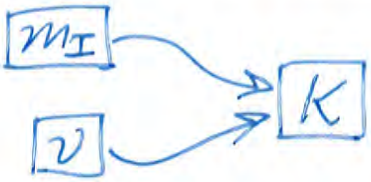
E2

Title Kinetic energy

Ingredients

Sketch	
At/Through	t
Owner	System
Quantity	Inertial mass; Instantaneous Speed; Kinetic energy
Variable	m_I; v; K
Giver	

Recipe

Diagram the relationship	
Graphically present quantities	Kinetic energy bar chart 
Mathematical relationship	$K = \frac{1}{2} m_I v^2$

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The top half of this sheet consists of an "**Ingredients**" section with a row labeled "Sketch", a row labeled "At/Through", a row labeled "Owner", a row labeled "Quantity", a row labeled "Variable", and a row labeled "Giver."

Sketch: A block, labeled m-sub-I, is moving toward the right, as indicated by whooshies trailing to the left. The block is surrounded by a dashed system bubble.

Remaining rows of Ingredients section are used for a flowchart illustrating the following:
The Owner is the System. At time t, the System owns the Quantity Inertial mass denoted by the Variable m-sub-I. At time t, the System owns the Quantity Instantaneous speed denoted by the Variable v. At time t, the System also owns the Quantity Kinetic energy denoted by the Variable uppercase K.

The bottom half of this sheet consists of a "**Recipe**" section with a row labeled "Diagram the relationship", a row labeled "Graphically present quantities", and a row labeled "Mathematical relationship".

Diagram the relationship
A flowchart arrow shows that inertial mass m-sub-I contributes to kinetic energy K. Another arrow shows that instantaneous speed v also contributes to kinetic energy K.

Graphically present quantities
Kinetic energy bar chart
Plot E on the vertical axis. Draw a tickmark labeled 0. At the height of this tickmark, draw a horizontal segment to the right, labeled underneath as K. From and extending upward from this labeled segment, draw a shaded rectangular bar.

Mathematical relationship
K = one-half m-sub-I times the square of v