Part 2 Potential and Kinetic Energy Name:

I am aware that I need to show all mathematical work in an organized manner to receive any credit for a question that involves calculations of any kind. Omitting / leaving out the units in the problem or at the end will also result in zero credit ◊ _____

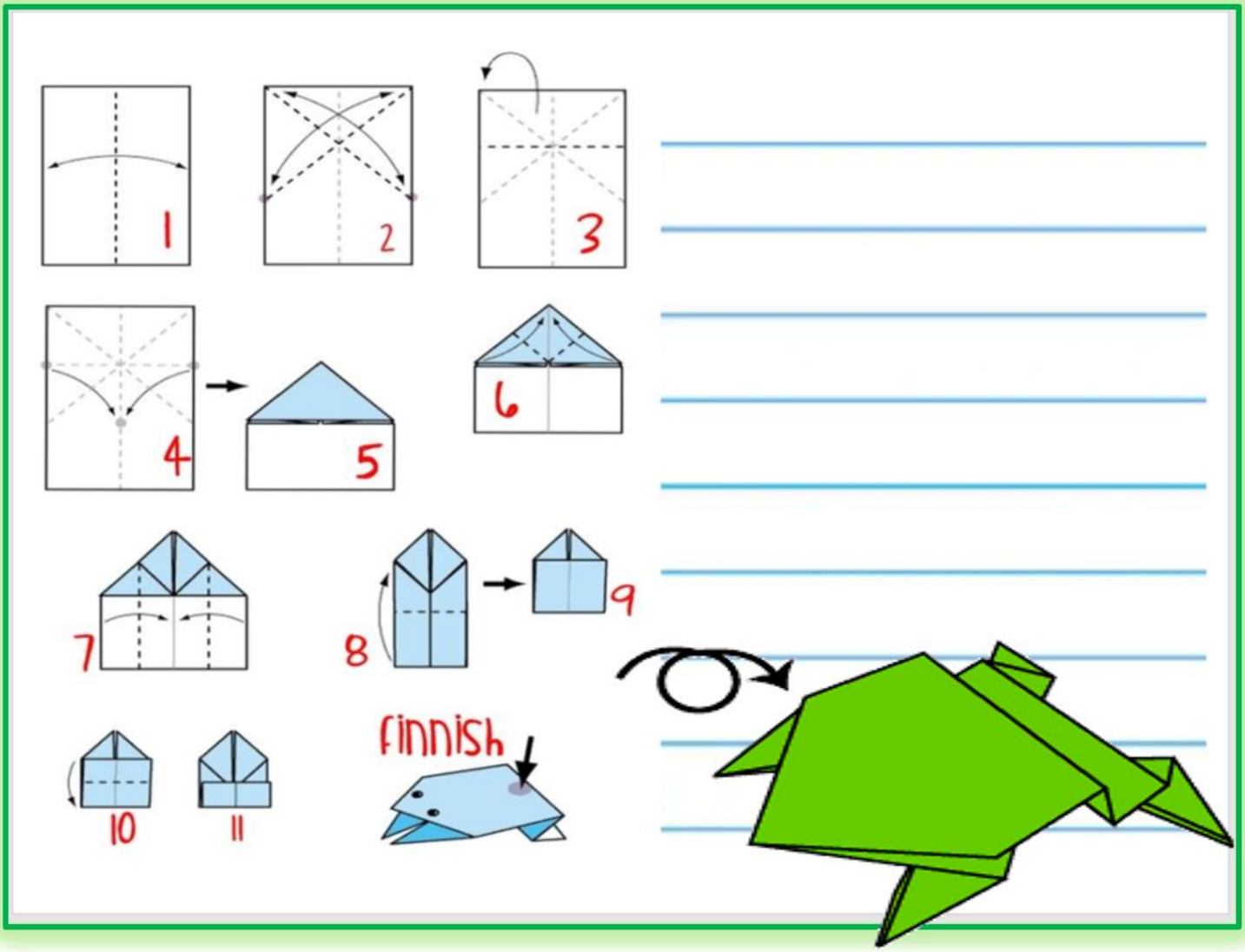
Part 2 Lesson 1 Potential Energy

Energy can either kinetic or potential.

Potential Energy: (PE) The energy stored by an object as a result of its p_____

Potential Energy is the energy of position. Objects that are e_____ have a high potential energy.
Kinetic Energy is the energy of m_____

Make, then explain how Potential and Kinetic Energy relate to your Origami jumping frog.

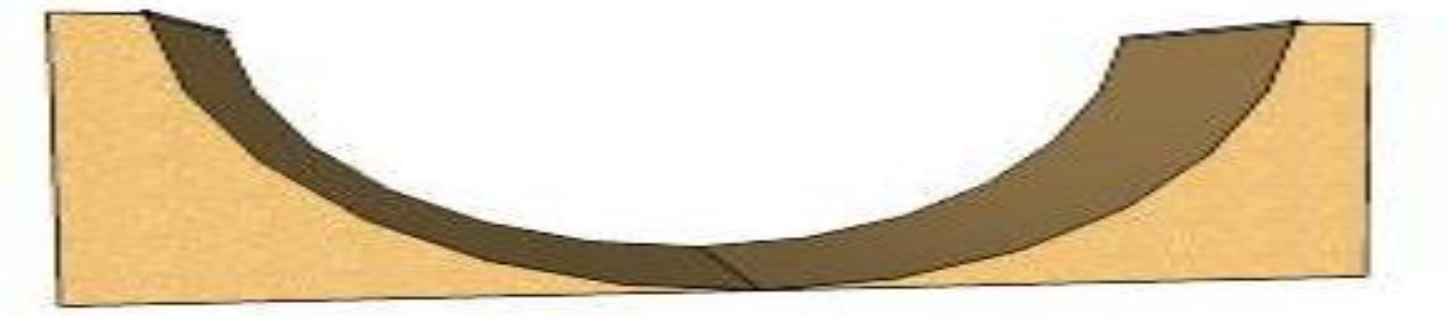


PE = mgh

PE = Energy (in _____)
m = mass (in _____)
g = gravitational acceleration of the earth _____ m/s^2
h = _____ above earth's surface (in meters)

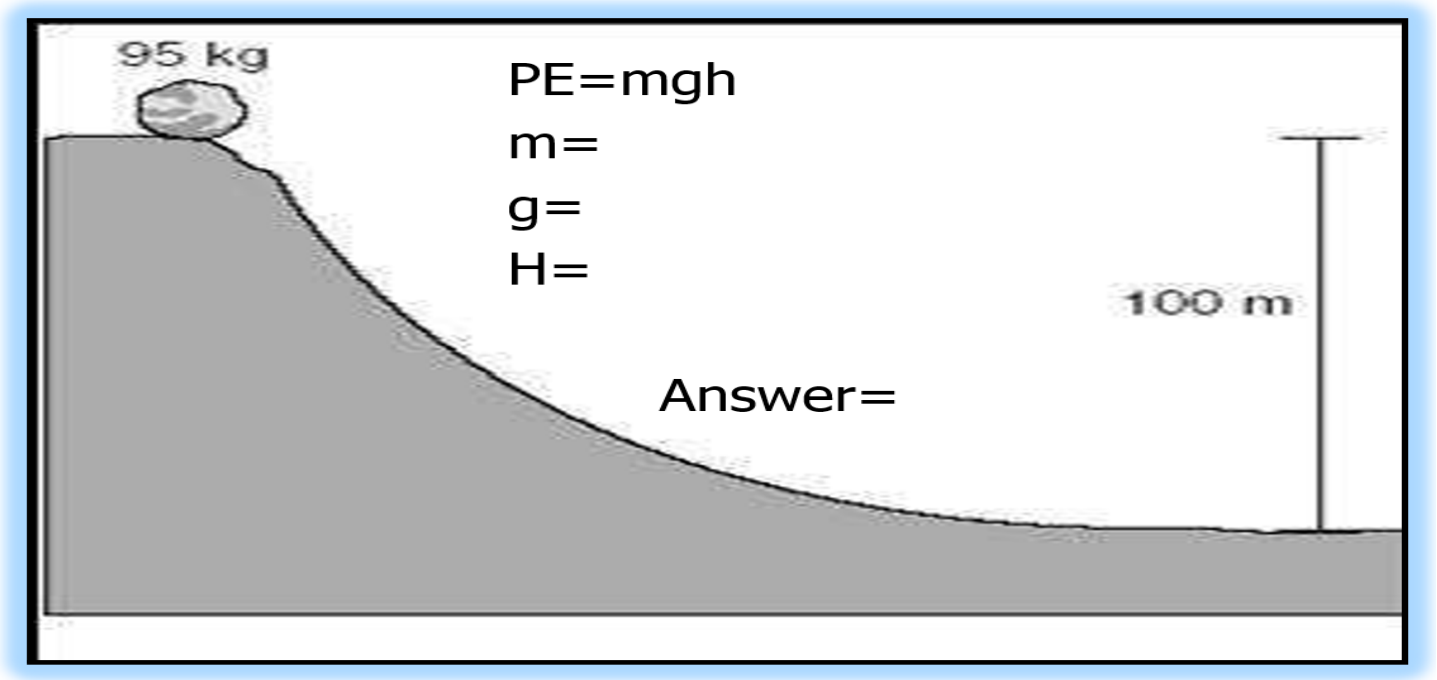
Please visit the site below (Energy Skate Park) describe potential and kinetic energy using the half pipe below.
-Draw in a skateboarder and explain where their potential energy is the highest, and when their kinetic energy is the highest. Does their total energy ever change?

