Kinematics

AP Physics 1 · Vocabulary in context

Word	Example
kinematics /ˌkɪnɪˈmætɪks/	**Kinematics** describes how things move.
scalar /ˈskeɪlə/	Mass is a **scalar** because it has no direction.
magnitude /ˈmægnɪtjuːd/	The force has a **magnitude** of 20 N. 20 N
distance /ˈdɪstəns/	The **distance** from home to school is 2 km. 2 km
vector /ˈvektə/	Velocity is a **vector** because it has a direction.
sign	The **sign** of velocity shows direction.
positive direction /ˈpɒzɪtɪv daɪˈrekʃn/	Up is the **positive direction**.
displacement /dɪˈspleɪsmənt/	After walking 3 km east, your **displacement** is 3 km east. 3 km 3 km
velocity /vəˈlɒsɪti/	The ball's **velocity** is 5 m/s to the left. 5 m/s
speed /spiːd/	The bus moves at a **speed** of 15 m/s. 15 m/s
acceleration /əkˌselə'reɪʃn/	The car speeds up quickly, so its **acceleration** is large.
average velocity /ˈævrɪdʒ vəˈlɒsɪti/	**Average velocity** is displacement divided by time.
instantaneous velocity /ˌɪnstənˈteɪnɪəs vəˈlɒsɪti/	**Instantaneous velocity** is velocity at one moment.
deceleration /dɪˌselə'reɪʃn/	**Deceleration** means slowing down.

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constant acceleration /ˈkɒnstənt əkˌselə'reɪʃn/	A dropped ball has **constant acceleration**.
kinematic equations	The **kinematic equations** link displacement, velocity, acceleration and time.
final velocity	The **final velocity** is the speed at the end.
free fall /friː fɔːl/	A stone dropped from a bridge is in **free fall**.
air resistance /eə rɪˈzɪstəns/	**Air resistance** slows down a falling leaf.
symmetry /ˈsɪmətri/	A thrown ball's path has **symmetry**: going up and coming down take the same time.
position–time graph	The slope of a **position–time graph** is velocity.
slope /sləʊp/	A steeper line has a larger **slope**.
velocity–time graph /vəˈlɒsɪti taɪm græf/	The slope of a **velocity–time graph** is acceleration.
area /ˈeərɪə/	The **area** under a velocity–time graph is the displacement.
best-fit line /best fɪt laɪn/	Draw a **best-fit line** through the points.
reference frame /ˈrefrəns freɪm/	A train is a **reference frame** for the people inside it.
relative motion /ˈrelətɪv ˈməʊʃn/	**Relative motion** depends on who is watching.
inertial reference frame /ɪˈnɜːʃl ˈrefrəns freɪm/	A smooth-moving train is an **inertial reference frame**.

Word	Example
components /kəmˈpəʊnənts/	Split the velocity into horizontal and vertical **components**.
projectile motion /prəˈdʒektaɪl ˈməʊʃn/	One model of **projectile motion** ignores air resistance.
independent /ˌɪndɪˈpendənt/	The horizontal and vertical motions are **independent**.
trajectory /trəˈdʒektəri/	The ball's **trajectory** is a curve.
parabola /pəˈræbələ/	A thrown ball follows a **parabola**.
time of flight /taɪm ɒv flaɪt/	The **time of flight** of the ball is 2 s.
maximum height	At **maximum height**, vertical velocity is zero.
range /reɪndʒ/	The **range** of the ball is how far it lands from where it started.

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