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 (or m)	kg
Radius	r	m
Time	t	s
Weight	W	$kg\, m/s^2$

1. The weight of an object due to the Earth's gravity is expressed: $W = \frac{GMm}{r^2}$, where G is known as the *Universal Gravitational Constant (or just Gravitational Constant).* Using the information in the table above, <u>find the units on G</u>.

Answer: 5 pts

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

STEP	DIRECTION	DISTANCE
1	West	$3\ km$
2	North	$2\ km$
3	30° south-of-east	$4\ km$

Set up a coordinate system, with $(0\ km, 0\ km)$ your starting point (let the $+x$-axis be East and the $+y$-axis be North). *Use the blank page at the end of the quiz if you need more room.*

Diagram: 2 pts

Coordinates: 2 pts.

Distance: 1 pt.

   i. Draw your path through the woods in the space below.
  ii. What are the coordinates of your final location?
 iii. How far from the starting point $(0\ km, 0\ km)$ do you finish?

3. You have a bag which contains 2 types of coins: dimes ($0.10) and nickels ($0.05).
   The bag:
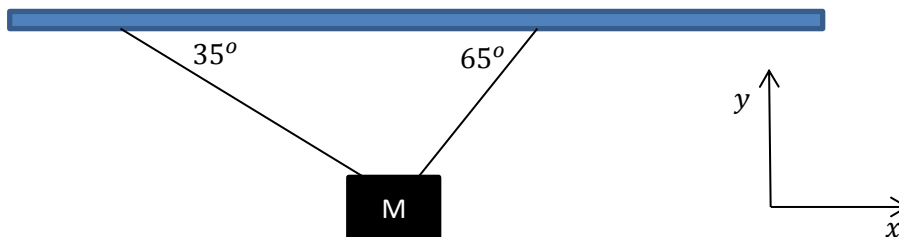   > i. Contains 10 coins.
   > ii. Has a total value: $0.95.

   How many dimes and nickels are in the bag?

Dimes:	Nickels:

Dimes: 1 pt.

Nickels: 1 pt.

Algebra: 3 pt.

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.

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