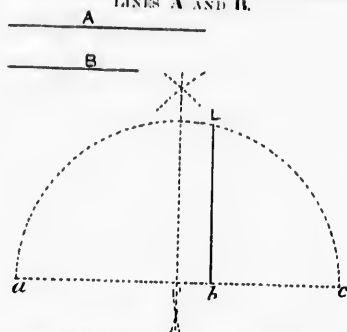


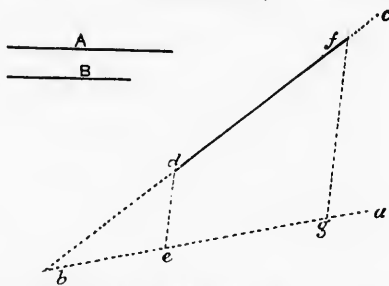
PROBLEM 17.—TO DRAW A MEAN PROPORTIONAL TO TWO GIVEN LINES A AND B.



In the line abc make ab and bc equal to A and B respectively. On ac as a diameter describe a semicircle. At b erect a perpendicular bl , cutting the semicircle in L . This line will be the required mean proportional.

NOTE.—The square on bl is equal in area to the rectangle having adjacent sides equal to A and B .

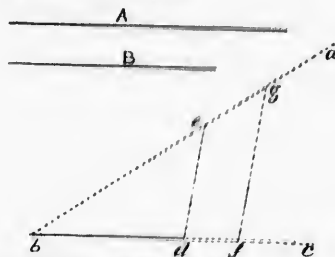
PROBLEM 18.—TO FIND A THIRD PROPORTIONAL TO TWO GIVEN LINES A AND B.



From any point b draw two straight lines ab , bc . Make bd equal to A and be equal to B . Make also ef equal to A or bd . Join de and through f draw a line fg parallel to de , meeting be in the point f . The third proportional to A and B will be df , and in this case df will be greater than either A or B .

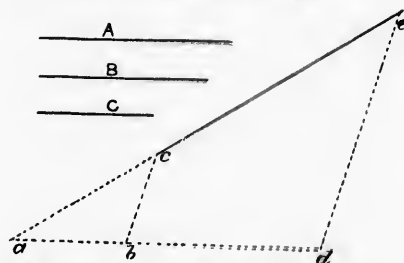
NOTE.—If B be taken as unity $A^2 = df$. In this way the square of any length may be obtained, the unit being given.

PROBLEM 18 (a).—TO FIND A THIRD PROPORTIONAL TO TWO GIVEN LINES A AND B, THE REQUIRED LINE TO BE LESS THAN EITHER OF THE GIVEN LINES.



From any point b draw two straight lines ab , bc . Make bd equal to A and be equal to B . Make also ef equal to B or bd . Join de and through f draw fg parallel to de , cutting be in the point d . bd will be the required third proportional.

PROBLEM 19.—TO FIND A FOURTH PROPORTIONAL TO THREE GIVEN LINES A, B AND C, WHEN THE REQUIRED LINE IS TO BE LONGER THAN ANY OF THE GIVEN LINES.



From any point a draw two straight lines ad , ae . Make ab equal to C and ac equal to B . Make also bd equal to A . Join be and draw cd parallel to be , cutting ae in the point c ; ce will be the required fourth proportional.

If it is required that the fourth proportional shall be shorter than any of the given lines, make the first line ab equal to A and bd equal to C . The same construction will give a fourth proportional line similarly situated to ce and shorter than the given lines.