

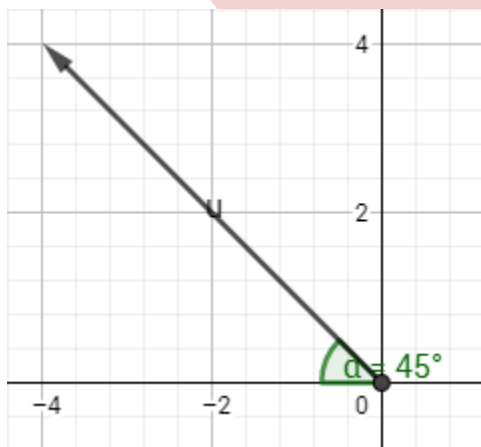
Kinematics*Technology, Society and the Environment*

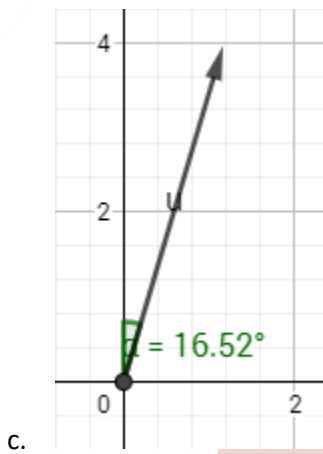
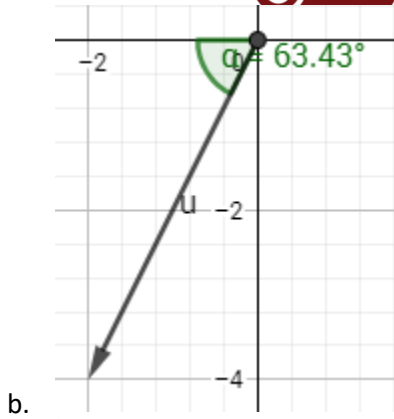
1. How does goal line technology operate in soccer?
2. How do speed guns capture the motion of speeding vehicles?
3. How are accelerometers used to examine the motion of animals in the wilderness?
4. Explain the operation of accelerometers in video game consoles.
5. How do motion sensor lamps operate?
6. Explain the operation of global positioning system in navigation.

Terminologies, graphing and deriving kinematic equations

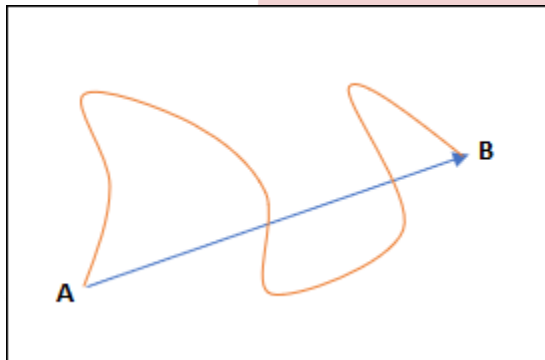
Scalar and Vector quantities

1. Identify each quantity as scalar or vector:
 - a. 15.8 m
 - b. 42 m/s [S]
 - c. 500 kg
 - d. 18 m/s² [down]
 - e. 51 s
 - f. 91 m [N30°W]
2. Illustrate the direction for each vector notation.
 - a. 10 m/s [E15°S]
 - b. 9.8 m/s² [S]
 - c. -5 m [N20°E]
 - d. 16 km [N8°W]
3. Write the vector notation for each. (magnitude = 10 km)





4. Label the lines for distance and displacement.



Not a vector Diagram!

5. Mary and her brother travelled for their vacation to Tokyo from Toronto. As a part of their journey they decided to tour the world, first stopping in Kingston, Jamaica (2859 km distance) then to Rio de Janeiro (a further 5833 km distance) to Johannesburg (7115 km) to Warsaw (8799 km) to Moscow (1150 km) and finally to Tokyo (7474 km) where they spent a week before returning to Toronto (10342 km). Calculate:
- Their displacement magnitude to Tokyo from Toronto
 - The total distance travelled to Tokyo from Toronto
 - Is their final position vector equal to their displacement or total distance?