

Science of Sailing Worksheet

Data Table 1

Sail Type	Angle of the Centerline to the Wind	Observations
Square	0°	
Square	45°	
Square	90°	
Square	135°	
Square	180°	
Triangle	0°	
Triangle	45°	
Triangle	90°	
Triangle	135°	

Data Table 2

Sail Type	Angle of the Centerline to the Wind	Angle of Sail to Centerline	Observations
Square	100°		
Square	100°		
Square	100°		
Triangle			
Triangle			
Triangle			

Post-Lab Questions *(Use a separate sheet of paper to answer the following questions.)*

1. Which sail generated the most forward motion when the sail car was pointed directly downwind? Explain why one sail type worked better than the other.
2. Which sail generated the most forward motion when the sail car was perpendicular to the wind? Explain why one sail type worked better than the other.
3. Did either type of sail produce forward motion *directly* into the wind?
4. Was it possible for either type of sail to produce forward motion with the sail car pointed into the wind at an angle? If so, which type of sail generated forward motion with the bow of the sail car pointed into the wind?
5. Explain how a sail can generate forward motion into the wind. Draw figures if necessary to illustrate force angles and direction of motion.
6. What are some advantages and disadvantages of a square sail? What are some advantages and disadvantages of a triangular sail?
7. Is it possible to rotate the square sail to the proper angle to generate forward motion into the wind? Explain.