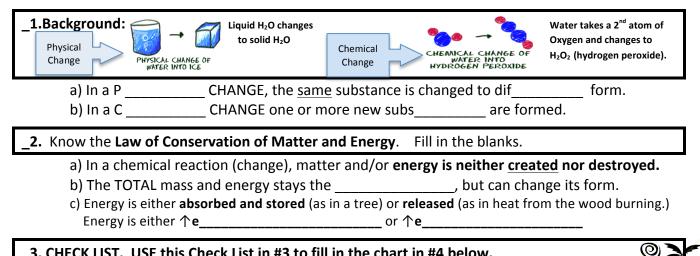
Changes Worksheet

Name

Period



Physical Changes		Chemical Changes	
Same substance as before	$H_2O \rightarrow H_2O$	New substance(s) formed	2H₂ + O₂ →2H₂O
May be in different form or shape	H₂O→Ice cube	Energy absorbed or given off (oft	ten as heat)
May include change of state (S-L-G)	Water \rightarrow Ice	Usually includes light or heat cha	nge Fire
Usually no color change		May include color change	
Usually easily reversed	Ice \rightarrow Water	Not easily reversed	Ashes 🗲 wood
Not described by chemical equation		Described by chemical equation	$C + O_2 \rightarrow CO_2$

_4. Fill in the Change chart below, using the Check List reasons from #3 above.

- 1. Write (P) Physical or (C) Chemical for the following changes.
- 2. Write the **bold words** from at least one \hat{u} reason in #3 for each example.

\$		
Change:	P or C?	Write 1 reason from #3 above:
a) Breaking glass or melting glass		
b) Burning anything (requires oxygen) 🚬 🙀		
c) Melting ice or melting lead		
d) Freezing, melting, evaporating,		
boiling, and/or condensation of H_2O .		
e) Dissolving salt (NaCl) in water (H ₂ O)	•	
f) Fe (iron) + O (oxygen) \rightarrow Fe ₂ O ₃ (rust)		
g) Letting dissolved carbon dioxide		
(CO ₂) out of soda pop $\bigcirc \bigcirc \bigcirc \bigcirc \bigcirc \bigcirc \bigcirc$		
h) Vinegar (Acetic Acid) + baking soda (NaCO ₃)		
+ H_2O + Carbon dioxide (CO ₂)		
i) H (hydrogen) + O (oxygen) \rightarrow H ₂ O (water \bigcirc		
vapor) + released energy (heat)		
$j) H_2O_2 \rightarrow H_2O + O_2 \qquad \qquad$		
(hydrogen peroxide → water + oxygen cleaned of water + oxygen cleaned of water reported the product of the second		
k) Sugar from chlorophyll in plants + sunlight®		
Sugar then used for energy		

	Changes Labs	Name	Per
Δ			
a 3	1. Use lodine and COLOR CHA	ANGE to TEST FOR STARCH in substances	S.

!! SAFETY ALERT: IODINE STAINS and is POISONOUS!

___a) Use a dry dish, pan or plate.

b) Place about a cubic centimeter (cm)

- or less of each substances like numbers on a clock, around
- the of the dish or pan. Use 1) cornstarch, 2) salt, 3) sugar, 4) paper towel, 5) thin paper, 6) thicker paper 7) Styrofoam, 8) soluble packing peanut, 9) water, 10) ??
- c) In the center, ASK for enough iodine solution to make a puddle about the size of a penny.

__d) Keep substances separate as you use a toothpick or stirring straw tip to move a little iodine to each substance, ONE AT A TIME.

- ___e) OBSERVE and RECORD resulting color for EACH substance.
- ___f) Always clean up according to directions. IF NOT SURE, <u>ASK</u>.

• IODINE is to be rinsed down the <u>CLEANUP SINK</u> or put in <u>wastebasket</u>. Your table should be rinsed & <u>cleaned</u>.

	Substance	Resulting Color	Physical or Chemical Change?	
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
	g) From your data	, IODINE	in STARCH	Clea

Clean up! Have Checked:

CHEMICAL CHANGE TO CHANGE A SUBSTANCE AND CLEAN a Penny.

_a) Use a small plastic dish. RINSE before using. Rinse after soap.

b) Try a small amount of each of the following, in order, to clean a penny.

____c) Observe and record to fill in the chart.

Substance for cleaning	Describe Change ↓	Change: Physical or Chemical?	Reason from Chemical Changes Worksheet
Water			
Soap and water Rinse after!			
Vinegar			
Vinegar and salt If time, Save this liquid for 3.			
		Clean u	p Have Checked

3. Chemical Change to copper plate (add a coating of copper) an object made of iron.



___a) Use the vinegar and salt mixture from above, or make more.

b) Use steel wool to break up the finish on a paperclip (or nail) that is made using iron.

____c) Add 2-4 copper pennies (1981 or older) in your vinegar and salt mixture.

d) Add your paperclip. If you want to compare the change, leave part of it out of the liquid.

_e) Let sit, checking every 5 minutes. If needed, mark with your name and period and **ask where**.

___f) Draw and describe the results here:

Time in solution:	Draw results:
Describe results:	

This involves **two chemical reactions**: 1. The copper first combines with the acetic acid (vinegar).

2. Copper is then attracted to the iron and leaves the acid to stick to the iron.