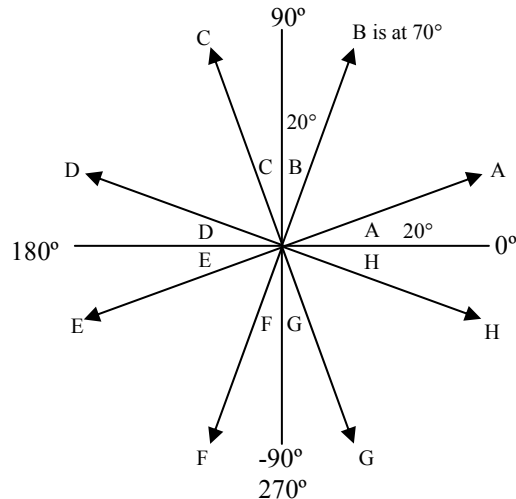


1. Use the diagram at the right to answer the following.  
 A. On the diagram mark the +x, -x, +y, and -y axis.

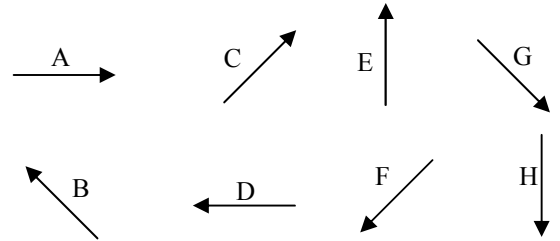
Notice angles A thru G. Each of them is  $20^\circ$ , but they are all at different directions. Your calculator needs to be able to tell them apart. So think of them as directions, not angles. Angle A is at a direction of  $20^\circ$ . Angle B is at an angle of  $70^\circ$  ( $90^\circ - 20^\circ$ ).



- B. Which arrow has a direction of  $-20^\circ$ ?  
 C. Which arrow has a direction of  $160^\circ$ ?  
 D. Which arrow has a direction of  $110^\circ$ ?  
 E. Which arrow has a direction of  $260^\circ$ ?  
 F. What is the direction of arrow C?  
 G. What is the direction of arrow E?

These are the directions that your calculator knows, so let's work WITH the calculator. From now on ALL angles must follow this diagram!

2. Use the arrows at the right to answer the following.  
 A. \_\_\_ Which arrow has +x and -y components?  
 (which is pointing in the +x and -y directions?)  
 B. \_\_\_ Which arrow has -x and +y components?  
 C. \_\_\_ Which arrow has +x and no y component?  
 D. \_\_\_ Which arrow/s have no x component?  
 E. \_\_\_ Which arrow is the negative of A?  
 F. \_\_\_ Which arrow = -B?  
 G. \_\_\_ Which arrow has -x and -y components?  
 H. What does A + D equal?



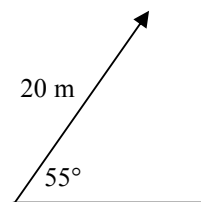
Still using the A-H arrows as displacement vectors (distances with directions)....

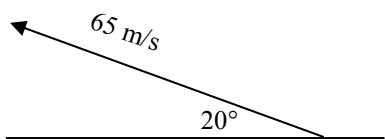
3. A. A person walks the direction of A, then C, the E, then 2D (D twice). Starting at the point marked "start" draw this path at the right.  
 B. A second person, standing at the same starting point, watches the first person walk their crazy path, but being much smarter (and a bit lazier), walks to the first person in a straight line. Use an arrow to show this second person. Mark the arrow "R" for resultant.

●  
Start

Use your "Vector Basics" notes:

4. Notice the arrow of 20m at  $55^\circ$ . Magnitude means "how big". Direction means "which way is it pointing".  
 A. What is the magnitude of the vector at the right?  
 B. What is the direction of the vector at the right?  
 C. Find the x and y components of the vector. (Draw a straight line down from the tip of the arrow to make a right triangle. With this triangle, find the x and y sides [components].)





5. Use the vector labeled 65 m/s to answer the following.
- A. What is the magnitude of the vector?
  - B. The angle given is not the direction of this vector. Using what you learned on the front, what is the direction of this vector?

C. Find the x and y –components of the vector.

Use the “Projectile Motion” notes to answer the following questions. (Please READ the notes!!!!)

- 6. The speed a projectile is launched is called its: \_\_\_\_\_
- 7. What is a projectile’s acceleration in the x-direction?
- 8. What is a projectile’s acceleration in the y-direction?
- 9. If object 1 is dropped from 4m and object 2 is thrown horizontally from 4m, which one hits the ground first?
- 10. In which direction do you calculate time?
- 11. How far the projectile moves in the x direction is known as the projectile’s \_\_\_\_\_.