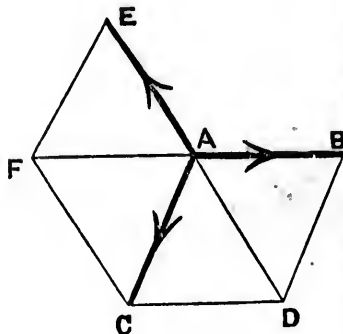


Magnitude
of Resultant.

Let AB , AC , represent the two forces acting at A . Complete the parallelogram $ACDB$. Then AD is the direction in which the Resultant acts, and we have now to prove that AD represents also its magnitude.



In DA produced backwards take AE to represent this magnitude, so that a force represented by AE will be equal and opposite to the Resultant; and the three forces represented by AB , AC , AE , will keep the point A at rest, and each one of them is equal and opposite to the Resultant of the other two.

Complete the parallelogram $AEFC$; then, AF is the direction of the Resultant of the forces AE , AC , and is therefore opposite to AB . Hence, FAB is a straight line, and therefore $FACD$ a parallelogram. Hence, the lines AE and AD are equal, being each equal to FC : but AE was taken to represent in magnitude the Resultant of AB , AC , and consequently AD also represents it in magnitude. *Q. E. D.*

Resolution
of a Force.

20. Conversely, a force acting at a point can be resolved into an equivalent pair of forces at that point in an infinite number of ways; for, taking a line drawn from a point to represent the Force, and constructing on it as diagonal *any* parallelogram, the two adjacent sides terminating at this point, will represent an equivalent pair of forces.

If this pair consist of two forces acting in perpendicular directions, each of them is called the *effective* part of the original force in this direction.