

COLLISION ANALYSIS ACTIVITY SHEETS

Name: _____

Period: _____ Date: _____

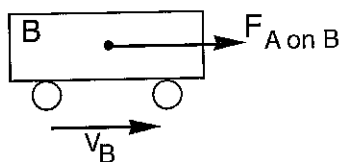
1.) Introduction

Each of the next three pages shows five "snapshots" of a collision between two frictionless carts. By labeling these diagrams we will be conducting a slow motion analysis of these collisions.

2.) Instructions

a.) For each cart diagram neatly construct (with a pencil and ruler) a horizontal force vector and label it as shown in the sample. Carefully adjust the length of each force vector so that it compares properly with the other force vectors.

b.) Below each cart's diagram construct an appropriate velocity vector. Carefully adjust the lengths of your velocity vectors so they correspond properly with the lengths of the other velocity vectors.

*Figure 9.30*

c.) Try the collisions shown on the next two pages with your carts and bricks to investigate the questions in this activity.

3.) Questions to help you check your work

a.) In each case where a cart feels a net force, does the cart speed up or slow down?

b.) How does the size of the force on cart A compare with the force on cart B in each "snapshot"?

c.) In which "snapshot" are the forces largest?

Experiment #1

In this collision of equal mass carts (one stationary) neatly construct proper force and velocity vectors, with labels, as indicated in the directions.

