

3. *Commercial Transactions.*—

- (a) Percentages applied to problems in simple interest where the principal is a whole number of pounds, tradesmen's discount, commission charges, insurance, direct cases of profit and loss. The use of percentages in rural arithmetic—*e.g.*, percentage of lambs in a flock, of butterfat, of germinated seed.
- (b) Simple cash account showing receipts and payments, as, for example, in the case of a school cricket or football club.
- (c) Simple direct calculations in connection with bankruptcies, rates, taxes.
- (d) Simple exercises in sharing of profits; method of proportional parts.
- (e) Short methods of calculation in common use in commercial houses.
- (f) Easy and direct calculations in converting American dollars to sterling, and *vice versa*.

4. *Mensuration.*—

- (a) Area of rectangles and triangles (length of base and height of apex from base always given). Problems based thereon. Carpeting floors and papering walls and ceilings to be excluded, but painting the walls of a house to be included. All work to be of a practical nature and to be illustrated by diagrams.
- (b) Square root and its application to simple problems in mensuration.
- (c) Volumes of rectangular objects only.
- (d) The circle: relation of circumference to diameter; area.

5. *Symbolical Expression.*—

- (a) The meaning of an algebraical equation introduced as a method of stating easy sums used in the lower classes: *e.g.*—
  - $6 + x = 15$ . What is  $x$  equal to?
  - $5 \times y = 20$ . What is  $y$  equal to?
- (b) Construction and interpretation of formulae as leading up to easy substitutions—*e.g.*, in mensuration.
  - (i) In a square  $P = 4x$ ,  $A = x^2$  (where  $P$  is the perimeter,  $A$  the area, and  $x$  the length of side).
  - (ii) In a rectangle  $P = 2x + 2y$  or  $2(x + y)$ ,  $A = xy$  (where  $x$  is the length and  $y$  the breadth).
  - (iii) In a cube  $A = 6x^2$  and  $V = x^3$  (where  $V$  is the volume).

In the exercises in substitution the ordinary algebraic signs to be used as far as they can be illustrated in the arithmetic of this standard.

6. *Practical Geometry.*—

- (a) Drawing of easy diagrams related to the work in mensuration.
- (b) Drawing of lineal and block graphs for illustrative purposes in connection with such matters as temperature, barometric pressure, rainfall, value or amount of products of a country.
- (c) The use of the 3-4-5 device in plotting a right angle.
- (d) Demonstration of the following by measurement:—
  - (i) If one straight line stands on another straight line, the sum of the adjacent angles equals two right angles.
  - (ii) If two straight lines intersect, the vertically opposite angles are equal.
  - (iii) Any two sides of a triangle are together greater than the third side.
  - (iv) The angles at the base of an isosceles triangle are equal and all the angles of an equilateral triangle are equal.
  - (v) The greatest side of every triangle has the greatest angle opposite to it, and conversely.
  - (vi) If a straight line intersects two parallel straight lines the alternate angles are equal, the corresponding angles are equal, and the two interior angles on the same side of the intersecting line are together equal to two right angles.