

A.1.5 Handheld Vectors

Key Concepts: Vectors
Materials: Addition Vectors: Equal and Inequal arms
Subtraction Vectors: Equal and Inequal arms
Set Up Time: 0 minutes
Time Estimate:

Set Up And Display

There are four sets of vectors. Two have four arms forming a parallelogram to show vector addition and two have two arms to show vector subtraction. The opposite corners of the addition vectors are connected by a cord to show the resultant vector. The heads of the two vectors in the subtraction vectors are connected by a cord to show the resultant. Two arms in each set are marked in 10 cm units, as are the connecting cords, to give a relation of the magnitudes involved.

Explanation

These four models give some idea of the addition and subtraction of vectors. The parallelograms demonstrate addition directly with equal arms of 50 cm each and unequal arms of 50 cm and 30 cm each. The two armed vectors demonstrate subtraction with the same choice of arm lengths. The unequal arms are useful in showing that two vectors of different magnitude never fully cancel.

These vectors can also be used to help demonstrate vector multiplication, although they cannot directly demonstrate the scalar or vector product.

Related Demonstrations: A 1.6