Name: _____

Part A: Multiple Choice (10 marks):

(1) A missile travelling at 375 m/s [E] is approaching a plane travelling at 350 m/s [E]. What is the velocity of the missile with respect to the plane?

(a) 25 m/s [W]	(b) 25 m/s [E]
(c) 375 m/s [E]	(d) 725 m/s [E]

(2) Nick is running away from Sam at 5.0 m/s. If Sam runs at 8.0 m/s, and Nick has a 300m head start, how long will it take Sam to catch him?

a. 100 s	b. 60 s
c. 37.5 s	d. 23 s

(3) Car A is moving north at 35 km/h while Car B is moving south at 50 km/h. What is the velocity of Car A with respect to Car B?

a. 15 km/h north	b. 15 km/h south
c. 85 km/h north	d. 85 km/h south

(4) A rocket accelerates from 130 m/s to 70 m/s in 5.0 s. What was it's acceleration? a. -40 m/s² b. -12 m/s² c. 12 m/s² d. 40 m/s²

(5) An arrow is shot straight up at 50.0 m/s. Approximately how fast is it travelling after 2.0s?

(a) 25 m/s	(b) 30 m/s
(c) 47 m/s	(d) 70 m/s

(6) A bomb is dropped from an airplane at an altitude of 6000m. How far has the bomb fallen after 3.0s?

(a) 15 m	(b) 30 m
(c) 45 m	(d) 2000 m

(7) How long will it take an airplane with an airspeed of 200 km/h to travel 200 km if there is a 50 km/h tailwind?

(a) 0.75 hr	(b) 0.80 hr
(c) 1.0 hr	(d) 1.33 hr

(8) A snail crawls 8 cm right on a leaf. At the same time, the wind blows the leaf 10 cm left. What is the displacement of the leaf with respect to the snail?

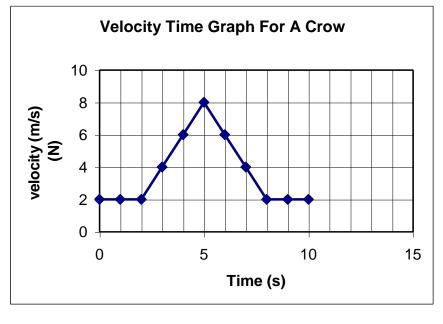
what is the displacement of the fear	with respect to the shart.
(a) 2 cm left	(b) 8 cm left
(c) 8 cm right	(d) 18 cm right

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(9) An object is thrown vertically upwards from the Earth. While it is rising what is true about its velocity and acceleration?

- (a) Its velocity is downward and its acceleration is downward
- (b) Its velocity is upward and its acceleration is upward
- (c) Its velocity is downward and its acceleration is upward
- (d) Its velocity is upward and its acceleration is downward

(10) What is the acceleration of the following object at t=7s?



(a) $0.7 \text{ m/s}^2 \text{ N}$	(b) $0.7 \text{ m/s}^2 \text{ S}$
(c) $2 \text{ m/s}^2 \text{ N}$	(d) $2 \text{ m/s}^2 \text{ S}$

Part B: Short Answer (15 marks)

(1) A car travelling at 25.0 m/s slams on the brakes and stops in 65.2m. What is the car's acceleration? (3)

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(2) A ball is thrown upwards from a 45m high bridge at 17.8 m/s. What is the maximum height the ball reaches off the ground? (3)

(3) A falling object reaches a speed of 32.5 m/s in 3.4 s. How far did it fall in this time? (2)

(4) A boat is sailing west at 60 km/h when there is a current of 25 km/h [S]. What is the boat's velocity with respect to the shore? Include a diagram with your answer (3)

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(4) a. A plane has an airspeed of 350 km/h. If it wants to travel due north and there is a 80 km/h [E] wind blowing, in what direction must the plane fly? Include a diagram in your answer. (2)

b. How long will it take the plane to fly 650 km [N]? (2)