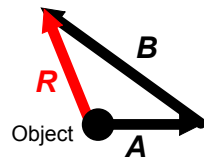


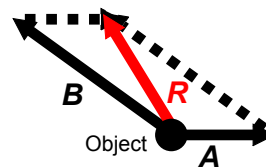
Adding Vectors Graphically: 2 Methods

Method 1: Tip-to-Tail



- Pro: Easier to solve.
- Con: More difficult conceptually to picture.

Method 2: Parallelogram

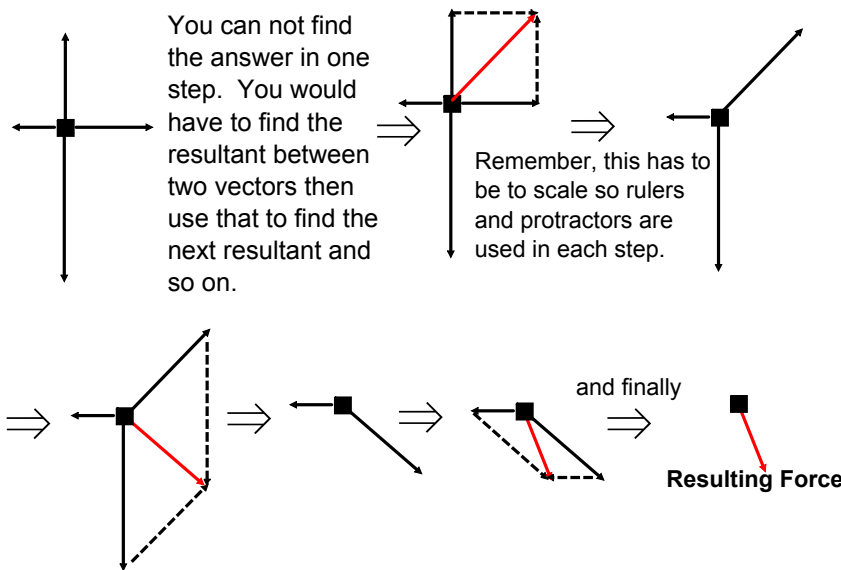


- Pro: Easier to conceptually picture.
- Con: More difficult to solve.

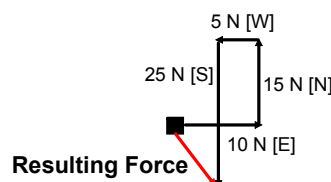
Take this example with many vectors, we won't solve it just walk through the steps for each method.

An object has four people pulling (forces) on it: 10 N [E], 15 N [N], 5 N [W], and 25 N [S]. Calculate the resultant force on the object,

Parallelogram Method



Tip-to-Tail Method



In the next few pages we will go in to more detail about how to properly use the tip-to-tail method.

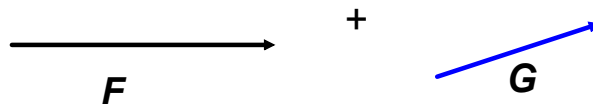
Writing Review

- Compare the two methods of using a scale diagram to solve two-dimensional vector problems.
- What are some advantages and disadvantages of using a scale diagram as opposed to a mathematical approach (which we do in grade 12 physics).

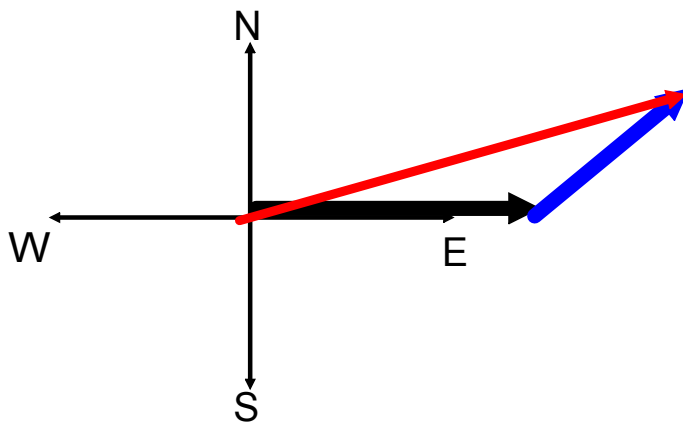
Adding Vectors Graphically



Tip-To-Tail Method



To add vectors graphically, they must first be lined up **tip-to-tail**.



The vector sum of **F** and **G** is the vector, **R**. It connects the tail of the first arrow to the tip of the last arrow.

Why is the letter **R** used for the vector sum?

*Physicists call the vector sum the **resultant vector** or the **resultant**.*

Why is the graphical method not considered the best method to use when adding vectors?

If the vectors are not drawn precisely, your final answer will not be accurate.