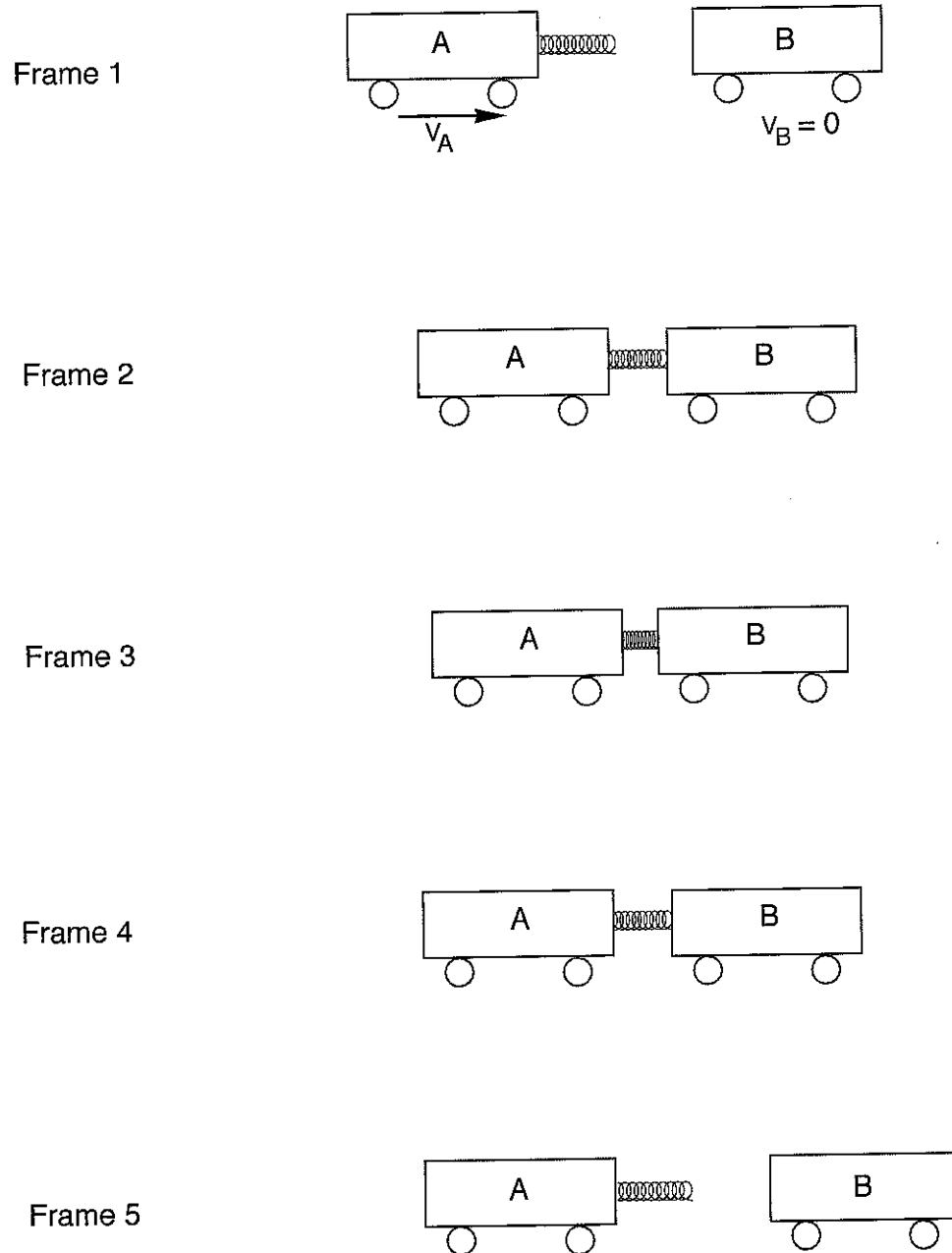


Figure 9.31

Experiment #2

For this collision of a large mass with a small stationary mass neatly construct and label appropriate force and velocity vectors for each mass.

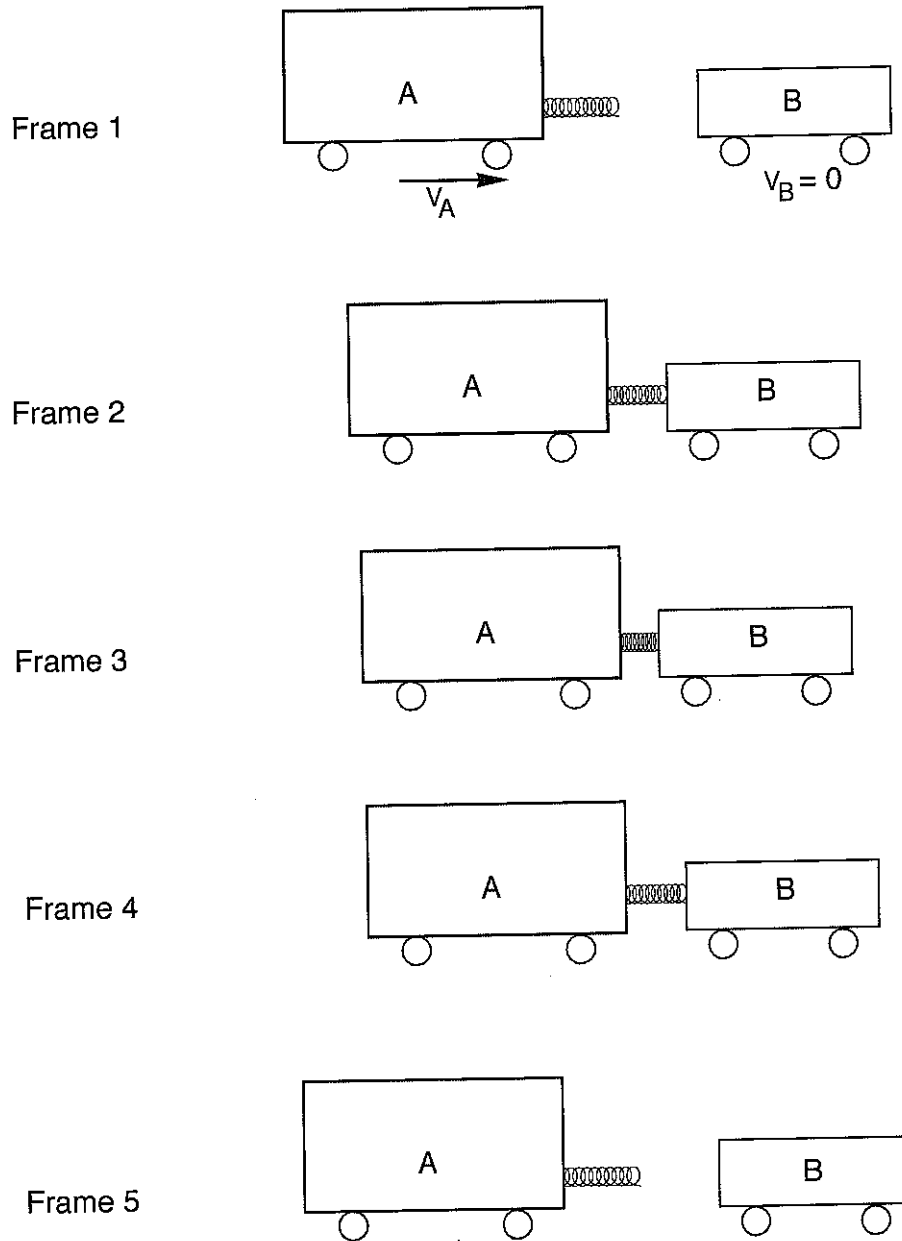


Figure 9.32

Experiment #3

In this collision a small moving mass strikes a large stationary mass. Neatly construct and label all the appropriate force and velocity vectors.

