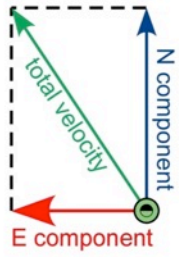
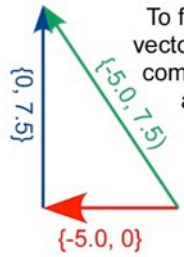
Interseismic Velocities Prior to August 24, 2014 Name: _____

Napa Earthquake interseismic velocities. Carefully draw the E–W and N–S velocity vectors associated with the three GPS sites shown as green dots in the map below. A negative east component is a vector pointing west, and a negative north component is a vector pointing south. The graphs are scaled in units of millimeters/year. Then draw the total horizontal velocity for each site, and determine the speed (that is, the length of the total horizontal velocity vector) of each site. You can determine the total horizontal velocity by one of the methods shown at right below.

Map of the region west of the South Napa earthquake epicenter (red star). Gray dots are surface rupture mapped by Trexler and Morelan (2014).

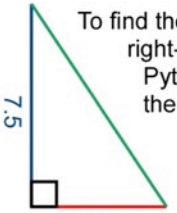


To find the total speed graphically, use a ruler and the scale shown on the graph to measure the length of the total velocity vector.



To find the total speed using vector math, add the E and N component vectors together, and find the length of the resulting total velocity vector using the Pythagorean theorem.

total speed = $\sqrt{(-5.0^2)+(7.5^2)}$



To find the total speed by solving a right-triangle problem, use the Pythagorean theorem to find the length of the hypotenuse of a triangle whose sides are the lengths of the E and N components.

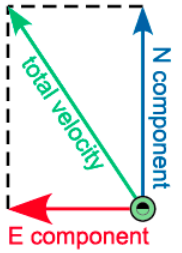
total speed = $\sqrt{(5.0^2)+(7.5^2)}$

Total horizontal speeds: P198_____mm/yr; P200_____mm/yr; SVIN_____mm/yr

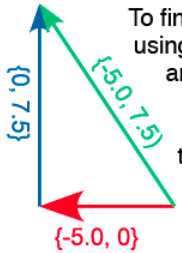
Coseismic Displacements *circa* August 24, 2014 Name: _____

Napa Earthquake coseismic displacements. Carefully draw the E–W and N–S displacement vectors associated with the three GPS sites shown as green dots in the map below. A negative east component is a vector pointing west, and a negative north component is a vector pointing south. The graphs are scaled in millimeter units. Then draw the total horizontal displacement vector for each site, and determine the magnitude of the displacement (that is, the length of the total horizontal displacement vector) of each site, using one of the methods shown at right below.

Map of the region west of the South Napa earthquake epicenter (red star). Gray dots are surface rupture mapped by Trexler and Morelan (2014).

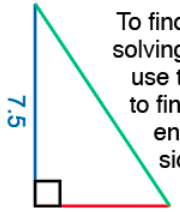


To find the total displacement graphically, use a ruler and the scale shown on the graph to measure the length of the total velocity vector.



To find the total displacement using vector math, add the E and N component vectors together,and find the length of the resulting total velocity vectorusing the Pythagorean theorem.

total speed = $\sqrt{(-5.0^2)+(7.5^2)}$



To find the total diplacement by solving a right-triangle problem, use the Pythagorean theorem to find the length of the hypotenuse of the triangle whose sides are the lengths of the E and N components.

total speed = $\sqrt{(5.0^2)+(7.5^2)}$

Total horizontal displacement: P198_____mm; P200_____mm; SVIN_____mm