- http://phet.colorado.edu/en/simulation/energy-skate-park



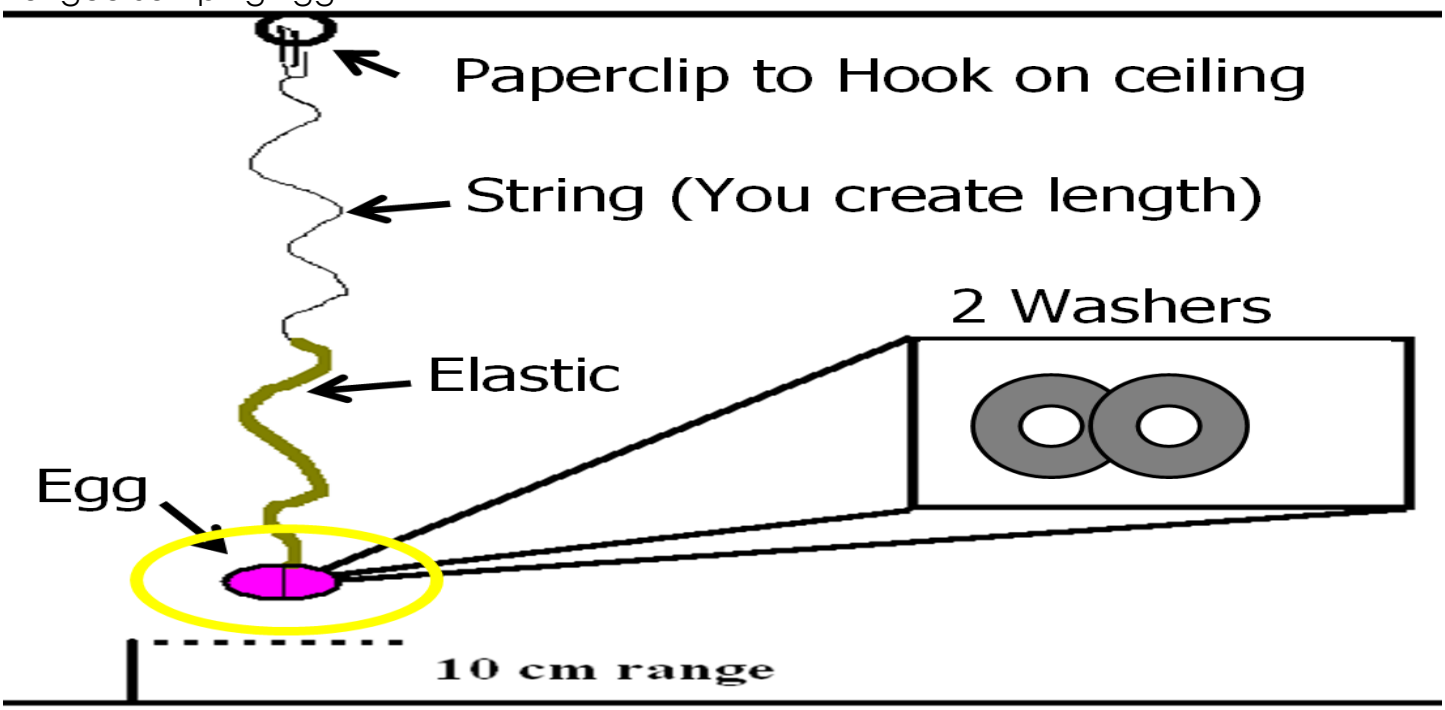
Calculate the potential energy for a 2 kg basketball dropping from a height of 3.5 meters with a velocity of 9.8 m/s². -Find the PE in Joules? PE=mgh **Please show your work**!	Calculate the potential energy of a shotput dropping from a height of 6 meters weighing 5.44 kg with a velocity of 9.8 m/s². - Find the PE in Joules? PE=mgh **Please show your work**!
Calculate the potential energy of a hammer dropping from a height of 60 meters weighing 7.26 kg with a velocity of 9.8 m/s². - Find the PE in Joules? PE=mgh **Please show your work**!	Calculate the potential energy of the 1,025 kg Perseverance Rover drop of 20 meters to the Martian surface. Find the PE in Joules? PE=mgh Mars Gravity Constant = 3.721 m/s² -We will do this on lesson 2 **Please show your work**!

What's the potential energy of the rock? Use the equation in your journal. Answer is in Joules. **Show your organized work! PE=mgh**



Part 2 Lesson 2 PE, Bungee Jumping Egg

Bungee Jumping Egg



Activity! Instructions

Goal: For the egg to fall from the ceiling and come within 10 cm of the floor without crashing.

-Everyone has the same amount of bungee material (Elastic / Rubber Bands)
-You must measure the correct length of rope to land within the 10 cm range.
-You are not allowed any test jumps from the ceiling but may drop from eye height.
-You must determine rope length using the provided information.
-You may begin when given the materials and use the information on the next slide.

How long does your string need to be in centimeters? _____

Did your egg drop succeed? Why? Record something you learned.

Please determine the Potential Energy of the Egg.

- The Potential Energy of the Egg
  - Potential Energy = PE = mgh
    - (m)ass of the egg and washers + Elastic + String = .032kg
    - (g) = (9.8 m/s^2)
    - (h) Height = 2.75 Meters

m	g	h	
.032 Kg	9.8 m/s^2	2.75 M	PE =_____Joules

Part 2 Lesson 3 Gravity and Quantities and Egg Drop

Gravity: The force of a_____ between all m_____ in the universe.
The more m_____ an object has, the greater the f_____ of attraction.
Law of Gravity F = G M m / r^2
Gravity is an attractive force between _____ bodies, which depends only on the mass of the two bodies (M and m) and inversely on the square of the s_____ between the two bodies.

Research several Designs Prior. Draw and describe your design for the egg drop. Is it Air Resistance, Impulse, Elasticity, or Buoyancy, or some combination of the above.

Egg Drop Rubric

Behavior During Construction	**Design / Planning**	**The Drop**	**Behavior during the Drop**
25 pts	25 pts	25 pts	25 pts
A Used all materials appropriately and efficiently. Students were on-task the entire time. The group worked well together, collaborating on a design, and executing that design. No conflicts of any kind. 25 pts	**A** Student had a well-planned design. The design used most or all the principles of impulse, air resistance, elasticity, and buoyancy. The plan included measurements, materials, and was adaptable. 25 pts	**A** The Egg was undamaged. 25 pts	**A** Student was well-behaved and supportive of other projects during the drops. Students cleaned up any mess and followed all school expectations. 25pts
B Student had to be spoken to about time use and general behavior but on-task. Fooling, Group was able to create and execute a design. Conflict throughout was obvious and apparent but the group ultimately designed and built. 20pts	**B** Student had a rough plan, but the project lacked a solid design and relied on making things happen as they went. Students were able to build their design. 20pts	**B** Some small cracks were visible, but most of the egg was intact 20pts	**B** Student had to be talked to about general behaviors. 20pts
C Student was fooling around with materials and generally off-task. Lots of conflict and the group was able to design a model but was unable to build one. 15 pts	**C** The student had a plan but was unable to build the design. 15 pts	**C** Leakage from cracks but still in the shape on an egg 15 pts	**C** Student had to be talked to more than once. Not following school behavioral expectations. 15 pts
D/X Unsafe and had to be talked to repeatedly. The group was not collaborative and could not cooperate. Nothing was designed or built. 10pts / 5pts / 0 pts	**D/X** Student was just fooling around with the materials and did not design or build their design. 10pts / 5pts / 0 pts	**D/X** Totally Destroyed 10pts / 5pts / 0pts	**D/X** Unsafe and disruptive. Not following school behavioral expectations. 10pts / 5pts / 0pts

Comments:_____

_____

_____

_____ Grade: _____

Did your egg survive? What would you do differently next time, and or why was your design successful. Where did the energy go to prevent the egg from breaking, or causing it to break?

