Reminders 07-15-09:

· **3rd Webassign due Tomorrow 11:59PM**

· **Hand in 3rd Assignment Problems Tomorrow**

· ***Exam 1 Chapters 1-3 Today***

· **4th Webassign Ch 4&5 Due Tuesday July 21**

· **Website for practicing on trigonometry. Site provides solutions to problems:**
www.hotmath.com/help/gt/genericalg2/index.html

Objectives:

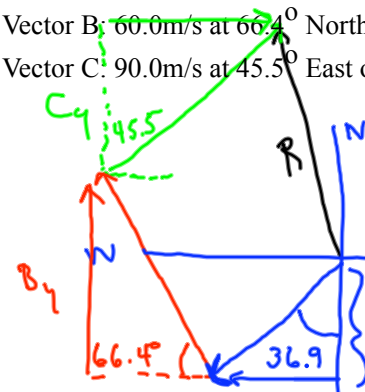· **Vectors Addition**

· **Forces**

· **Newton's Laws**

Vector Worksheet

Let's add the following three vectors. Sketch the vectors.

Vector A: 30.0m/s at 36.9^O West of South

Vector B: 60.0m/s at 66.4^O North of West

Vector C: 90.0m/s at 45.5^O East of North

$$\sin\theta = \frac{o}{h}$$

$$o = h\sin\theta$$

$$\cos\theta = \frac{a}{h}$$

$$a = h\cos\theta$$

1st step: find the x-component of A: $-30.0\cos(90-36.9)$ or $-30.0\sin 36.9 = -18.0 \frac{m}{s}$

find the x-component of B: $-60.0\cos 66.4 = -24.0\frac{m}{s}$

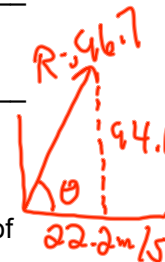find the x-component of C: $90.0\sin 45.5 = 64.2\frac{m}{s}$

2nd step: find the y-component of A: $-30.0\cos 36.9 = -24.0\frac{M}{s}$

find the y-component of B: $60\sin 66.4 = 55.0\frac{m}{s}$

find the y-component of C: $90\cos 45.5 = 63.1\frac{m}{s}$

3rd step:

Sum the x-components: $+22.2 \ ^m/s$

Sum the y-components: $+94.1 \ ^m/s$

R=96.7

4th step: Use Pythagorean Theorem to find magnitude of resultant

Magnitude: $\sqrt{\left(22.2\frac{m}{s}\right)^2 + \left(94.1\frac{m}{s}\right)^2} = 96.7 \ ^m/s$

5th step: Calculate direction of resultant vector using

Angle: $\theta = \tan^{-1}\frac{94.1 m/s}{22.2 m/s} = 76.7^O$ North of East or above + x-axis

The length of vector **A** is 250 units and the length of vector **B** is 350 units. If these two vectors are added together, what is the maximum possible length of their sum? Please illustrate your response with a drawing.

Max length is 600
Occurs when they are
Parallel
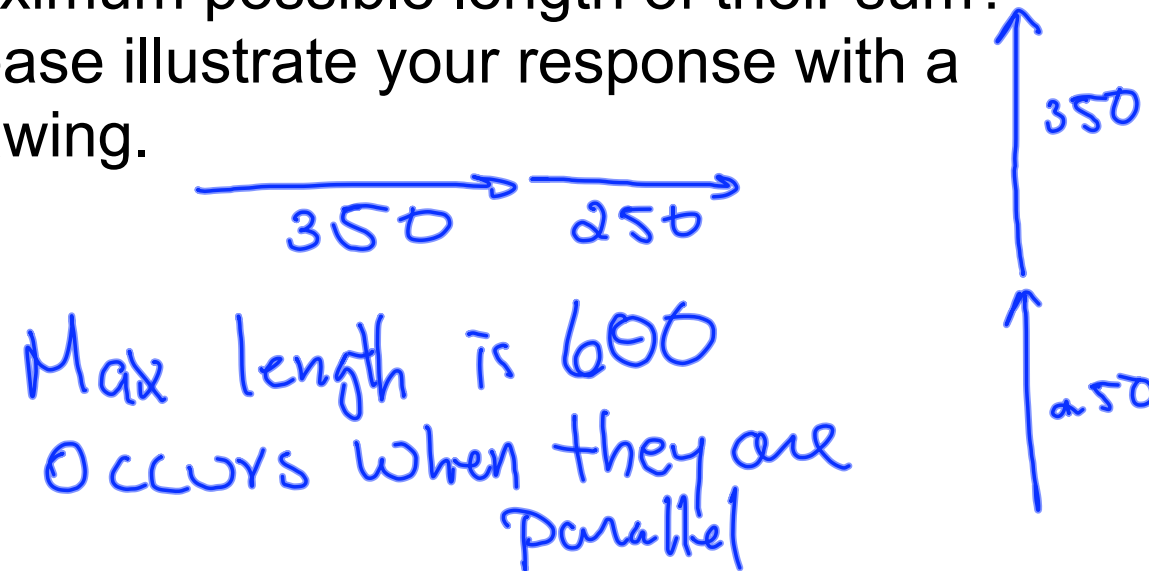
What is the minimum possible length of their sum? Please illustrate your response with a drawing.

Min length is 100
Occurs when they
are in opp. dir.