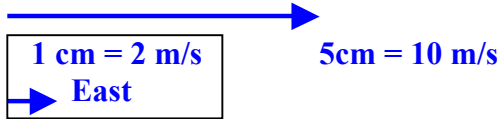


**Vectors and Projectiles**  
**Formative Assessment**

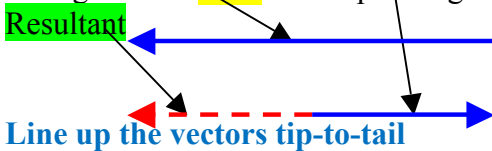
Name \_\_\_\_\_  
 Date \_\_\_\_\_ Block \_\_\_\_\_

*Answer completely in the space provided. You may do any work on the back.*

1. Draw a vector that represents a velocity of 10 m/s East. *Indicate your scale.*



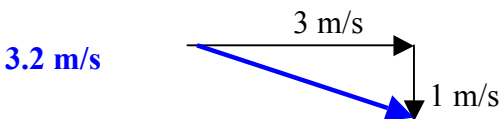
2. Draw the resultant of a 1 cm vector pointing right and a 2 cm vector pointing left.



3. What part of a vector quantity does the length of a vector represent?

**Magnitude or size**

4. What is the magnitude of the resultant of the following pair of vectors: **Measure the resultant and use a scale or try Pythagorean theorem.**



5. A plane flies North at 125 mi/hr and encounters a 20 mi/hr wind directed South. What's the resultant velocity of the plane?



6. Give two examples of vector quantities. **Displacement, velocity, acceleration, force...all of these have direction, which makes them vectors.**

7. Two projectiles are fired with the same speed at different angles. They both land the same distance from the launch point. What is the sum of the two launch angles?

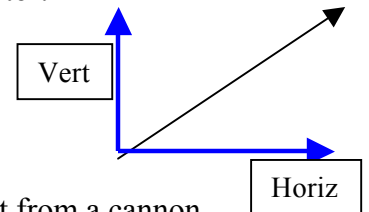
**90 degrees; complementary launch angles will provide the same range**

8. How far downrange would your baseball be 3 seconds after being dropped out of a plane traveling horizontally with a velocity of 100 m/s? *Ignoring air resistance*

$$d = v t = 100 \text{ m/s} \cdot 3 \text{ s}$$

$$d = 300 \text{ m}$$

9. Draw the horizontal and vertical components of the following vector:



10. A cannonball is shot from a cannon horizontally with a speed of 40 m/s. An identical cannonball is dropped from the same height at the same time. Which, if either, hits the ground first?

**Same time; same height = same fall time due to gravity**

11. What is the vertical velocity of the cannonball in #10, 3 seconds after it was shot?

**It's in freefall for 3 s so,  $\Delta v = g \cdot t = 10 \text{ m/s}^2 \cdot 3 \text{ s}$**

$$v = 30 \text{ m/s}$$

12. Sketch the shape the motion of a projectile. What is this shape called?

**Parabola**