Part 2 Lesson 4 Kinetic Energy – Scalar Quantity. It has magnitude and direction.

Kinetic Energy

The energy that matter has because of its m_____ and m_____.
where m = _____ of object in kilograms
v = _____ of object in m/s²
KE = Energy in _____

$$KE = \frac{1}{2} * m * v^2$$

Do not forget your order of operations.
PEMDAS
For KE, you must do exponents (E) before multiplying (M). So square the velocity first, and multiply by half of the mass.

Kinetic energy

T_____ Energy: Motion from one location to another.
V_____ energy (sound)
E_____ energy: Flow of electrons.
R_____ energy.

Kinetic energy is a _____ quantity; as it does not have a direction.

Velocity, acceleration, force, and momentum are **v**_____. A quantity having direction as well as magnitude

What is the kinetic energy of a .142 kilogram baseball traveling at 45 meters per second? **-Please show your work!**	What is the kinetic energy of a 10 kilogram cannon ball traveling at 50 meters per second?

Mechanical Energy (ME) – Energy due to p_____ and m_____; sum of potential and kinetic energies. Includes heat and friction.

Just add Potential Energy + Kinetic Energy.

A ski jumper moving down the hill had a Potential Energy of 1300 Joules, and a Kinetic Energy of 3,900 Joules.
What is her Mechanical Energy?

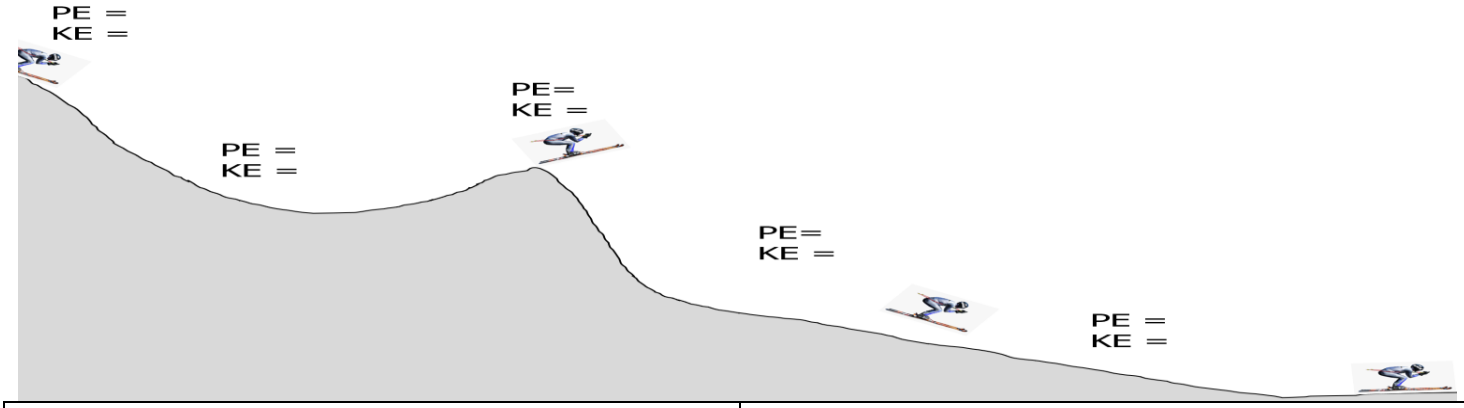
Please show your work!

What's the kinetic energy of a ,1200 gram frozen fish being tossed at 2 meters per second?

- m = 12 kg
- v = 2 m/s²

-Please show your work!

Please show how potential and kinetic energy is conserved with this ski jumper. Total Energy should always be 10,00 Joules



Find the Mechanical Energy of the large D battery hitting the parked car from the highest position.

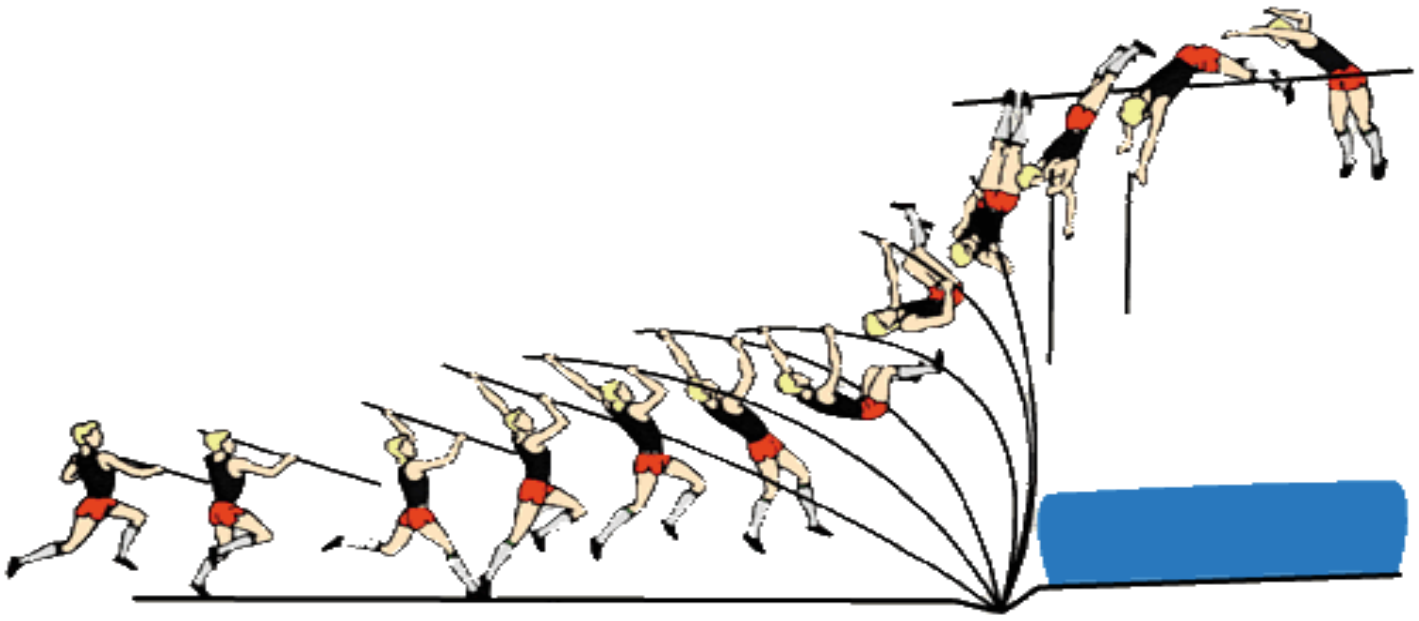
PE = mgh KE = ½ mass * velocity²
D Battery mass = 148 g (.148kg)
Height = 6 cm (.06m)
Gravity = 9.8 m/s²
Velocity .5 m/s West
Answer in Joules

What is the kinetic energy of a **<u>12 pound</u>** football being thrown from a perfect spiral at 17 m/s² to a wide open receiver in the endzone. 12 pounds = 5.44 kg

Please calculate the potential energy of a pole-vaulter at the top of their vault. Their height was 3 meters and they weighed 77 kilograms. PE= mgh

Please calculate the KE of a pole-vaulter. The run into the vault was 8.3 m/s^2 and they weighed 77 kilograms. KE= ½ m * V^2 (Assume all energy in the vault was transformed into potential energy to make this question easier.)

What was the Mechanical Energy of the pole-vaulter? Remember to show your work! Describe Potential and Kinetic Energy below. Does the total energy ever change? Record your answer along the vault below.



