problems met with in the science lessons.

6. *Graphical Arithmetic*.—Extension of the work of Standard VI, including thermographs, barographs, simple statistical graphs of different kinds.

7. *Algebra*.—Simple equations and symbolic formulæ connected with arithmetic continued. Further work in substitutions already touched on in Standard VI. Graphical representation of positive and negative quantities. Easy exercises in addition, subtraction, multiplication, and division.

8. *Practical Geometry*.—

- (a) Graphical solution of practical problems in geometry, such as finding height of tree, width of stream, setting out tennis-court or ornamental garden-plots.