**Unit 4 - Quiz 1a**

In each of the following situations, the object is your system. In the middle column, draw a force diagram showing all forces acting on the object. In the space to the right, draw **arrows showing direction** of velocity, sum of the forces, and change in velocity on the object. For any one of these quantities that is zero, write 0 next to the quantity.

|  |  |  |
| --- | --- | --- |
| 1. Object sits motionless |  | Velocity :  Sum of Forces:  Change in Velocity: |
| 2. Object slides across a frictionless table at constant speed. |  | Velocity :  Sum of Forces:  Change in Velocity: |
| 3. The object slides across a table and slows down because of friction. |  | Velocity :  Sum of Forces:  Change in Velocity: |
| 4. A person pulls on the block so that it moves across the table at a constant speed. There is friction. |  | Velocity :  Sum of Forces:  Change in Velocity: |
| 5. The ball is rising in a parabolic trajectory. |  | Velocity :  Sum of Forces:  Change in Velocity: |

For each of the situations below, assume that the same puck is used. Assume the puck is on perfectly level ice unless specified..

* 1. Draw and label a proper force diagram for the puck in the space provided.
  2. Determine the sum of the forces on the puck based on the forces in your force diagram.
  3. Describe the type of motion the puck will have.

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| --- | --- |
| 1. The puck sits at rest on the ice and experiences no horizontal forces. | a. Force diagram |
| b.  𝛴 Fx =  𝛴 Fy = | c. The block will… |

|  |  |
| --- | --- |
| 7. The puck sitting on the ice is pushed to the right with a constant force. | a. Force diagram |
| b.  𝛴 Fx =  𝛴 Fy = | c. The block will… |

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| --- | --- |
| 8. The puck is moving to the right on the ice, while experiencing no horizontal forces. | a. Force diagram |
| b.  𝛴 Fx =  𝛴 Fy = | c. The block will… |

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| --- | --- |
| 9. The puck is moving to the right while experiencing a constant force to the left. | a. Force diagram |
| b.  𝛴 Fx =  𝛴 Fy = | c. The block will… |

1. How are the sum of the forces on an object and the change in its velocity related? Include evidence from class activities to support your answer.