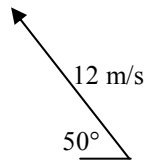


1. Draw the components and calculate their values of the vector at the right.



2. A submarine surfaces to fire its guns at an enemy ship that is 550 m away.
The sub's gun fires at 70 m/s at an angle of 35°.
A. Will the enemy be hit? (*Assume both the sub and the enemy ship are at sea level.*)

B. How high did the projectile go into the air?

3. Answer these projectile motion conceptual questions.

A) In which direction do you calculate time?
B) Why?

C) If an ball rolls off of a 2 m tall table going 4 m/s,

1. What is its Δy ?
2. What is a_y ?
3. What is a_x ?
4. What is V_{xi} ?
5. What is V_{yi} ?

D) What is the x-direction acceleration for any projectile?

E) If the initial $V_x = 15$ m/s, what is the final V_x ?

4. What kind of symbiosis?

A. A fox lives in a hole made by the roots of a tree. The tree is neither helped nor harmed.
B. A leech latches onto a human and drinks the human's blood.
C. In human stomachs bacteria eat the plants we eat, helping us digest the plant matter.
D. When a human goes to dinner and eats a steak.

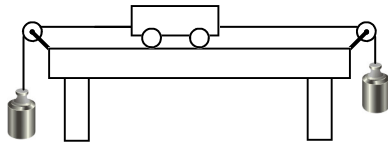
5. Carnivore, herbivore, omnivore, producer, or consumer?

A. Eat both plants and animals.
B. Plants. Get their energy from the sun.
C. Eat only plants.
D. Both plant eaters and meat eaters are this because they eat other organisms.
E. Eat only meat.

6. A person can walk 2 m/s. If they walk from the front of a bus to the back of the bus and the bus is moving 8 m/s, how fast is the person walking relative to a person on the sidewalk outside the bus?
7. A vector is something with m _____ and d _____.
8. Is weight a vector quantity or not?

Remembering that $F_w = mg$...

9. What is the mass of a 5 kg object?
10. What is the weight of a 12 kg object?
11. What is the mass of a 120 N object?
12. What is the weight of a 10 N object?
13. When an astronaut is walking on the moon their _____ the same as on the earth, but their _____ is less.



14. The above cart has equal masses attached to it.
- A. Are the forces balanced or unbalanced?
 - B. What is the net force on the cart?
 - C. If the cart is at rest, what happens?
 - D. If the cart is at constant speed to the right, what happens?
15. When two forces are acting on a moving object and one of the forces is bigger the object will a _____.
16. When two forces are acting on a moving object and the forces are equal will the object change directions?

