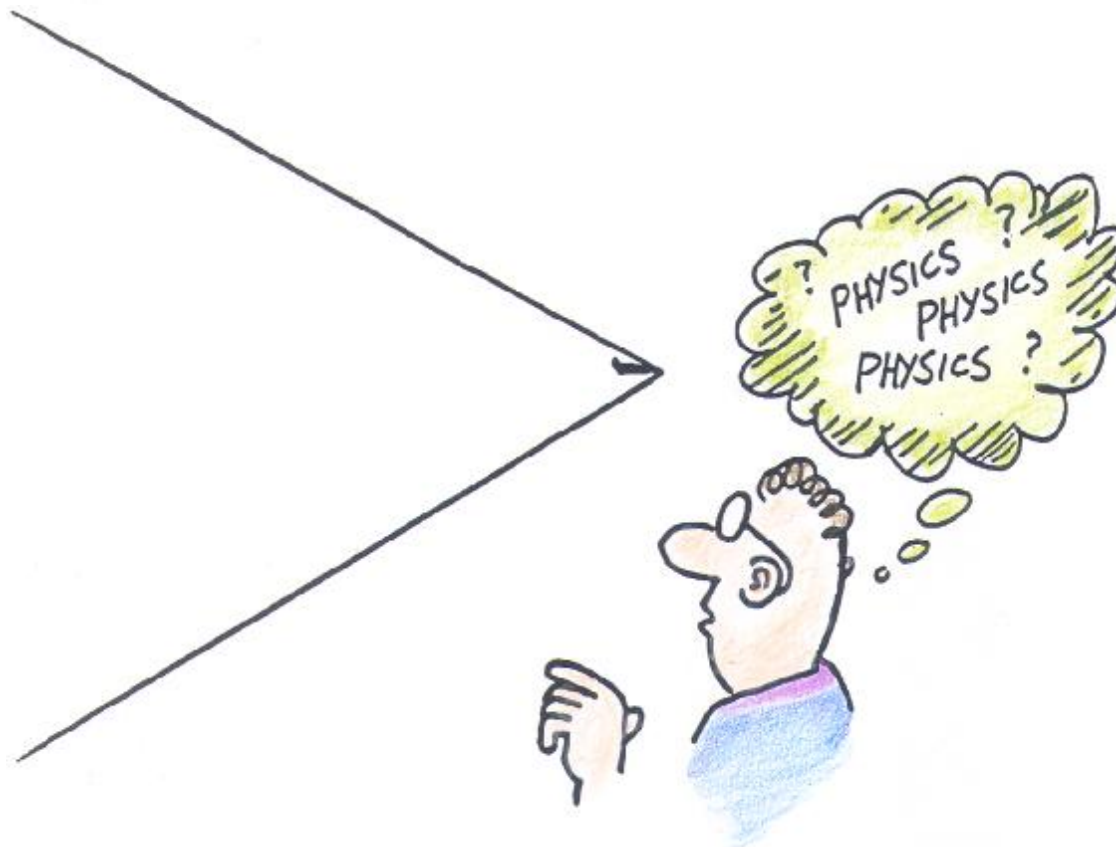


# NEXT-TIME QUESTION

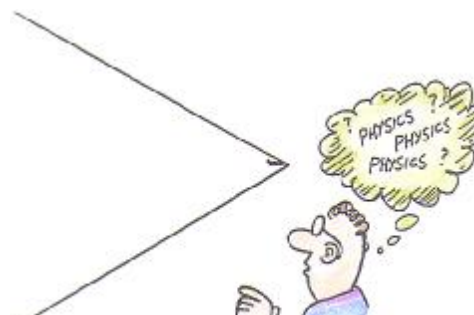
A conical shock wave is generated by a supersonic aircraft as shown.

Estimate the speed of the aircraft.



# NEXT-TIME QUESTION

A conical shock wave is generated by a supersonic aircraft as shown. Estimate the speed of the aircraft.



Answer:

Twice the speed of sound, as can be seen by the angle of the shock wave. Each segment of the wave is a superposition of expanding spheres that were generated by the aircraft as it traveled along the dashed line. The center of any sample sphere (circle, as seen in two dimensions on the page) shows where the aircraft was when the sphere was first produced. By comparing the distance the sound has traveled to the distance the aircraft has traveled in the same time, we have the speed of the aircraft compared to the speed of sound. In this case, the aircraft has traveled twice as far as sound has traveled in the same time, so it moves at twice the speed of sound.