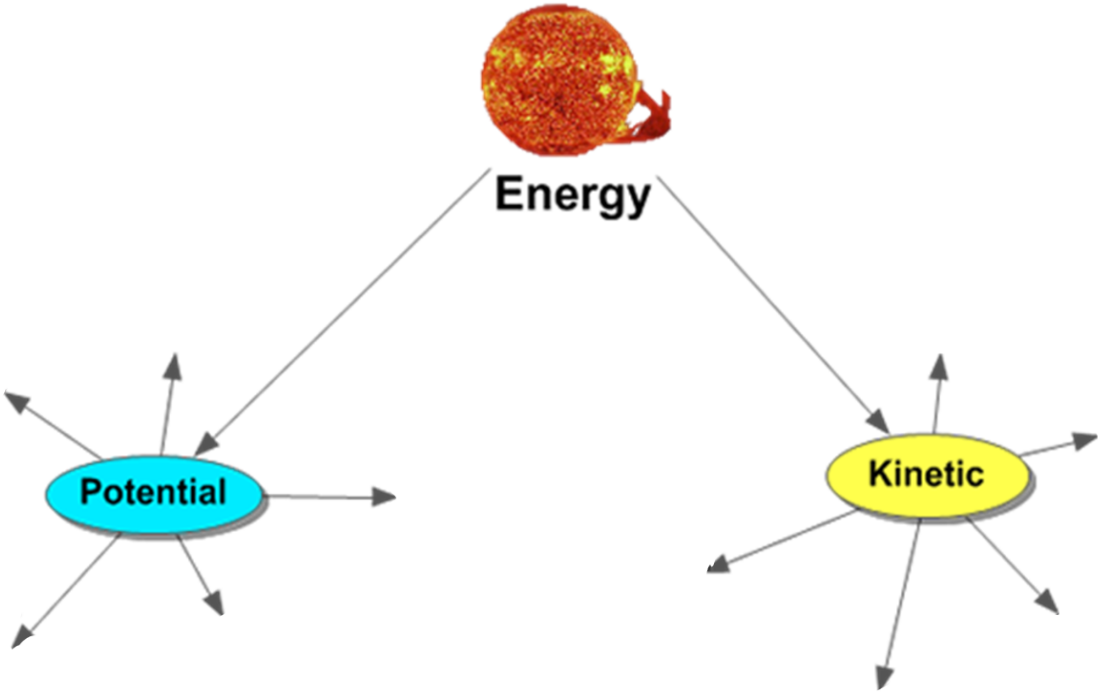
Part 4 Lesson 5 PE, KE, ME, Review

Please make a roller coaster in the space below. Please color code areas that coaster will have with high potential energy and kinetic energy.

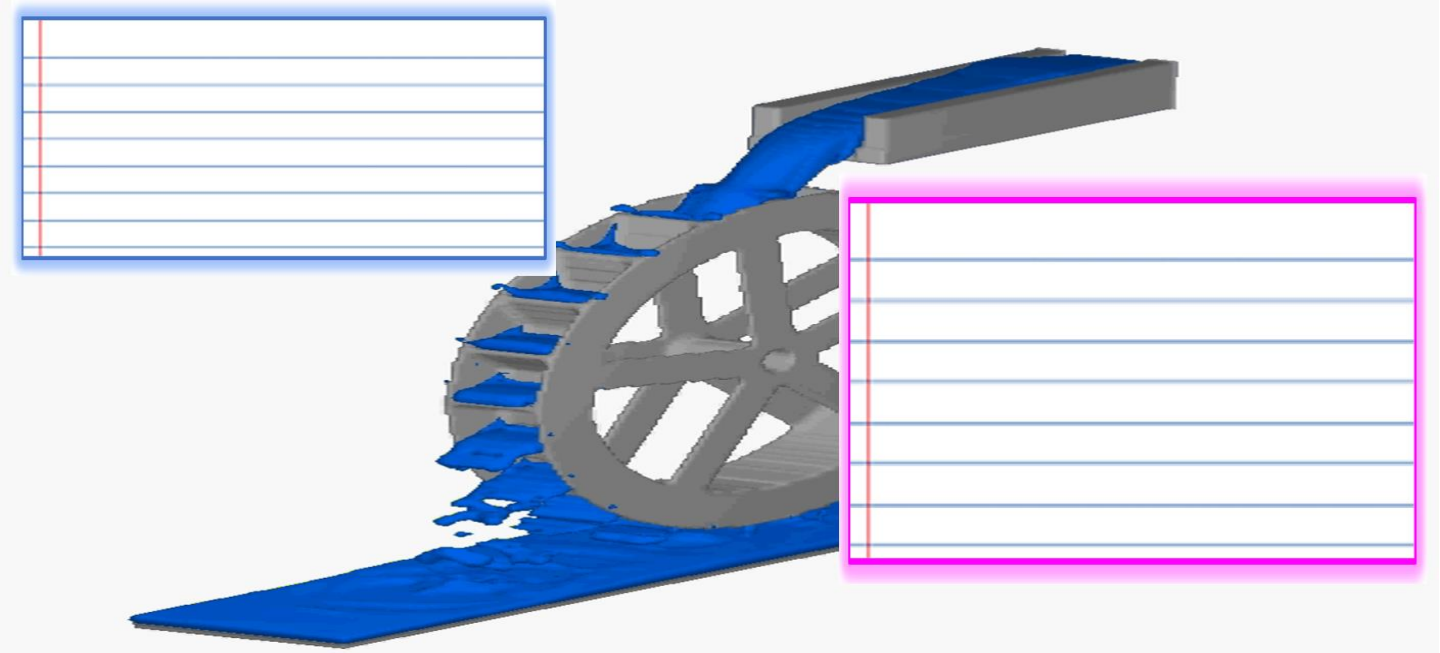
Potential Energy = _____ Color

Kinetic Energy =_____ Color

Sketch some forms of potential and kinetic energy below.



How does a water wheel work? Describe using potential and kinetic energy?

