

The Dash Timer



Figure 1: A weathered stopwatch and a printed position-time graph rest on a running track lane line, sunlight low across the rubber surface, a

Maya clicked her stopwatch as Devon sprinted the school track. "Forty metres, five point two seconds," she called. "That's your speed, but which way you ran, that's velocity." Devon jogged back, breathing hard. "Same thing, isn't it?" "No. Speed's just a number. Velocity needs direction too. You ran east, so it's forty metres east over five point two seconds." They plotted his run on a position-time graph app. "See this slope?" Maya said. "Steeper means faster. And when you slowed down near the finish, that curve bending is acceleration." "So acceleration is just speeding up?" "Speeding up, slowing down, or changing direction. Any change in velocity over time." Devon grinned. "Next race, I'm calculating my own acceleration before you do."

Words to know

- **displacement:** A vector quantity describing the change in position of an object, including direction.

- **velocity:** A vector quantity describing the rate of change of displacement, including direction.
- **acceleration:** A vector quantity describing the rate of change of velocity over time.
- **scalar quantity:** A quantity described by magnitude only, such as speed or distance.
- **vector quantity:** A quantity described by both magnitude and direction, such as velocity or displacement.
- **position-time graph:** A graph showing how an object's position changes over time, whose slope gives velocity.

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