Name: Period #:

1. Add the following vectors and determine the resultant. Angles are on a unit circle.

a. 5.0 m/s, @ 45º and 2.0 m/s, @ 180º
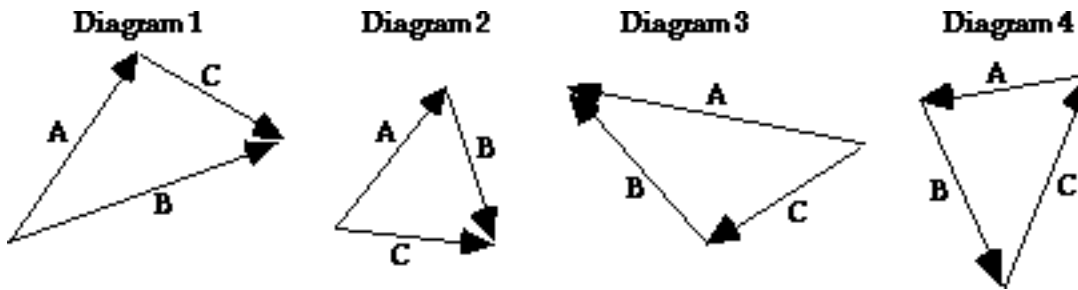b. 5.0 m/s, 45º and 2.5 m/s, 135º

2. When adding vector B to vector A geometrically (or graphically) using the head to tail method, the resultant
is drawn from _____ to the _____.

  a. head of A, tail of B   b. tail of A, head of B

  c. head of B, tail of A   d. tail of B, head of A

Use the diagrams above to answer questions 3-6.

3. Diagram 1 represents A + B = C by the tail to tail method.

  a. True.   b. False.

4. Which one of the following vector addition equations is shown in Diagram 2?

  a. A + B = C   b. A + C = B   c. B + C = A   d. B + A = C

  e. C + B = A

5. Which one of the following vector addition equations is shown in Diagram 3?

   a. A + B = C   b. A + C = B   c. B + C = A   d. B + A = C

   e. C + B = A

6. If the direction of vector C were reversed in Diagram 4, the correct equation for the vector addition would be

   a. A + B = C   b. A + C = B   c. B + C = A   d. B + A = C

   e. none of these

7. Vector A: + 8 units. Vector B: -20 units. Add them head to tail and draw the resultant, R.

8. Vector A, with a magnitude of 32 units, points $65°$ with respect to the +x axis. What are the magnitudes of the x and y components of this vector?

9. Vector A, 10 units @ $0°$ with respect to the +x-axis; Vector B, 5 units at @ $180°$; Vector C, 20 units @ $135°$. What is the magnitude and direction of the resultant vector? Sketch a diagram to help visualize it.

10 . Which of the following statements are true of scalars and vectors? Choose all that are TRUE.

a. A vector quantity always has a direction associated with it.

b. A scalar quantity can have a direction associated with it.

c. Vectors can be added together; scalar quantities cannot.

11. If side AB were a resultant vector with its head at end A, the direction of side CB would have to be _____ and the direction of side CA would have to be _____
a. due east, A° W of N
b. due west , 42° N of E
c. due east, B° W of N
d. due west, 90-A° S of E
e. 48° E of N, 42° N of E
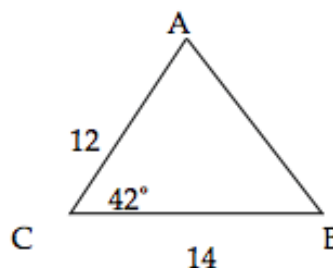
Use the following diagram to answer the next 2 questions. The letters on the diagram represent vector names. All angles are with respect to the +x axis.
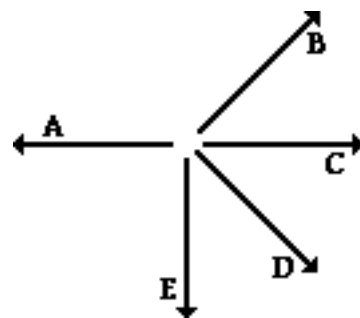
12. Vector B is 45° and vector D is 315°. Vector A is due 180° and E is 270°. If vectors A and E are added head to tail, the direction of the resultant is the same as _____. If vectors A and E are added tail to tail, the direction of the resultant is the same as___.

a. $\vec{D}, -\vec{D}$

b. $-\vec{D}, \vec{D}$

c. $\vec{B}, \vec{B}$

d. $-\vec{B}, -\vec{B}$

e. $\vec{C}, \vec{D}$

13. The direction of vector C is 0°, the direction of vector B is 45° with respect to C and the direction of vector D is 315° with respect to vector C. The direction of the resultant of B + D is
a. 90°
b. 45°
c. 180°
d. the same as vector C.
e. none of these.

Solve problem 14 analytically using the head-to-tail vector addition method. Draw a neat, well-labeled diagram. Show work neatly.

14. A bullet traveling 920 m ricochets (bounces back at angle) from a rock. The bullet travels another 400 m, but at an angle of 42° from its previous forward motion. What is the resultant displacement of the bullet?