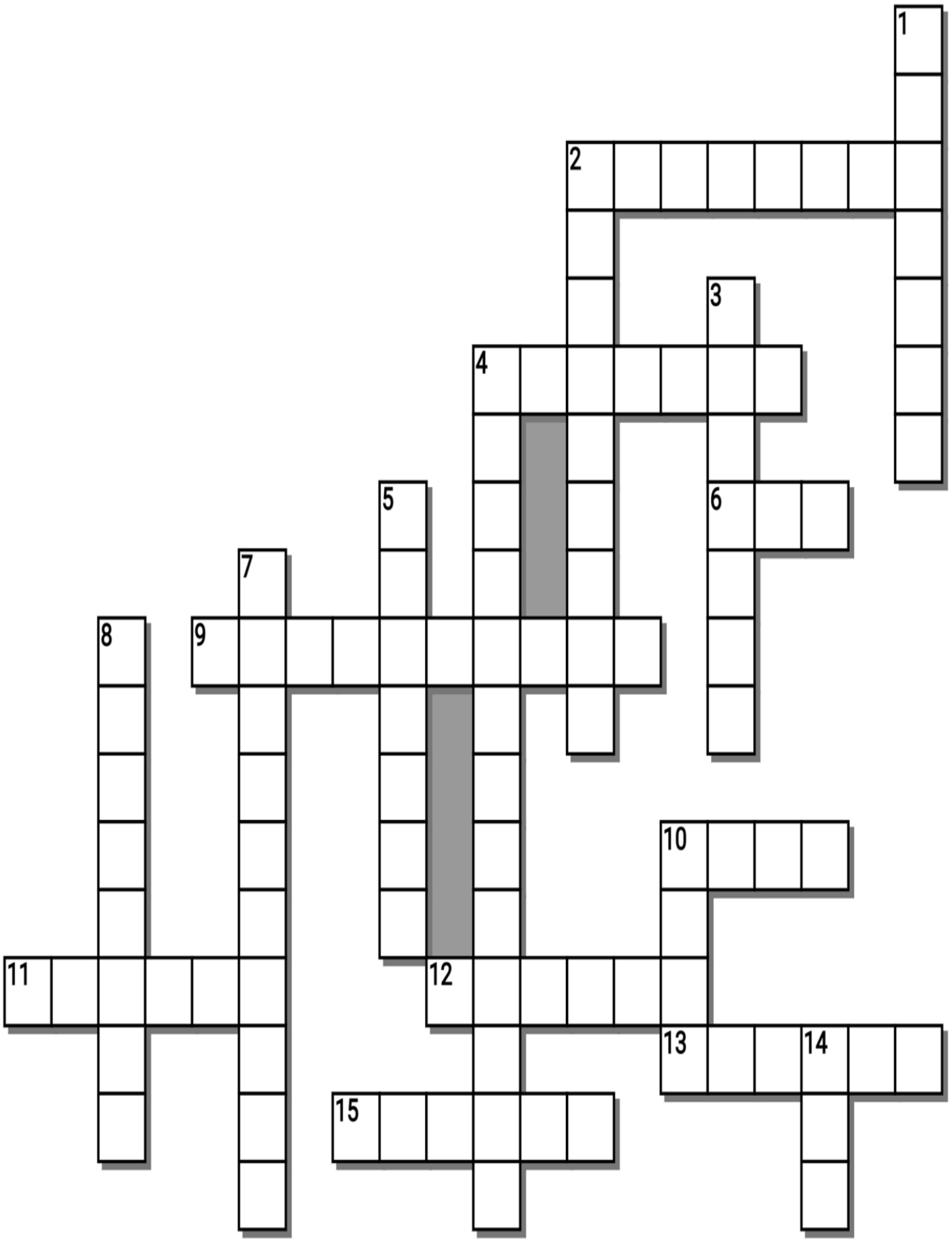


Marble Maze Project

Behavior / On-Task	Number of moves where PE is increased	Complexity of Maze	Overall Neatness and Organization	Working Together
20 pts	20 pts	20 pts	20 pts	20 pts
A Amazing behavior / On-task the entire class period and working diligently to complete the maze	A Several moves / (more than 2) ways that PE was increased / the maze became longer were used.	A Creative use of ordinary materials to extend maze. More than just blocks.	A Uses the entire surface and marble goes all over space. Area was neat and organized / Student cleaned-up materials and space	A Group worked together great. No conflicts and everyone contributed in some form.
B Spoken to once about staying on-task / behavior issues.	B Two moves were used to increase PE and extend maze / path of travel.	B Some of use of materials but basic in its use	B Didn't use all of the provided space. A bit messy and teacher had to assist in clean-up	B An issue or two / group struggled to get along. Teacher had to assist group to get along.
C. Spoken to twice.	C One move was used to increase PE and extend maze	C Just blocks used ramp / very short / not a lot of moves. Marble made it most of the way but DNF.	C A messy work space and lack of clean-up	C Several incidents occurred where the group struggled to agree
D/X Spoken to more than twice about behavior and effort.	D/X. Maze was just a ramp downhill / Marble did not finish	D/X Incomplete /Short, Marble did not finish	D/X Incomplete / Messy / Inappropriate use of materials	D/X Complete dysfunction in the group.

Comments:_____

_____ Grade: _____


1
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14
15

Across

2. Potential Energy is the energy of _____
4. The more mass an object has, the _____ the force of attraction.
6. Gravity is an attractive force between ____ bodies, which depends only on the mass of the two bodies (M and m) and inversely on the square of the separation between the two bodies.
9. Energy due to position and motion; sum of potential and kinetic energies. Includes heat and friction.
10. Kinetic Energy Theenergy that matter has because of its _____ and motion. where m = mass of object v= speed of object KE = Energy in Joules
11. PE = mgh PE= Energy (in Joules) m= mass (in kilograms) g= gravitational acceleration of the earth (9.8 m/s²) h= _____ above earth's surface (in meters)
12. PE = mgh PE = Energy (in _____) m= mass (in kilograms) g= gravitational acceleration of the earth (9.8 m/s²) h= height above earth's surface (in meters)
13. Kinetic energy is a _____ quantity; as it does not have a direction.
15. For KE, you must do exponents before multiplying. So _____ the velocity first, and multiply by half of the mass.

Down

1. This is the energy of the motion.
2. The type of energy stored by an object as a result of its position
3. Velocity, acceleration, force, and momentum are _____. A quantity having direction as well as magnitude
4. PE = mgh PE= Energy (in Joules) m= mass (in kilograms) g= _____ acceleration of the earth (9.8 m/s²) h= height above earth's surface (in meters)
5. The force of attraction between all masses in the universe.
7. Gravity is an attractive force between two bodies, which depends only on the mass of the two bodies (M and m) and inversely on the square of the _____ between the two bodies.
8. Kinetic Energy Theenergy that matter has because of its mass and motion. where m = mass of object v= _____ of object KE= Energy in Joules
10. PE = mgh PE= Energy (in Joules) m =_____ g = gravitational acceleration f the earth (9.8 m/s²) h= height above mass (in kilograms) earth's surface (in meters)
14. _ _ _ of Gravity F = G M m / r^2

-----Teacher can remove this word bank to make puzzle more challenging----------
GRAVITY, GREATER, HEIGHT, JOULES, KINETIC, LAW, MASS, MASS, MECHANICAL, POSITION, POTENTIAL, TWO, GRAVITATIONAL, SCALAR, SEPARATION, SQUARE, VECTORS, VELOCITY

PE, KE, ME **Part 2 Review Game** Name:

1-20 = 5 pts
*20-*25 * = Bonus + 1 pt,
(Secretly write owl in correct space +1 pt) Score ____ / 100
Final Question = 5 pt wager

ENER G	IT's ALL ABOUT ME	GYM CLASS or PE	KE Epping IT REAL	TRUCKIN Bonus round 1 pt each
1)	6)	11)	16)	*21)
2)	7)	12)	17)	*22)
3)	8)	13)	18)	*23)
4)	9)	14)	19)	*24)
5)	10)	15)	20)	*25)

Final Question: 5 Point Wager ____=WAGER

Part 2 Potential and Kinetic Energy

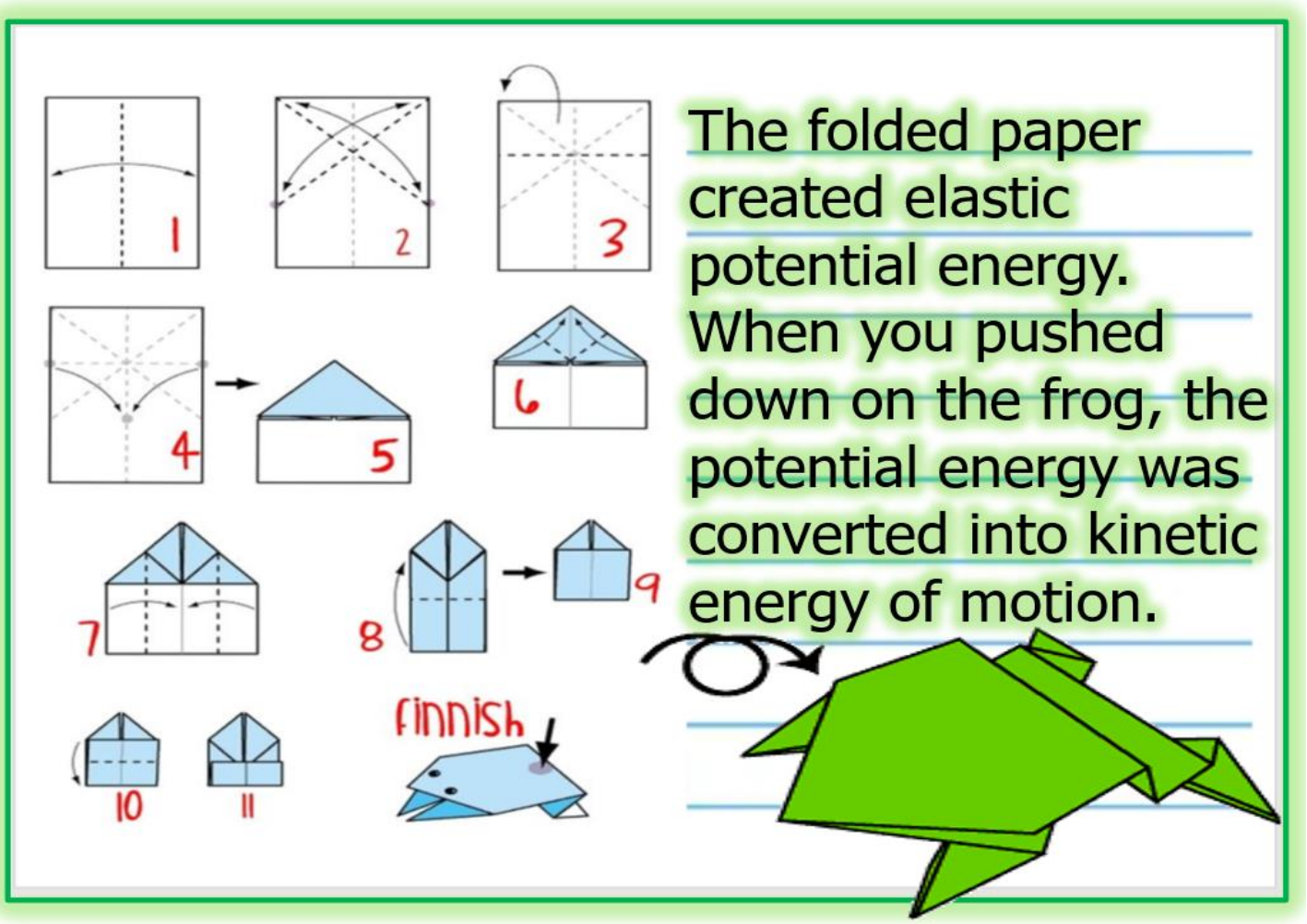
Name:

I am aware that I need to show all mathematical work in an organized manner to receive any credit for a question that involves calculations of any kind. Omitting / leaving out the units in the problem or at the end will also result in zero credit ◊ _____

Energy can either kinetic or potential.

