**Extra Review Problems for Unit 3 PhySci Test**

1. What are the units for the following variables:
	1. Power
	2. Energy
	3. Work
2. If Eminem and Rihanna went riding in a sweet car that moved with a force 750 N and went 400 meters down the road, how much work is done? (include units!)
3. If AJ shoot a basketball and it goes 30 meters being pushed with 15 N of force in 5 seconds, how much work is being done? AND how much power was used?
4. What is the potential energy of J-cole sitting across Ms. P on a date if he weighs 75 kg and is sitting 2 meters off the ground?
5. A giant alien spaceship and penny are sitting on the side of a cliff, who has more potential energy? Who has less potential energy?
6. If Jason Durelo wants to marry Ms. P then he needs to drive his car with a mass of 175 kg at a rate of 50 m/s to go see her. What would be his kinetic energy?
7. If a machine’s work input is 225 J and its work output is 52 J, what is its efficiency?
8. Which ramp would it be the hardest for Macklemore to push his shopping cart full of thrift shop finds up? Which would be the easiest?
	1. Length = 10, Height = 5
	2. Length = 5, Height = 10
	3. Length = 2, Height = 8
	4. Length = 8, Height = 2
9. What is the mechanical advantage of a bike whose wheels have a radius of 15 inches and axle has a radius of 1 inch?
10. What do pulleys do to the force that is applied to it? How many string would be attached to a pulley that has a mechanical advantage of 1?
11. Andrew decided to throw a bowling ball down a lane traveling at a rate of 5 m/s and the ball was 8 kg, how much kinetic energy does it have?
12. How much kinetic energy does Kelsey have if she runs away from Michael Jackson if she is 50 kg and traveling at 6 m/s?
13. Ms. P uses 90N of force to push 2 chainz around in her cart 10 meters down the hallway, how much work does she do?
14. Nelly and Ms. P does 5,000J of work biking to the top of a hill while singing “Just a Dream” it takes us 90 seconds to get to the top, what was our power output?
15. How much power does Beyonce need to push Jay Z’s boxes the curb since he didn’t put a ring on it fast enough if she used 50 J of work in 5 seconds?
16. What is the mechanical advantage of an incline place that is 15 meters long at 2 meters high?
17. What is the mechanical advantage of the lever below?

 dL=20 meters, dE = 5 meters



1. Why do bridges have joints?
2. Give an example of the following:
	1. Elastic potential energy
	2. Gravitational potential energy
	3. Chemical potential energy
3. What are the three things a machine CAN do?
4. 2 Chainz is so hot he needs to open the fridge to get a cold pop, when he opens the fridge he says “thank goodness the fridge makes all this cold air”, why was he wrong?
5. If I compare half a cup of water at 50 degrees to the ocean at 50 degrees, which one has more heat?
6. What is the difference between input and output of a machine?
7. What is the pivot point on a lever called?
8. What is the difference between potential and kinetic energy?
9. What simple machine are the following an example of? (If more than one list them)
	1. Elevator
	2. Wheelbarrow
	3. Scissors
	4. Ramp
	5. Bike
	6. Knife
10. Is work being done if 2 Chainz takes his chains and does the following:
	1. Lifts them around his neck
	2. Throws them to Ms. P to wear
	3. Leaves them on his night stand
	4. Pushes them across the table
11. What do the following terms define?
12. The number of times a machine multiplies the input force in known as the
13. Materials that heat moves through easily are known as
14. Materials that heat does not move through easily are known as
15. The measure of average kinetic energy in an object
16. The measure of total kinetic energy in an object
17. How heat moves through space
18. How heat moves through currents in matter
19. How heat moves through direct contact
20. Energy due to movement
21. Energy due to position

**Extra Review Problems for Unit 3 PhySci Test**

1. What are the units for the following variables:
	1. Power - Watts
	2. Energy - Joules
	3. Work - Joules
2. If Eminem and Rihanna went riding in a sweet car that moved with a force 750 N and went 400 meters down the road, how much work is done? (include units!)

W= F x d 750N x 400 m = 300,000 J

1. If AJ shoot a basketball and it goes 30 meters being pushed with 15 N of force in 5 seconds, how much work is being done? AND how much power was used?

W = F x d P=W/t Work=15N x 30 m = 450 J Power = 450 J/5s = 90 W

1. What is the potential energy of J-cole sitting across Ms. P on a date if he weighs 75 kg and is sitting 2 meters off the ground?

PE = m x h x x g PE = 75 kg x 2 m x 10 m/s = 1,500 J

1. A giant alien spaceship and penny are sitting on the side of a cliff, who has more potential energy? Who has less potential energy?

The space ship has more because it has more mass, the penny has less because it has less mass (the height above the ground and gravity are the same for both)

1. If Jason Durelo wants to marry Ms. P then he needs to drive his car with a mass of 175 kg at a rate of 50 m/s to go see her. What would be his kinetic energy?

