

Composition of concurrent forces assignment

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Composition of Concurrent Forces Abstract” The experiment aims to show the relationship of different forces acting at the same time by using different variables namely, the equilibrate force, the resultant, and the given forces F_{AA} and F_{eb} ... The equilibrate force is the force that establishes equilibrium while the resultant is the addition of the given forces and is also the opposite of the equilibrate. The objective of the experiment is to determine the resultant of two forces experimentally, to be checked by using its components and graphically adding the forces.

The resultant obtained by component and rhapsodically adding the vectors was approximately close to the resultant obtained experimentally. Though the results were close to each other, the different methods still resulted to slight differences. It is suggested that different approaches be used to give the most precise value. Introduction * The objective of the experiment is to determine the force which balances two other forces using the Force Table- this force is other wise known as the equilibrate force. In the experiment, the addition of the two forces was the resultant.

The resultant should be equal to the equilibrate but opposite in direction. There are two ethos of adding vectors, by graphically adding the vectors or by using vector components. Graphically adding vectors was possible by using a scaled vector diagram and applying the head-to-tail method (polygon method) and parallelogram method to get the resultant. The graph had to be scaled in order to accurately represent the vector. The vector, which is directed in two dimensions, has two components that have different amount of influence.

The amount of influence in a given direction can be solved by using trigonometric functions, which is then used to get the resultant or the addition of the forces. Methodology In this experiment, a Force Table, ring, string, three pulleys and pulley clamps, three mass hangers, mass set, metric ruler and protractor were used. The vector sum of the forces was determined using three methods: the force table method, component method and graphical method. There are two methods in assembling the Force Table.

The first method used the conventional ring in the center of the table while the second method used an anchor string through the hole in the center of the table. In this set up, three strings should go over three pulleys- two of which are set up correspondingly: gate 300 and gig at 1200. The system should be at equilibrium. Figure 1 shows the set up for the experiment. Using the component method, FAA and Feb.. Were plotted on different planes as two separate vectors. Figure 1 Force Table Assembly The X and Y components of the vectors were determined using trigonometric functions.

To determine the X component, hypotenuse \cos was used and for the Y The angle is acquired by \tan^{-1} Rays Using the graphical method, two approaches were used: The polygon (head-to-tail) and parallelogram method. In graphing, the graph was scaled to $10 \text{ g} = 1 \text{ CM}$. For the polygon method, FAA was plotted, and from point A, Feb.. Was plotted (FAA being g, 300 and Feb.. Being gig, 1200). The resultant was then acquired by measuring the “ head to tail” of the polygon formed and the measure of the angle formed in the first plane.