Potential Energy: (PE) The energy stored by an object as a result of its position

- Potential Energy is the energy of position. Objects that are elevated have a high potential energy.
- Kinetic Energy is the energy of motion

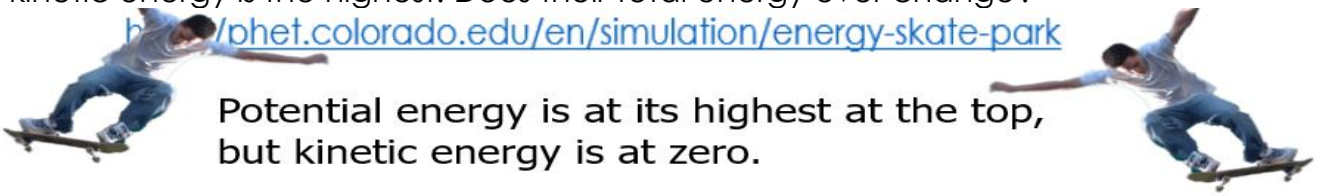


PE = mgh

- PE = Energy (in Joules)
- m = mass (in kilograms)
- g = gravitational acceleration of the earth (9.8 m/s^2)
- h = height above earth's surface (in meters)

Please visit the site below (Energy Skate Park) describe potential and kinetic energy using the half pipe below.
-Draw in a skateboarder and explain where their potential energy is the highest, and when their kinetic energy is the highest. Does their total energy ever change?

- h[illegible]/phet.colorado.edu/en/simulation/energy-skate-park



Gravity: The force of attraction between all masses in the universe.

- The more mass an object has, the greater the force of attraction.
- Law of Gravity $F = G M m / r^2$
- Gravity is an attractive force between two bodies, which depends only on the mass of the two bodies (M and m) and inversely on the square of the separation between the two bodies.
    - Ex. (If you double the mass of the earth, its gravitational force will become twice as big; if you get 3 times further away from the earth, its gravitational force will be 3 times weaker.)

Mechanical Energy (ME) – Energy due to position and motion; sum of potential and kinetic energies. Includes heat and friction.

- Just add Potential Energy + Kinetic Energy.

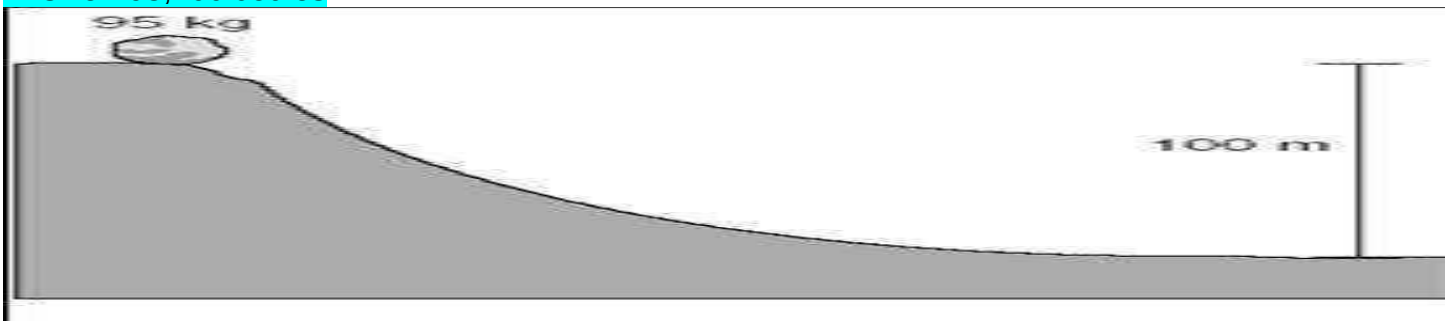
Calculate the potential energy for a 2 kg basketball dropping from a height of 3.5 meters with a velocity of 9.8 m/s². -Find the PE in Joules? PE=mgh PE = mgh m= 2 kg g = 9.8 m/s² h= 3.5 meters PE = 2kg x 9.8m/s² x 3.5 m PE = 68.6Joules **Please show your work**!	Calculate the potential energy of a shotput dropping from a height of 6 meters weighing 5.44 kg with a velocity of 9.8 m/s². - Find the PE in Joules? PE=mgh PE = mgh m = 5.44 kg g = 9.8 m/s² h = 6 m PE = (5.44kg) (9.8m/s²) (6m) PE = 319.87 Joules **Please show your work**!
Calculate the potential energy of a hammer	Part 2 Lesson 2 Bungee Jump Egg

dropping from a height of 60 meters weighing 7.26 kg with a velocity of 9.8 m/s². - Find the PE in Joules? PE=mgh PE = mgh m = 7.26 kg g = 9.8 m/s² h = 60 m PE = (7.26kg) (9.8m/s²) (60m) PE = 4268.88 Joules or 4.2 Kilojoules **Please show your work**!	Calculate the potential energy of the 1,025 kg Perseverance Rover drop of 20 meters to the Martian surface. Find the PE in Joules? PE=mgh Mars Gravity Constant = 3.721 m/s² PE = mgh m = 1,025 kg g = 3.72 m/s² h = 20 m PE = (1,025kg) (3.72m/s²) (20m) PE = 76,280 J / 76.28 kJ **Please show your work**!

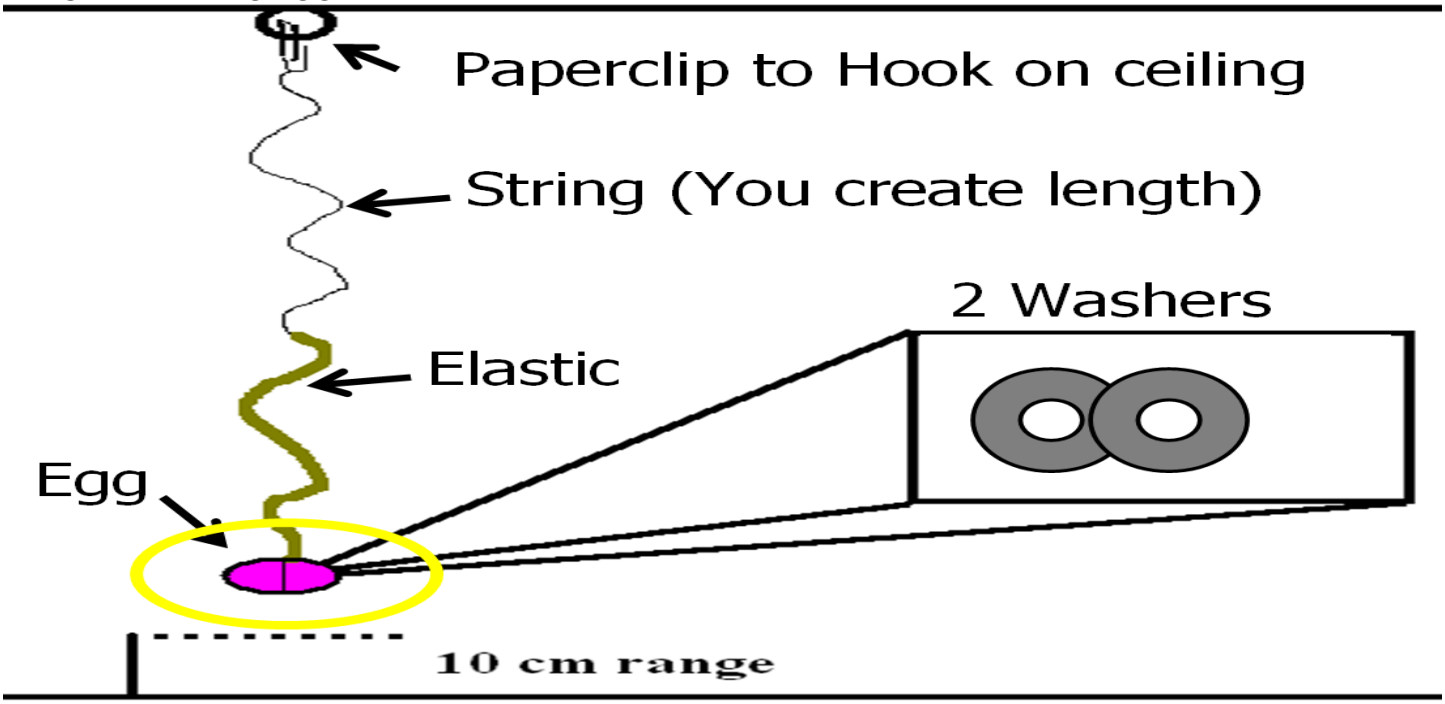
What's the potential energy of the rock? Use the equation in your journal. Answer is in Joules.