KE = ½ x m x s^2 KE = ½ x 175kg x 50 m/s^2 = 218,750 J

1. If a machine’s work input is 225 J and its work output is 52 J, what is its efficiency?

Eff = output/input x 100% Eff = 52 J / 225 J x 100 = 23.1%

1. Which ramp would it be the hardest for Macklemore to push his shopping cart full of thrift shop finds up? Which would be the easiest?
	1. Length = 10, Height = 5 MA =10/5= 2
	2. Length = 5, Height = 10 MA = 5/10=0.5
	3. Length = 2, Height = 8 MA =2/8=0.25 This would be the hardest – smallest MA
	4. Length = 8, Height = 2 MA=8/2=4 This would be the easiest – largest MA
2. What is the mechanical advantage of a bike whose wheels have a radius of 15 inches and axle has a radius of 1 inch?

MA of a wheel = radius wheel/radius axle 15/1 = 15

1. What do pulleys do to the force that is applied to it? How many strings would be attached to a pulley that has a mechanical advantage of 1?

Pulleys change the direction of the applied force, a pulley with a mechanical advantage of 1 would only have 1 string attached to the load

1. Andrew decided to throw a bowling ball down a lane traveling at a rate of 5 m/s and the ball was 8 kg, how much kinetic energy does it have?

KE = ½ x m x s^2 KE = ½ x 8 kg x 5^2 = 100 J

1. How much kinetic energy does Kelsey have if she runs away from Michael Jackson if she is 50 kg and traveling at 6 m/s?

KE = ½ x m x s^2 KE = ½ x 50 kg x 6^2 = 900 J

1. Ms. P uses 90N of force to push 2 chainz around in her cart 10 meters down the hallway, how much work does she do?

Work = F x d Work = 90N x 10m = 900 J

1. Nelly and Ms. P does 5,000J of work biking to the top of a hill while singing “Just a Dream” it takes us 90 seconds to get to the top, what was our power output?

Power=W/t P= 5,000J/90s = 55.6 W

1. How much power does Beyonce need to push Jay Z’s boxes the curb since he didn’t put a ring on it fast enough if she used 50 J of work in 5 seconds?

P = W/t P = 50J / 5 s = 10 W

1. What is the mechanical advantage of an incline place that is 15 meters long at 2 meters high?

MA =length/height MA = 15m/2m = 7.5

1. What is the mechanical advantage of the lever below?

 dL=20 meters, dE = 5 meters



MA = input/output MA = 5/20 = 0.25

1. Why do bridges have joints?

To accommodate thermal expansion when it gets too hot or cold

1. Give an example of the following:
	1. Elastic potential energy - rubber band, sling shot, bow and arrow
	2. Gravitational potential energy – roller coaster, sky diving, cliff diving
	3. Chemical potential energy – food, gas, batteries
2. What are the three things a machine CAN do?

Multiply an applied force
Multiply a distance of an effort
Change the direction of the applied force

1. 2 Chainz is so hot he needs to open the fridge to get a cold pop, when he opens the fridge he says “thank goodness the fridge makes all this cold air”, why was he wrong?

The fridge doesn’t make cold air it just removes the heat

1. If I compare half a cup of water at 50 degrees to the ocean at 50 degrees, which one has more heat?

The ocean because it has more particles for TOTAL kinetic energy

1. What is the difference between input and output of a machine?

Input is what is applied to a machine, output is what it produces

1. What is the pivot point on a lever called?

Fulcrum

1. What is the difference between potential and kinetic energy?

PE is store energy due to the object position, KE due to the object’s motion

1. What simple machine are the following an example of? (If more than one list them)
	1. Elevator - pulley, lever
	2. Wheelbarrow – lever, wheel axle
	3. Scissors - lever
	4. Ramp – incline plane
	5. Bike – lever, incline plane, wheel and axle, pulley
	6. Knife – lever

Compound machines remember are made up of two or more simple machines so like a bike, wheel barrow or elevator

1. Is work being done if 2 Chainz takes his chains and does the following:
	1. Lifts them around his neck Yes
	2. Throws them to Ms. P to wear Yes
	3. Leaves them on his night stand No – because they are not moving a distance
	4. Pushes them across the table Yes
2. What do the following terms define?
3. The number of times a machine multiplies the input force in known as the – mechanical advantage
4. Materials that heat moves through easily are known as - conductor
5. Materials that heat does not move through easily are known as – insulator
6. The measure of average kinetic energy in an object - temperature
7. The measure of total kinetic energy in an object – thermal energy (heat)
8. How heat moves through space – Radiation
9. How heat moves through currents in matter – Convection
10. How heat moves through direct contact - Conduction
11. Energy due to movement - Kinetic energy
12. Energy due to position – Potential energy