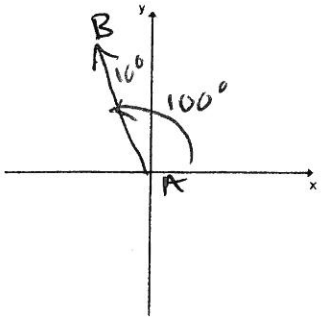
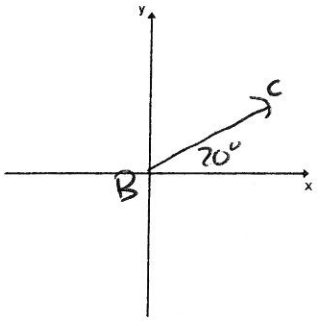
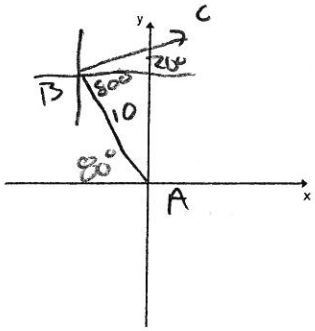
Name_____ Resultant Vectors.

A resultant vector is typically the result of performing operations on one or more vectors.

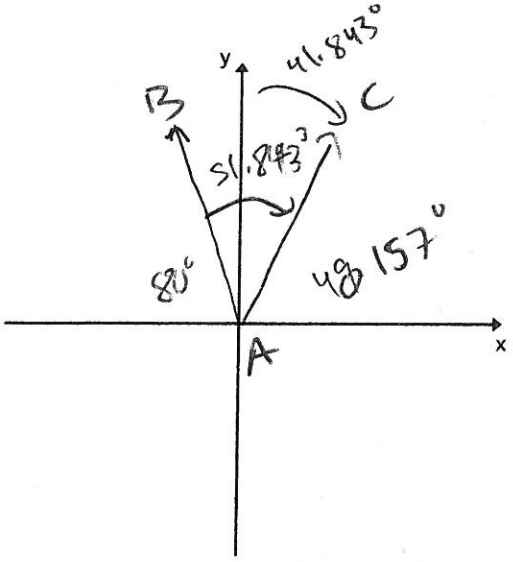
Today, we will focus on vector addition. Vector addition will add two or more vectors to create either a vector triangle (in the case of addition of two vectors) or a vector polygon (the addition of more than two vectors)

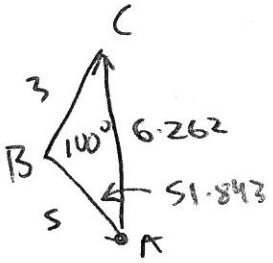
We will focus on vector addition today.

Vector AB has a heading of 100°and a magnitude of 5 cm Vector BC has a heading of 20° and a magnitude of 3 cm.

Draw Vector AB as if A starts at the origin	Draw Vector BC as if B starts at the origin	Draw Vector Triangle ABC as if A starts at the origin
		

Draw vector AC as if A starts at the origin





$AC = \sqrt{5^2+3^2-2(5)(3)\cos 100}$

$= 6.262$

$A = \cos^{-1}\left(\frac{6.262^2+3^2-5^2}{2(6.262)(3)}\right)$

≈ 51.843

What is the measure of angle ABC? 100° (Hint rectangles and alternate interior angles help with this task sometimes.)

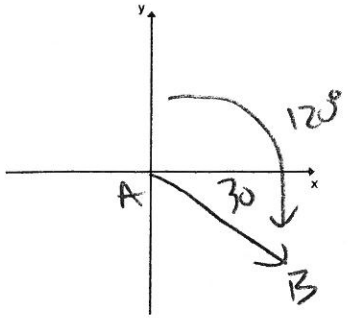
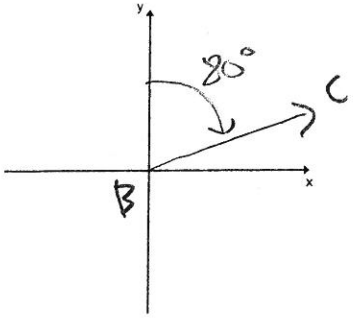
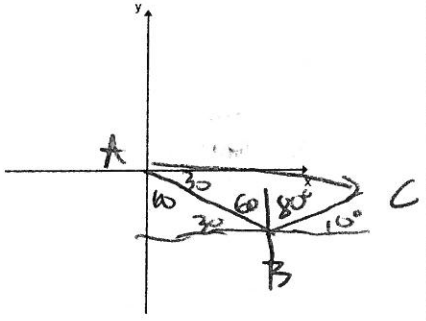
What is the length of Vector AC? 6.262 (hint SAS and Law of Cosines is typically how you can find this)

The resultant vector AC has a heading of 48.157 and a magnitude of 6.262 The resultant vector AC has a bearing of 41.843

