Unit 4 - Quiz 1b

Introduction to Forces

1. Which of the following statements are true of an object that experiences **balanced forces** (or **unbalanced forces**)? Circle ALL of the TRUE statements below.

1. If a cart is moving to the right, then the forces acting on it have to be **unbalanced**.
2. An object slowing to a stop has **balanced** forces acting on it.
3. It always takes an **unbalanced** force to keep an object in motion.
4. If an object is moving with a changing velocity, then the forces acting on the object are **balanced**.
5. **Balanced** forces cause stationary objects to remain at rest
6. **Balanced** forces cause moving objects to come to rest.
7. **Unbalanced** forces cause objects to move.

2. Consider what you know about the **sum of forces** and **balanced forces** to determine which of the following statements are true. Circle ALL of the TRUE statements below.

1. It always takes an **unbalanced** force to keep an object in motion.
2. If an object is at rest, then there are **no forces** acting upon the object.
3. It takes an **unbalanced** force to keep an object in motion at a constant velocity.
4. It is the natural tendency of all objects to eventually come to a rest position.
5. It takes an **unbalanced** force to cause an object to accelerate from rest.

3. Which of the following force diagrams depict an object moving to the **right** with a **constant speed**? Circle ALL that apply.

25 N

25 N

25 N

25 N

25 N

25 N

25 N

25 N

20 N

15 N

20 N

20 N

20 N

A

B

C

D

4. Construct system schema and force diagrams for the following physical situations at the instant in time for which they are described. As is always done in force diagrams**, label the forces according to type, agent and object and draw the arrows such that their length reflects the magnitude of the force.** Determine the direction of the change in velocity.

**System schema Force diagram Direction of 𝚫v**

|  |
| --- |
| 1. A book is at rest on   top of a table. |



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| b. A book is being pushed  to the right across a table  surface with a **constant**  **velocity.** |

|  |
| --- |
| c. A book is being pushed  to the right across a table  surface and **accelerating**  **in the direction of the push.** |

