Name: _____ DISC: _____ Score: _____ / 20

Instructions:

- Do your own work.
- Answer the questions below in the space provided.
- Make sure you show all your work and any equations that you use.
- Please place a box around your answers.
- Remember to give the correct units with all numerical answers

Q1	Q2	Q3	Q4
5	5	5	5

PHYSICAL QUANTITY	SYMBOL	UNITS
Mass	M	kg
Length	x	m
Time	t	s
Force	F	$kg\ m/s^2$

1. The force on a spring is expressed as $F = -kx$, where k is known as the *spring constant.* Using the information in the table above, find the units on the *spring constant* k.

Answer: 5 pts

2. You are on a hike through the woods. The table below describes the path you took.

STEP	DIRECTION	DISTANCE
1	East	$3\ km$
2	South	$2\ km$
3	30^o north-of-west	$4\ km$

   a. Set up a coordinate system, with $(0\ km, 0\ km)$ your starting point (let the $+x$-axis be East). Draw your path through the woods.

Diagram: 2 pts

   b. How far away from your starting point $(0\ km, 0\ km)$ do you stop? In what direction?

Answer: 3 pts

3. You have a bag which contains 2 types of coins: dimes ($\$0.10$) and nickels ($\$0.05$).
   a. You want to know how many of each type of coin you have in the bag, without opening the bag, removing the coins, and counting each type. What information would help you solve this problem?

Answer: 2 pts

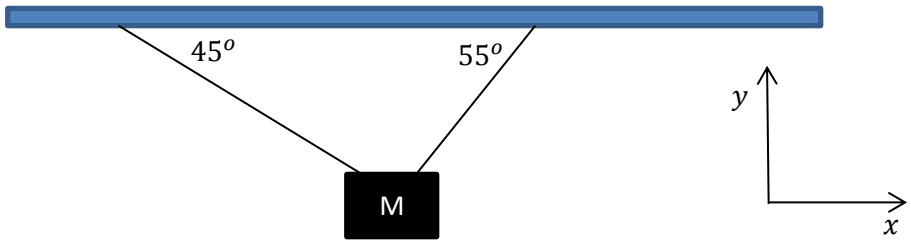
   b. Someone now tells you the following information:
      i. The bag contains 10 coins.
      ii. The bag contains $0.90.

   How many of dimes and nickels are in the bag?

Dimes:	Nickels:

Dimes: 1 pt.
Nickels: 1 pt.
Algebra: 1pt.

4. A block hangs from the ceiling as shown in the diagram:



   a. The block is in *equilibrium*. What does this mean?

Definition: 2 pts.

Vectors: 3 pts.

   b. On the diagram above, draw all of the forces vectors *and* their components. Remember to label all of your vectors.