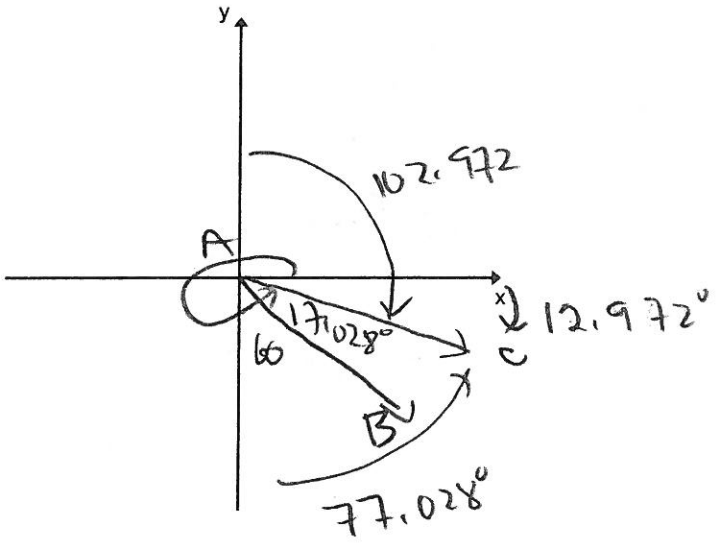
What quadrant did point C end up in? 1

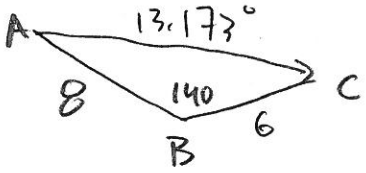
We will focus on vector addition today.

Vector AB has a bearing of 120°and a magnitude of 8 cm Vector BC has a Bearing of 80° and a magnitude of 6 cm.

Draw Vector ~~AC~~ AB as if A starts at the origin	Draw Vector BC as if B starts at the origin	Draw Vector Triangle ABC as if A starts at the origin
		

Draw vector AC as if A starts at the origin





$AC = \sqrt{8^2+6^2-2(8)(6)\cos 140}$

$\approx 13.173°$

$A = \cos^{-1}\left(\frac{13.173^2+8^2-6^2}{2(13.173)(8)}\right)$

$\approx 17.028°$

What is the measure of angle ABC? 140° (Hint rectangles and alternate interior angles help with this task sometimes.)

What is the length of Vector AC? 13.173° (hint SAS and Law of Cosines is typically how you can find this)

The resultant vector AC has a heading of 347.018° and a magnitude of 13.173 The resultant vector AC has a bearing of 102.972°

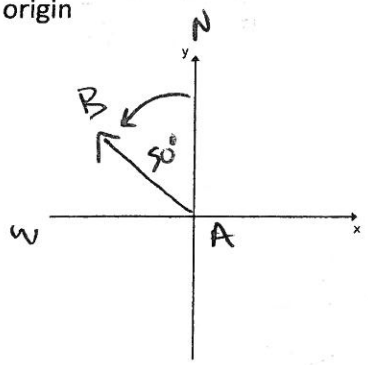
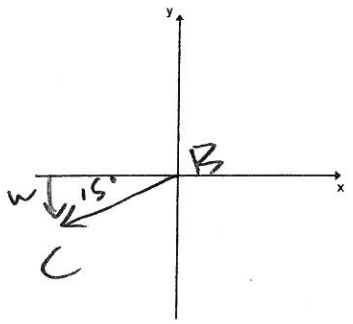
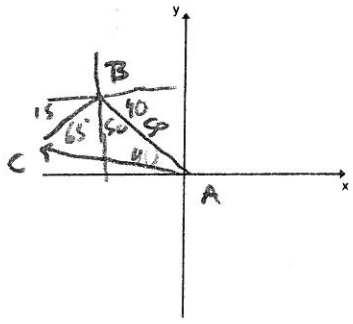
What quadrant did point C end up in? 4

A resultant vector is typically the result of performing operations on one or more vectors.

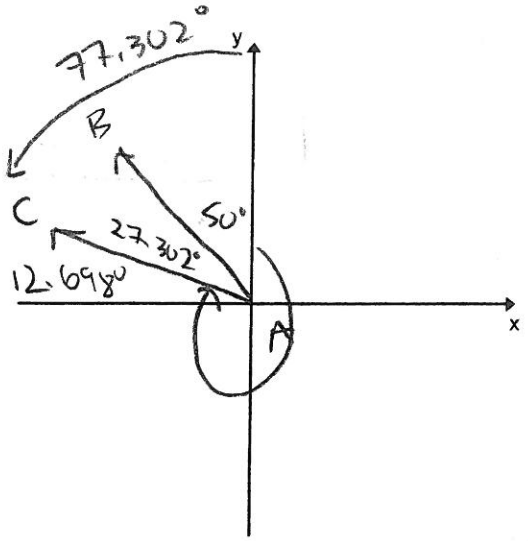
Today, we will focus on vector addition. Vector addition will add two or more vectors to create either a vector triangle (in the case of addition of two vectors) or a vector polygon (the addition of more than two vectors)

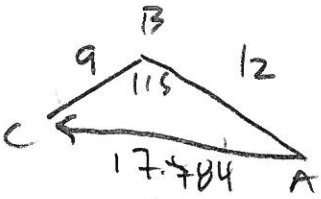
We will focus on vector addition today.

