Physical science unit 6 study guide

Name KEY

1. Fill out the table below:

	definition	Unit	Formula	Solve for:	Solve for:
Kinetic energy	Energy in the form of motion	Joules	$KE=\frac{1}{2}mv^2$	m= $\frac{KE \times 2}{v^2}$	---
Potential energy	stored energy	Joules	$PE=mgh$	m= $\frac{PE}{gh}$	h= $\frac{PE}{mg}$
Work	The energy transfered when a force moves an object	Joules	$W=F \times d$	F= $\frac{W}{d}$	d= $\frac{W}{F}$
Power	The rate at which work is done.	Watts	$P=\frac{W}{t}$	W= $P \cdot t$	t= $\frac{W}{P}$

Classify the following as potential or kinetic:

2. A bird flying Kinetic
3. A child sitting at the top of a slide Potential
4. A ball thrown to 1st base Kinetic
5. A piece of cake Potential
6. Electrical energy is transformed into what kind of energy in a light bulb? Light & thermal
7. Radiant energy from the sun is transformed into what kind of energy in food? Chemical
8. Kinetic energy depends on mass and velocity
9. A ball weighing 20 Kg in sitting on top of a hill which is 15m high. What is its potential energy? $PE=mgh$

$m=20kg \quad g=9.8m/s^2 \quad h=15m$

$PE=20kg \times 9.8m/s^2 \times 15m$

$=2940\ J$

10. A bird weighing 2 Kg is flying in the sky at 10 m/s. What is its kinetic energy?

$KE = \frac{1}{2}mv^2$ $m = 2kg$ $V = 10m/s$ $KE = \frac{1}{2} 2kg \cdot 10^2 m/s = \frac{1}{2} \cdot 2kg \cdot 100 m/s$

$= 100J$

11. A person moves a 25 Kg box with a force of 12 N. The box moves 5 m. How much work was done on the box? $m = 25kg$ $F = 12N$ $d = 5m$

$W = F \times d$ $W = 12N \times 5m = 60$

12. A mover pushes a fridge and does 1,150 J of work. He moved the fridge 5m. How much force did it take? $W = 1,150J$ $d = 5m$ $F = ?$

$W = F \times d \Rightarrow F = \frac{W}{d} = \frac{1,150J}{5m} = 230N$

13. How much time is needed to produce 720 Joules of work if 90 watts of power is used?

$W = 720J$ $P = 90W$ $t = ?$

$P = \frac{W}{t}$ $t = \frac{W}{P} = \frac{720J}{90W} = 8s$

14. If 68 W of power is produced in 18 seconds, how much work is done?

$P = 68W$ $t = 18s$ $W = ?$

$P = \frac{W}{t} \Rightarrow W = P \cdot t = 68W \cdot 18s = 1224J$

15. A set of pulleys lifts an 800 N crate 4 meters in 7 seconds. What power was used?

$F = 800N$ $d = 4m$ $t = 7s$ $P = ?$

$P = \frac{W}{t} = \frac{F \times d}{t} = \frac{800N \times 4m}{7s} = 457 watts$

16. Every simple machine can be classified as either as a lever or a inclined plane

17. What is the function of a machine?

to make work easier.

18. What is the difference between IMA and AMA?

IMA is ideal = No friction

AMA is actual = friction is taken into account.

19. A box weighing 732 Kg is pushed up a ramp with a force of 525 N. The ramp is 12 m long and 5 m high. A. Calculate the IMA. B. Calculate the AMA. C. Calculate the efficiency * on BACK

20. What is the difference between heat and temperature? * Done in class

21. Almost all substances expand when they are heated and contract when they are cooled.

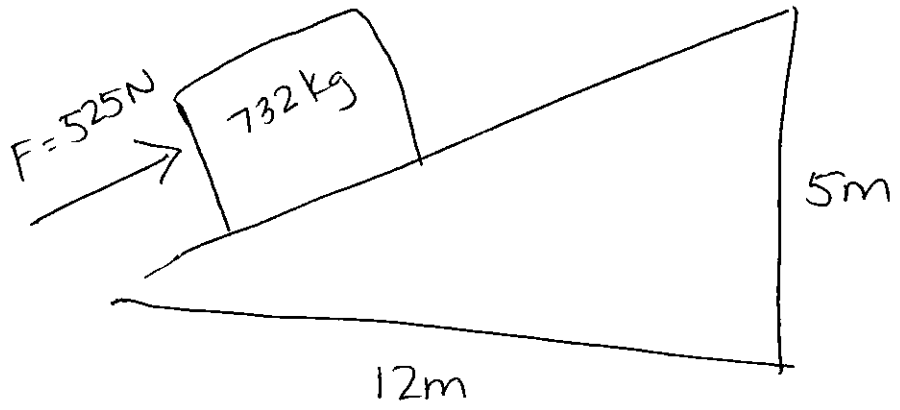
22. Define specific heat: * Done in class

23. A bar of chocolate melting in a child's hand Conduction

24. Hot air rising Convection

25. A heat lamp warming a lizard's habitat Radiation

19



A. $IMA = \frac{d_E}{d_R} = \frac{12m}{5m} = 2.4$

B. $AMA = \frac{F_R}{F_E} = \frac{732}{525}$ 1.4

C. Efficiency = $\frac{AMA}{IMA} \times 100 = \frac{1.4}{2.4} \times 100 = 0.58 \times 100 =$ 58%