

DYNAMICS WORKSHEET Name _____ Problem _____

MODEL Make simplifying assumptions.

VISUALIZE

- Draw a picture. Show important points in the motion.
- Establish a coordinate system. Define symbols.
- List knowns. Identify what you're trying to find.
- Draw a motion diagram.
- Identify forces and interactions.
- Draw free-body diagrams.

Known

Find

SOLVE

Start with Newton's first or second law in component form, adding other information as needed to solve the problem.

ASSESS

Have you answered the question?

Do you have correct units, signs, and significant figures?

Is your answer reasonable?

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MOMENTUM WORKSHEET

Name _____ Problem _____

MODEL Make simplifying assumptions.

VISUALIZE

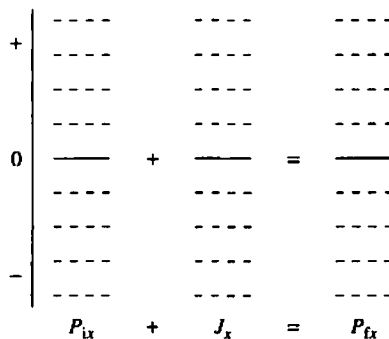
- Draw a before-and-after picture.
- Establish a coordinate system. Define symbols.
- Draw a momentum bar chart.
- List knowns. Identify what you're trying to find.

Known

Find

- What is the system? _____
- What forces exert impulses on the system? _____
- Is the system's momentum conserved during part or all of the problem?

If so, during which part? _____



SOLVE

Start with conservation of momentum or the impulse-momentum theorem, using Newton's laws or kinematics as needed.

ASSESS

- Have you answered the question?
- Do you have correct units, signs, and significant figures?
- Is your answer reasonable?

MOMENTUM WORKSHEET

Name _____ Problem _____

MODEL Make simplifying assumptions.

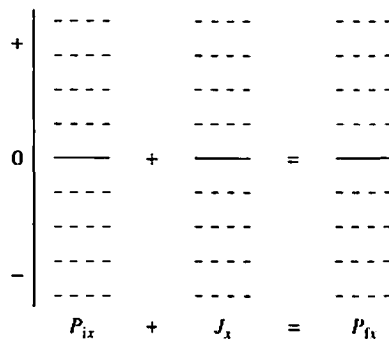
VISUALIZE

- Draw a before-and-after picture.
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Find

- What is the system? _____
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SOLVE

Start with conservation of momentum or the impulse-momentum theorem, using Newton's laws or kinematics as needed.

ASSESS

- Have you answered the question?
- Do you have correct units, signs, and significant figures?
- Is your answer reasonable?

ENERGY WORKSHEET

Name _____ Problem _____

MODEL Make simplifying assumptions.

VISUALIZE

- Draw a before-and-after picture.
- Establish a coordinate system. Define symbols.
- Draw an energy bar chart.
- List knowns. Identify what you're trying to find.

Known

Find

What is the system?

Potential energies?

Nonconservative forces?

External forces?

Is mechanical energy conserved?

+				=							
0				=							
-				=							
	K_i	+	U_i	+	W_{ext}	=	K_f	+	U_f	+	ΔE_{th}

SOLVE

Start with conservation of energy, adding other information and techniques as needed to solve the problem.

ASSESS

- Have you answered the question?
- Do you have correct units, signs, and significant figures?
- Is your answer reasonable?

ENERGY WORKSHEET

Name _____ Problem _____

MODEL Make simplifying assumptions.

VISUALIZE

- Draw a before-and-after picture.
- Establish a coordinate system. Define symbols.
- Draw an energy bar chart.
- List knowns. Identify what you're trying to find.

Known

Find

What is the system? _____

Potential energies? _____

Nonconservative forces? _____

External forces? _____

Is mechanical energy conserved? _____

+											
0		+		+		=		+		+	
-											
	K_i	+	U_i	+	W_{ext}	=	K_f	+	U_f	+	ΔE_{th}

SOLVE

Start with conservation of energy, adding other information and techniques as needed to solve the problem.

ASSESS

Have you answered the question?

Do you have correct units, signs, and significant figures?

Is your answer reasonable?