

(AT REST OR MOVING AT CONST. VELOCITY)

$a \neq 0$ (ACCELERATING)

Balanced vs. Unbalanced Forces

Read from Lesson 1 of the Newton's Laws chapter at The Physics Classroom:

<http://www.physicsclassroom.com/Class/newtlaws/u2l1c.html>

<http://www.physicsclassroom.com/Class/newtlaws/u2l1d.html>

MOP Connection: Newton's Laws: sublevels 2 and 3




Review: An object at rest ... **remains at rest** ;
 An object in motion ... **Remains in motion (constant velocity)** ;
 unless ... **acted upon by an unbalanced force** ;

1. The amount of force required to keep a 6-kg object moving with a constant velocity of 2 m/s is ___ N.
 a. 0.333 b. 2 c. 3 d. 6 e. 12
 f. ... nonsense! A force is NOT required to keep an object in motion.

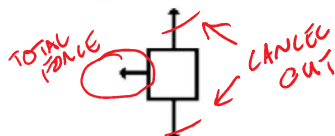
$a = 0$ $\therefore F = 0$

2. Renatta Oyle is having car troubles. She is notorious for the trail of oil drops that she leaves on the streets of Glenview. Observe the following oil traces and indicate whether Renatta's car is being acted upon by an unbalanced force. Give a reason for your answers.

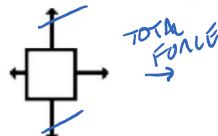
$F \neq 0$
 \therefore IT'S ACCELERATING

		Unbalanced Force?
a.		Yes or No
Reason:	SPACING IS \uparrow , SO IT'S ACCELERATING (SPEEDING UP)	<input checked="" type="radio"/> Yes or <input type="radio"/> No
b.		Yes or No
Reason:	SPACING IS CONSTANT, SO IT'S MOVING AT CONSTANT VELOCITY	Yes or <input checked="" type="radio"/> No
c.		Yes or No
Reason:	SPACING IS \downarrow , SO IT'S ACCELERATING (SLOWING DOWN)	<input checked="" type="radio"/> Yes or <input type="radio"/> No

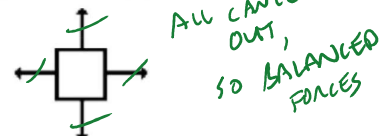
3. Each one of the dot diagrams in question #2 can be matched to a force diagram below. The force diagrams depict the individual forces acting upon the car by a vector arrow. The arrow direction represents the direction of the force. The arrow length represents the strength of the force. Match the dot diagrams from #2 to a force diagram; not every force diagram needs to be matched.



Dot Diagram(s): C



Dot Diagram(s): A



Dot Diagram(s): B

ALL CANCEL OUT, SO BALANCED FORCES

4. If the net force acting upon an object is 0 N, then the object MUST _____. Circle one answer.
 a. be moving b. be accelerating c. be at rest d. be moving with a constant speed in the same direction e. either c or d.

$\therefore a = 0$, SO

Source: The Physics Classroom
<https://www.physicsclassroom.com>

Unit 4: Work Packet pg. 4