Show your organized work! PE=mgh

PE=mgh PE = (Mass) (gravitational Constant) (Height)
PE = (95kg)(9.8m/s²) (100m)
Answer! 93,100 Joules



Bungee Jumping Egg



Activity! Instructions
Goal: For the egg to fall from the ceiling and come within 10 cm of the floor without crashing.
-Everyone has the same amount of bungee material (Elastic / Rubber Bands)

-You must measure the correct length of rope to land within the 10 cm range.
-You are not allowed any test jumps from the ceiling but may drop from eye height.
-You must determine rope length using the provided information.
-You may begin when given the materials and use the information on the next slide.

How long does your string need to be in centimeters?_____

Did your egg drop succeed? Why? Answers will vary

Please determine the Potential Energy of the Egg. (Don't forget PEMDAS)

- The Potential Energy of the Egg
  - Potential Energy = PE = mgh
    - (m)ass of the egg and washers + Elastic + String = .032kg
    - (g) = (9.8 m/s^2)
    - (h) Height = 2.75 Meters

m	g	h	
.032 Kg	9.8 m/s^2	2.75 M	PE = .86 Joules

What will happen when you suspend a slinky and then drop it?
A.) The Slinky will drop as is with nothing interesting or unusual occurring.
B.) The Slinky will fly upwards because of the stored potential energy.
C.) The bottom of the Slinky will remain still for a brief second until a compression wave reaches it and then the Slinky falls as one.
D.) Both ends will snap towards each other meeting in the middle and causing the Slinky to pancake.

Kinetic Energy

- The energy that matter has because of its mass and motion.
- where m = mass of object
- v = velocity of object
- KE = Energy in Joules

$$KE = \frac{1}{2} * m * v^2$$

- Do not forget your order of operations.
- PEMDAS
- For KE, you must do exponents (E) before multiplying (M). So square the velocity first, and multiply by half of the mass.

Kinetic energy

- Translational Energy: Motion from one location to another.
- Vibrational energy (sound)
- Electrical energy: Flow of electrons.
- Rotational energy.

Kinetic energy is a **scalar** quantity; as it does not have a direction.
Velocity, acceleration, force, and momentum are **vectors**. A quantity having direction as well as magnitude

What is the kinetic energy of a .142 kilogram baseball traveling at 45 meters per second?
-Please show your work!

- KE = 0.5 times .142 kg times (45) ² Joules
- KE = 0.5 times .142 kg times 2,025 Joules
- KE = .071 kg times 2,025 Joules
- KE = 143.775 Joules

What is the kinetic energy of a 20 kilogram cannon ball traveling at 40 meters per second?
-Please show your work!

- KE = 0.5 times 20 kg times (40) ² Joules
- KE = 0.5 times 20 kg times 1,600 Joules
- KE = 16,000 Joules or 16kJ

A ski jumper moving down the hill had a Potential Energy of 10,500 Joules, and a Kinetic Energy of 6,500 Joules.
What is her Mechanical Energy?
Please show your work!
ME = PE + KE
PE = 10500 J
KE = 6500 J

10500 J + 6500 J = 1700 Joules
or 17kJ

What's the kinetic energy of a 12 kilogram frozen fish being tossed at 2 meters per second?

- m = 12 kg
- v = 2 m/s

-Please show your work!

KE = 0.5 times 12 kg times (2) ² Joules
KE = 0.5 times 12 kg times 4 Joules
KE = 6 kg times 4 Joules
KE = 24 J

Find the Mechanical Energy of the large D battery hitting the parked car from the highest position.

PE = mgh KE = ½ mass * velocity²
D Battery mass = 148 g (.148kg)
Height = 6 cm (.06m)
Gravity = 9.8 m/s²
Velocity .5 m/s West
Answer in Joules

PE=mgh
PE= .148kg * 9.8 m/s² * .06m
PE = .0870 Joules

KE=1/2 m * velocity²
KE=.5 * .148 * .5 m/s
KE=.5 * .148 * .25 m/s
KE = .0185 Joules

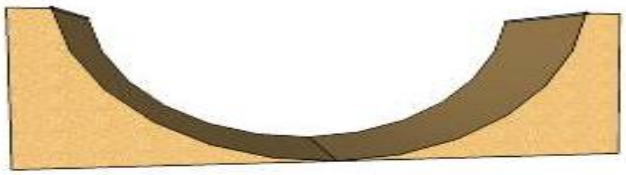
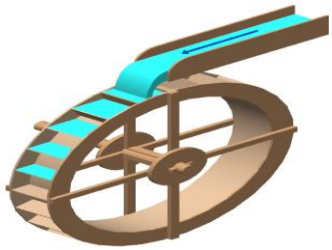
.087 +.0185J = .1055J
Mechanical Energy (ME) = .1055 Joules

What is the kinetic energy of a **12 pound** football being thrown from a perfect spiral at 17 m/s to a wide open receiver in the end zone.

Need to convert 12 pounds to kilograms
12 pounds = 5.44 kg

KE = 0.5 times 5.4 kg times (17m/s) ² Joules
KE = 0.5 times 5.4 kg times 289 Joules
KE = 2.7 x 289 J
KE = 780J

Please calculate the potential energy of a pole-vaulter at the top of their vault. Their height was 3 meters and they weighed 77 kilograms. PE= mgh PE= mgh PE = 77 kg* 9.8 m/s² * 3 m PE = 2263.8 Joules	Please calculate the KE of a pole-vaulter. The run into the vault was 8.3 m/s and they weighed 77 kilograms. KE= ½ m * V² (Assume all energy in the vault was transformed into potential energy to make this question easier.) KE = ½ m * V² KE = .5* 77 kg * 8.3 m/s KE = .5* 77 kg * 68.89 m/s KE = 2652.2 Joules
What was the Mechanical Energy of the pole-vaulter? Remember to show your work! PE =2263.8J + KE=2652.2 J = 4,916 Joules	Where is the kinetic energy the highest, and when is the potential energy the highest? Does the total energy ever change? Note- When pole bends it becomes elastic potential energy POTENTIAL  KINETIC

Please describe potential and kinetic energy using the half pipe below.  Response= Potential Energy: (PE) The energy stored by an object as a result of its position. A skater at the top of the ramp has a high Potential Energy. The skater at the bottom of the ramp after coming down has high kinetic energy. When the skater gets air born going up a ramp, the kinetic energy slows down, but the potential	Please describe how potential energy can be turned into kinetic energy using the picture below as a visual aid.  Response= Potential Energy can be turned into kinetic energy in this example of hydropower. Falling water (High Potential Energy) turns a wheel and creates kinetic energy.

energy increase. ● Potential Energy is the energy of position. Objects that are elevated have a high potential energy. ● Kinetic Energy is the energy of motion	

