Momentum Worksheet

Name _____

Date _____

Period _____

True or False?

_____1.) Momentum is not equal to the mass of an object divided by its velocity.

_____2.) The momentum of an object can change.

_____3.) Two objects with the same mass will always have the same momentum.

_____4.) All moving objects don't have momentum.

_____5.) When an object speeds up, it gains momentum.

_____6.) Objects with different masses can't have the same momentum.

_____7.) Direction does not matter when you are measuring momentum.

_____8.) Momentum can be transferred from one object to another.

_____9.) When objects collide, some momentum is lost.

_____10.) A tiny bullet can have more momentum than a huge truck.

Fill in the blank.

11.) A moving car has momentum. If it moves twice as fast, its momentum is _____as much.

12.) Two cars, one twice as heavy as the other, move down a hill at the same speed. Compared to the lighter car, the momentum of the heavier car is _____as much.

Given the following data, solve for momentum. P = *mv*

Object	**Mass (kg)**	**Velocity (m/s)**	**Momentum (kg-m/s)**
13.) Bird	.04	19	.76
14.) Football player	100	10	
15.) Skier	60	20	
16.) Bullet	.004	600	
17.) Frog	.9	12	
18.) Meteorite	.1	1,000	
19.) Baseball	.14	30	
20.) Wagon	2	3	

21.) Satellite	3,000	8,000	

Equation	Gives you…	If you know…
$P = mv$	Momentum	Mass and Velocity
$m = P/v$	Mass	Momentum and Velocity
$V = P/m$	Velocity	Momentum and Mass

22.) A steel ball whose mass is 2.0 kg is rolling at a rate of 2.8 m/s. What is its momentum? Show your work in the large solution box.

Looking for	**Solution**
Given	
Equation	

23.) A marble is rolling at a velocity of 1.5 m/s with a momentum of 0.10 kg·m/s. What is its mass? Show your work in the large solution box.

Looking for	**Solution**
Given	

Equation	

24.) On April 15, 1912, the luxury cruise liner Titanic sank after running into an iceberg. What was the cruise liner's velocity when it collided with the iceberg if it had a mass of 4.23×10^8 kg ship and a momentum of 4.9×10^9 kg·m/s? Show your work in the large solution box.

Looking for	**Solution**
Given	
Equation	

25.) Suppose you are traveling in a bus at highway speed on a nice summer day and the momentum of an unlucky bug is suddenly changed as it splatters onto the front window. For the following 4 questions circle the correct situation.

a) Compared to the force that acts on the bug, how much force acts on the bus. (more) (the same) (less)

b) Although the momentum of the bus is very large compared to the momentum of the bug, the ***change*** in momentum of the bus compared to the ***change*** in momentum of the bug is (more) (the same) (less)

c) Which experiences the greater acceleration (**HINT**: think of Newton's 2nd Law)?
(bus) (both the same) (bug)

d) Which, therefore, suffers the greater damage? (bus) (both the same) (the bug of course!)