

STUDY GUIDE

● Motion and Speed

In each of the following statements, a term has been scrambled. Unscramble the term and write it on the line provided.

- _____ 1. When something moves, it changes *iitsopon*.
- _____ 2. *Otoinm* can be described as a change in position.
- _____ 3. Speed is the *etra fo neahgc* in position.
- _____ 4. *Sttananuoseni eedps* is the rate of motion at any given instant.
- _____ 5. A speed that doesn't vary is called a *tntnsoca dspee*.
- _____ 6. The total distance traveled divided by the total time of travel is called the *evraage pesed*.
- _____ 7. A *miet-nasidtce* graph makes it possible to "see" the motion of an object over a period of time.

Now find each unscrambled term in the hidden word puzzle below. The terms can be written horizontally, vertically, or diagonally and forward or backward. Circle each term as you find it.

H	Z	I	P	L	Q	E	F	O	N	T	Q	S	B	D
C	O	N	S	T	A	N	T	S	P	E	E	D	Z	B
P	B	S	R	F	P	A	Z	A	C	G	Y	B	F	X
M	O	T	I	O	N	O	A	C	E	B	X	G	D	A
R	O	A	M	G	T	O	S	Z	R	H	A	G	F	Y
G	O	N	N	E	I	N	H	I	A	X	F	B	Z	D
G	T	T	Q	H	M	O	L	B	T	B	X	C	B	A
L	Y	A	Z	M	E	G	S	O	E	I	I	E	I	S
T	C	N	Y	P	D	B	B	I	O	M	O	A	C	X
M	P	E	L	P	I	I	F	M	F	B	D	N	J	J
Q	C	O	C	I	S	M	I	Q	C	I	K	P	C	X
O	F	U	B	N	T	P	M	C	H	P	O	M	B	A
C	P	S	P	O	A	F	P	F	A	O	S	N	N	G
E	L	S	F	C	N	C	C	N	N	D	V	A	O	E
F	L	P	O	J	C	J	G	A	G	D	G	I	S	T
D	E	E	P	S	E	G	A	R	E	V	A	E	O	S
G	S	E	F	B	N	L	O	O	N	Q	T	H	P	Q
Z	R	D	G	K	C	D	N	B	G	C	E	A	L	R

STUDY GUIDE

● Velocity and Acceleration

Use the terms below to fill in the blanks.

acceleration

direction

meters per second squared (m/s^2)

slowing down

$$a = \frac{v_f - v_i}{t} = \frac{\Delta v}{t}$$

divide

meters per second (m/s)

subtract

increasing speed

positive

time interval

negative

seconds(s)

velocity change

Speed is the rate of motion of an object. _____ describes an object's speed and direction. The velocity of an object can _____ even if the speed of the object remains constant. This would occur if the _____ of the object's motion changes.

The rate of change of velocity is called _____. The size of an acceleration depends on both the change in velocity and the _____ of the change.

To calculate acceleration, _____ the change in velocity by the time interval. To find the change in velocity, _____ the initial velocity (v_i) from the final velocity (v_f). The equation for average acceleration is _____. Final velocity will be less than initial velocity if an object is _____, and acceleration will have a _____ value. Final velocity will be greater than initial velocity if an object is _____, and acceleration will have a _____ value.

The units for velocity are _____. The unit for time is _____. Therefore, the units for acceleration are _____.

STUDY GUIDE

● A Crash Course in Safety

Listed below are statements that either agree with the textbook or don't agree with the textbook. If the statement does agree, place a (✓) to the left of the statement. If the statement doesn't agree, rewrite it so it will agree with the textbook. Underline the words you change.

- _____ 1. Researchers put lifelike dummies in cars for crash tests. _____

- _____ 2. When a car traveling about 50 km/h collides head-on with something solid, the car expands, speeds up, and goes on. _____

- _____ 3. Within 0.1 second after a car crash, the car stops; but because of gravity, any passenger not wearing a seat belt continues to move forward at the same speed the car was traveling. _____

- _____ 4. By studying the results of crash tests and real car collisions, scientists have learned what happens to people in auto accidents. _____

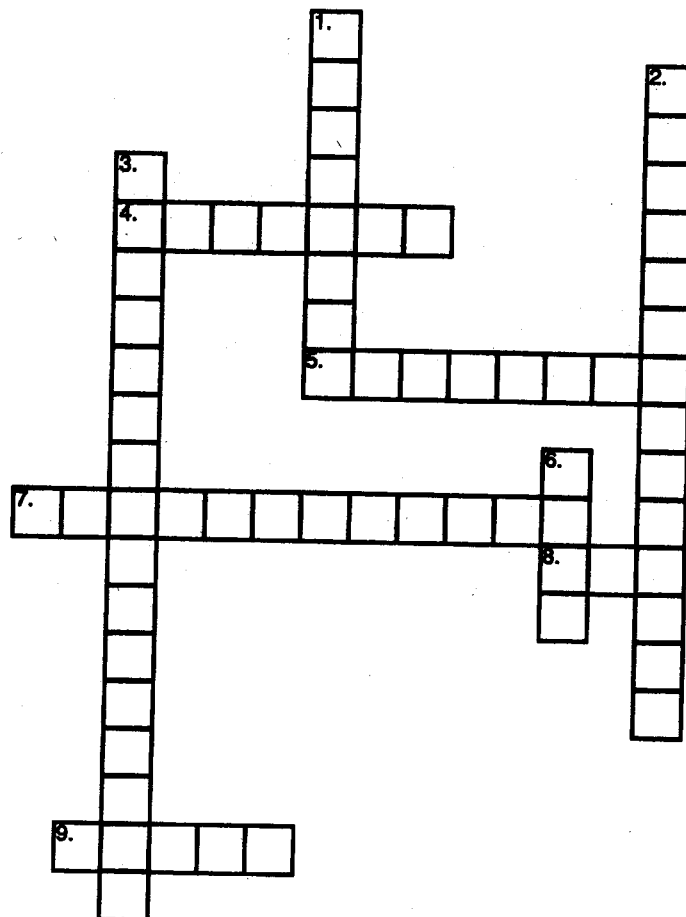
- _____ 5. A person in a car wearing a seat belt becomes "part" of the car and slows down when the car slows down. _____

- _____ 6. The force needed to slow a person from 50 km/h to zero in 0.1 second is equal to 2 times that person's height. _____

- _____ 7. A seat belt not only holds a person in place; it also "gives," increasing the time it takes for a person to come to rest and spreading out the force so it's not concentrated on one part of the body. _____

● Connecting Motion with Forces

Solve the following crossword puzzle using the clues provided.



Across

4. the tendency of an object to resist any change in its motion
5. If this acts on an object, the object will change speed, change direction, or both. (2 words)
7. another name for Newton's first law of motion (3 words)
8. a title before Isaac Newton's name
9. a push or pull that one body exerts on another body

Down

1. the force that opposes motion between two surfaces that are touching each other
2. forces that are equal in size and opposite in direction (2 words)
3. Newton's law that says, "an object at rest stays at rest unless a net force acts on it" and, "an object moving at constant velocity continues at that velocity unless a net force acts on it." (4 words)
6. The more of this an object has, the greater the object's inertia.