Vector AB has direction N 50° W and a magnitude of 12 cm Vector BC has direction of W 15° S and a magnitude of 9 cm.

Draw Vector AB as if A starts at the origin	Draw Vector BC as if B starts at the origin	Draw Vector Triangle ABC as if A starts at the origin
		

Draw vector AC as if A starts at the origin





$AC = \sqrt{12^2+9^2-2(12)(9)\cos 115}$

≈ 17.784

$A = \cos^{-1}\left(\frac{12^2+17.784^2-9^2}{2(12)(17.784)}\right)$

$\approx 27.302°$

What is the measure of angle ABC? 115° (Hint rectangles and alternate interior angles help with this task sometimes.)

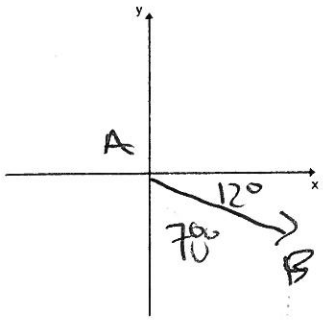
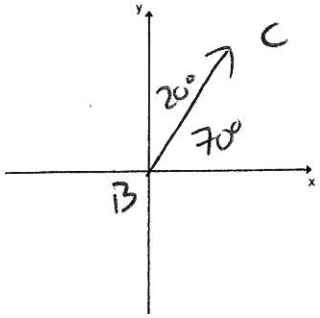
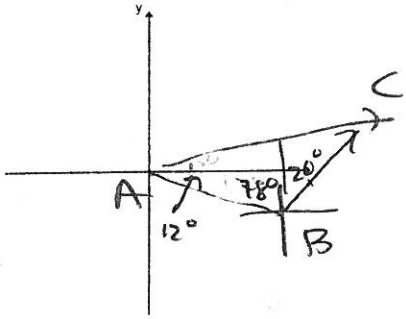
What is the length of Vector AC? 17.784 (hint SAS and Law of Cosines is typically how you can find this)

The resultant vector AC has a heading of 67.302 and a magnitude of 17.784 The resultant vector AC has a bearing of 282.698

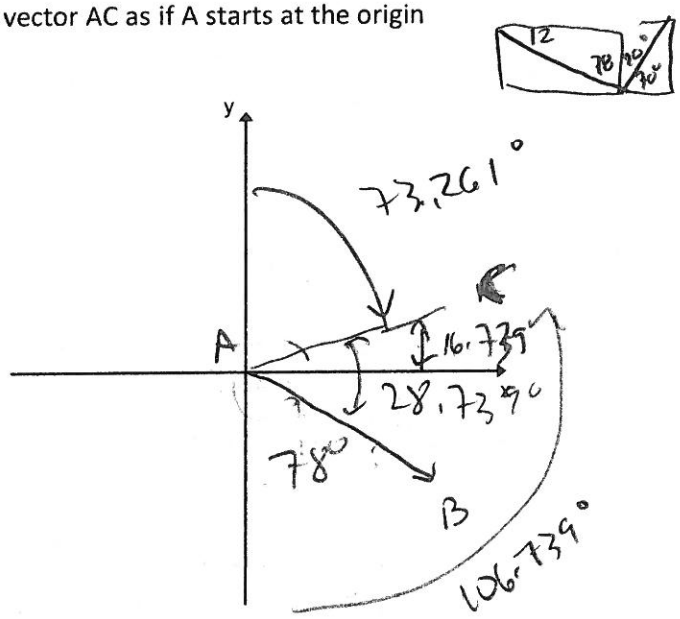
What quadrant did point C end up in? 2

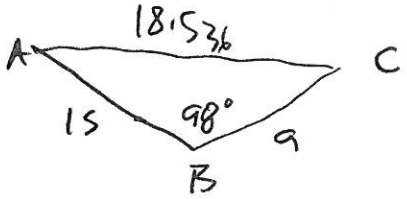
We will focus on vector addition today.

Vector AB has direction 12° South of East and a magnitude of 15 cm Vector BC has direction 70° North of East and a magnitude of 9 cm.

Draw Vector AB as if A starts at the origin	Draw Vector BC as if B starts at the origin	Draw Vector Triangle ABC as if A starts at the origin
		

Draw vector AC as if A starts at the origin





$$AC = \sqrt{15^2 + 9^2 - 2(15)(9)\cos 98}$$

$$= 18.536$$

$$A = \cos^{-1}\left(\frac{18.536^2 + 15^2 - 9^2}{2(18.536)(15)}\right)$$

$$\approx 28.739°$$

What is the measure of angle ABC? 98° (Hint rectangles and alternate interior angles help with this task sometimes.)

What is the length of Vector AC? 18.536 (hint SAS and Law of Cosines is typically how you can find this)

The resultant vector AC has a heading of 16.739° and a magnitude of 18.536 The resultant vector AC has a bearing of 73.261°

What quadrant did point C end up in? 1