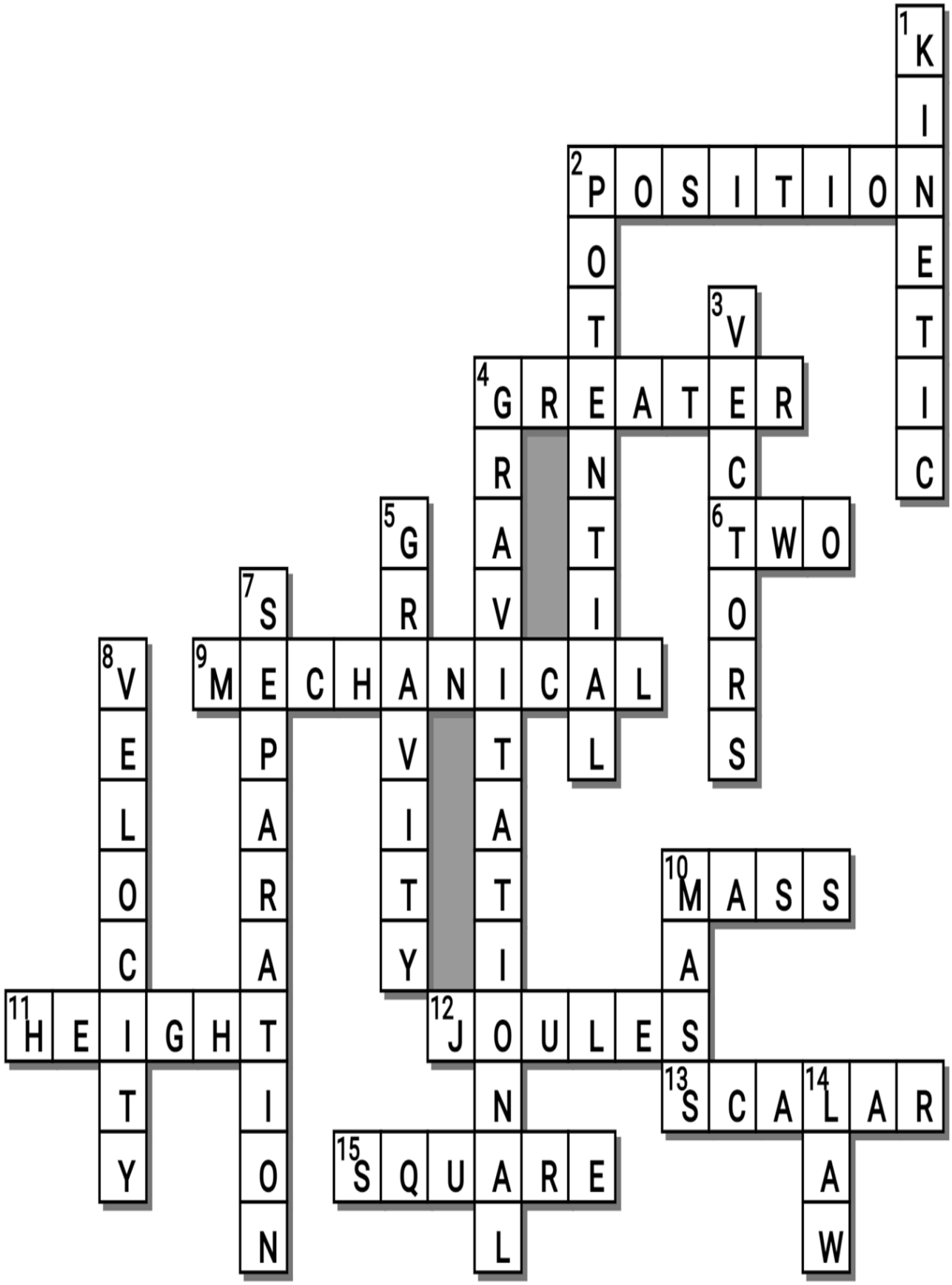
Name some quantities that are… Which one has magnitude and direction?

Scalar **Vector**

Scalar Quantities	Vector Quantities
Have magnitude but no direction	Have magnitude and direction
Distance Speed Mass Energy Density Power Length, Area, Volume Time Temperature Work	Displacement Velocity Weight Acceleration Force Impulse Pressure Momentum Gravity Drag

Mechanical Energy (ME): Energy due to position and motion.

- Sum of potential and kinetic energies, includes heat and friction. PE + KE = ME POSSES THE ABILITY TO do….


1 KINETIC
2 POSITION
3 VECTORS
4 GREATER
5 GRAVITATIONAL
6 TWO
7 SEPARATION
8 VELOCITY
9 MECHANICAL
10 MASS
11 HEIGHT
12 JOULES
13 SCALAR
14 LAW
15 SQUARE

Across

2. Potential Energy is the energy of _____
4. The more mass an object has, the _____ the force of attraction.
6. Gravity is an attractive force between ___ bodies, which depends only on the mass of the two bodies (M and m) and inversely on the square of the separation between the two bodies.
9. Energy due to position and motion; sum of potential and kinetic energies. Includes heat and friction.
10. Kinetic Energy Theenergy that matter has because of its ____ and motion. where m = mass of object v= speed of object KE = Energy in Joules
11. PE = mgh PE= Energy (in Joules) m= mass (in kilograms) g= gravitational acceleration of the earth (9.8 m/s²) h= _____ above earth's surface (in meters)
12. PE = mgh PE = Energy (in _____) m= mass (in kilograms) g= gravitational acceleration of the earth (9.8 m/s²) h= height above earth's surface (in meters)
13. Kinetic energy is a _____ quantity; as it does not have a direction.
15. For KE, you must do exponents before multiplying. So _____ the velocity first, and multiply by half of the mass.

Down

1. This is the energy of the motion.
2. The type of energy stored by an object as a result of its position
3. Velocity, acceleration, force, and momentum are _____. A quantity having direction as well as magnitude
4. PE = mgh PE= Energy (in Joules) m= mass (in kilograms) g= _____ acceleration of the earth (9.8 m/s²) h= height above earth's surface (in meters)
5. The force of attraction between all masses in the universe.
7. Gravity is an attractive force between two bodies, which depends only on the mass of the two bodies (M and m) and inversely on the square of the _____ between the two bodies.
8. Kinetic Energy Theenergy that matter has because of its mass and motion. where m = mass of object v= _____ of object KE= Energy in Joules
10. PE = mgh PE= Energy (in Joules) m =_____ g = gravitational acceleration f the earth (9.8 m/s²) h= height above mass (in kilograms) earth's surface (in meters)
14. _ _ _ of Gravity F = G M m / r^2

-----Teacher can remove this word bank to make puzzle more challenging----------
GRAVITY, GREATER, HEIGHT, JOULES, KINETIC, LAW, MASS, MASS, MECHANICAL, POSITION, POTENTIAL, TWO, GRAVITATIONAL, SCALAR, SEPARATION, SQUARE, VECTORS, VELOCITY

ENER G	IT's ALL ABOUT ME	GYM CLASS or PE	KE Epping IT REAL	TRUCKIN Bonus round 1 pt each
1) C.) Energy can be either kinetic or potential.	6) Twice as big, Three times weaker	11) Joules, Kilograms m/s^2	16) Mechanical Energy	*21) Movie Twlight
2) Position and Motion	7) D.) Quadruple	12) 19.9 kilojoules	17) Letter A Constant	*22) Grave Digger
3) PE = mgh m = 5000 kg g = 9.8 m/s^2 h = 100 m PE = (5000 kg) (9.8 m/s^2) (100 m) PE = 4,900,000 Joules PE = 4,900 gigajoules	8) E.) Hookes Law	13) PE = mgh m = 15,103 kg g = 1.62 m/s^2 h = 1,048 m PE = (15,103kg) (1.62m/s^2) (1048m) PE = 25641269.28 J / or 25,641 kJ	18) False	*23) Kitt from Night Rider
4) KE = 0.5 times 12 kg times (2) ² Joules KE = 0.5 times 12 kg times 4 Joules KE = 6 kg times 4 Joules KE = 24 Joules	9) PE = (10kg) (9.8m/s^2) (5m) PE = 490 Joules	14) Letter C Potential Energy	19) Letter D The total mechanical energy in a system (i.e., the sum of the potential plus kinetic energies) remains constant.	*24) Vaneloppe Von Sweetz
5) ME = PE + KE ME = 7,000J + 3,000 J ME = 10,000 Joules. 10 kilojoules	10) Potential, Kinetic, Kinetic	15) A=Potential B=Kinetic	20) Letter D Mass and Velocity	*25) The Delorean

Final Question: 5 Point Wager ____=WAGER

KE = 0.5 times 12 kg times (2) ² Joules

- KE = 0.5 times 12 kg times 4 Joules
- KE = 24 Joules