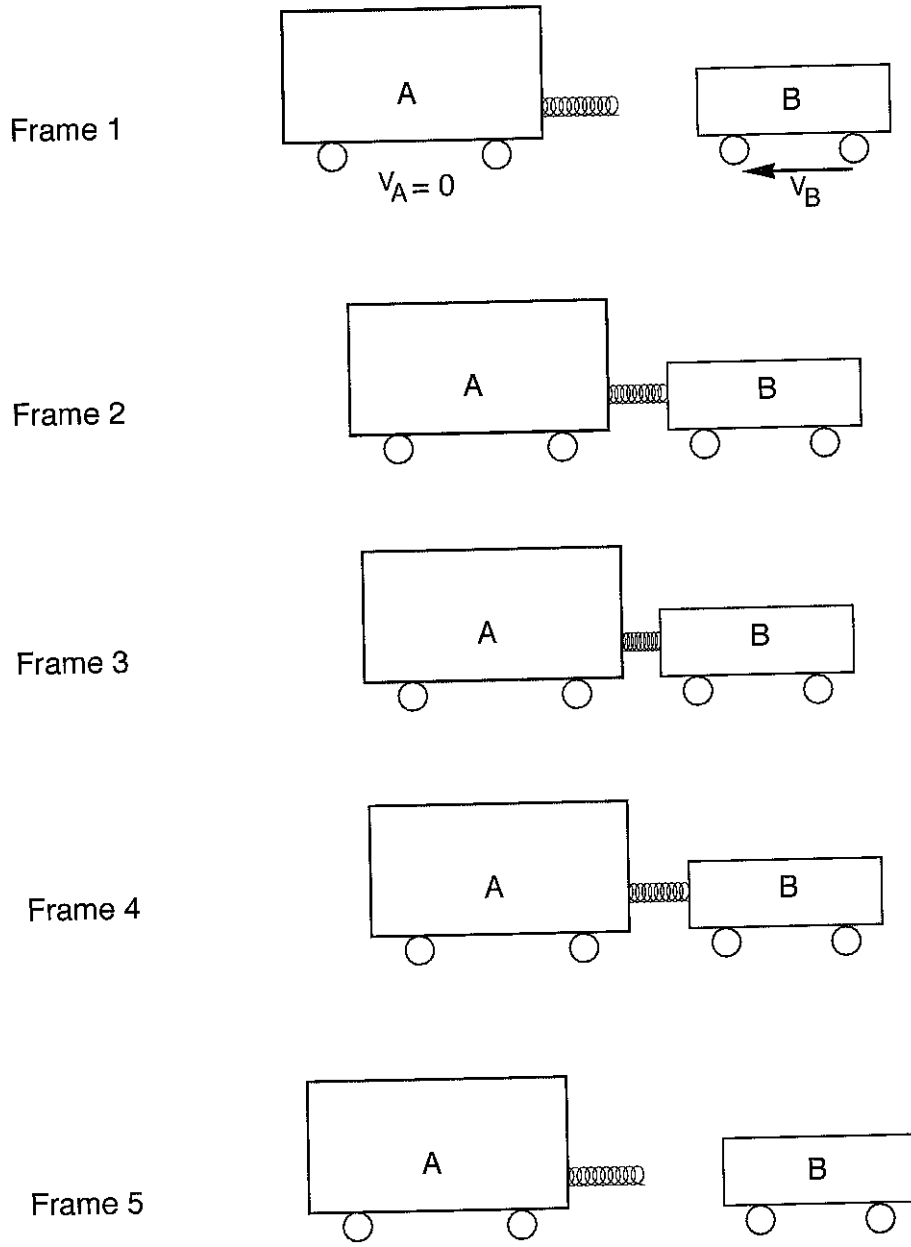


Figure 9.33