Position

Coordinate system
Displacement:
- magnitude
- direction

Velocity

Δ position/time
Magnitude
Direction
Const. vs. changing vel.
Speed vs velocity

Acceleration

Δ velocity/time
Magnitude
Direction
Zero vs.non-zero acc.
v = 0 vs. a = 0

Time

Ave. vs. instantaneous

Meaning of ± signs

1-D: Sign = direction
2-D: Sign of comp. = direction
Meaning of negative v, a.
Increasing/decreasing vs. sign
Sign and change in x, v, a.
Negative time

Graphs

x vs t, v vs t, a vs t.
Consistency among graphs
Meaning of slope, x&y intercepts, max, min, concave up/down.

Verbal descriptions

Interpreting kinematics scenarios
Verbal description↔graphs

Diagrams

Constructing/interpreting Setup

2-D (vectors)

Component representation
Angle- magnitude representation
Decomposition into orth. components
Mag. via components + pythag.
Direction via components + trigonometry
Components via mag + trigonometry

Projectile motion

Independence of x and y directions
Behavior of x, y, v_x, v_y, a_x, a_y in trajectory
Zeros, maxima along trajectory
Time of flight comparisons
Possible symmetries in values
Special trajectories: “half”, y_i = y_f = 0