

First Letter of Last Name
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Although this room is crowded, do your best not share answers or information. **No notes, books, calculators, cell phones, iPods, computers or electronics of any sort allowed. Please turn off the ringer on your phone now.**

Put an X where you are sitting.

front

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page	marks	
3	13	
4	16	
5	16	
6	16	
<b>Total</b>		
	<b>61</b>	

6	Atomic number
<b>C</b>	Symbol
12.011	Atomic mass

**PERIODIC TABLE OF THE ELEMENTS**

Atomic masses are based on <sup>12</sup>C. Atomic masses in parentheses are for the most stable isotope.

Groups																VIIIA	
1A															2		
1															2	<b>He</b>	
1.00079															4.00260		
IIA												IIIA	IVA	VA	VIA	VIIA	
3	4											5	6	7	8	9	10
<b>Li</b>	<b>Be</b>											<b>B</b>	<b>C</b>	<b>N</b>	<b>O</b>	<b>F</b>	<b>Ne</b>
6.941	9.01218											10.81	12.011	14.0067	15.9994	18.998403	20.179
IIIB		IVB	VB	VIB	VIIIB	VIII		IB	IIB	IIIB		IVB	V	VI	VII	VIII	
11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
<b>Na</b>	<b>Mg</b>	<b>Al</b>	<b>Si</b>	<b>P</b>	<b>S</b>	<b>Cl</b>	<b>Ar</b>	<b>K</b>	<b>Ca</b>	<b>Sc</b>	<b>Ti</b>	<b>V</b>	<b>Cr</b>	<b>Mn</b>	<b>Fe</b>	<b>Co</b>	<b>Ni</b>
22.98977	24.305	26.98154	28.0855	30.97376	32.06	35.453	39.948	39.0963	40.08	44.9559	47.90	50.9415	51.996	54.9380	55.847	58.9332	58.70
37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
<b>Rb</b>	<b>Sr</b>	<b>Y</b>	<b>Zr</b>	<b>Nb</b>	<b>Mo</b>	<b>Tc</b>	<b>Ru</b>	<b>Rh</b>	<b>Pd</b>	<b>Ag</b>	<b>Cd</b>	<b>In</b>	<b>Sn</b>	<b>Sb</b>	<b>Te</b>	<b>I</b>	<b>Xe</b>
85.4678	87.62	88.9059	91.22	92.9064	95.94	(98)	101.07	102.9055	106.4	107.868	112.41	114.82	118.69	121.75	127.60	126.9045	131.30
55	56	57	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86
<b>Cs</b>	<b>Ba</b>	<b>La</b>	<b>Hf</b>	<b>Ta</b>	<b>W</b>	<b>Re</b>	<b>Os</b>	<b>Ir</b>	<b>Pt</b>	<b>Au</b>	<b>Hg</b>	<b>Tl</b>	<b>Pb</b>	<b>Bi</b>	<b>Po</b>	<b>At</b>	<b>Rn</b>
132.9054	137.33	138.9055	178.49	180.9479	183.85	186.207	190.2	192.22	195.09	196.9665	200.59	204.37	207.2	208.9804	(209)	(210)	(222)
87	88	89	104	105	106												
<b>Fr</b>	<b>Ra</b>	<b>Ac</b>	<b>Unq</b>	<b>Unp</b>	<b>Unh</b>												
(223)	226.0254	227.0278	(261)	(262)	(263)												

\*Lanthanide series

58	59	60	61	62	63	64	65	66	67	68	69	70	71
<b>Ce</b>	<b>Pr</b>	<b>Nd</b>	<b>Pm</b>	<b>Sm</b>	<b>Eu</b>	<b>Gd</b>	<b>Tb</b>	<b>Dy</b>	<b>Ho</b>	<b>Er</b>	<b>Tm</b>	<b>Yb</b>	<b>Lu</b>
140.12	140.9077	144.24	(145)	150.4	151.96	157.25	158.9254	162.50	164.9304	167.26	168.9342	173.04	174.967

† Actinide series

90	91	92	93	94	95	96	97	98	99	100	101	102	103
<b>Th</b>	<b>Pa</b>	<b>U</b>	<b>Np</b>	<b>Pu</b>	<b>Am</b>	<b>Cm</b>	<b>Bk</b>	<b>Cf</b>	<b>Es</b>	<b>Fm</b>	<b>Md</b>	<b>No</b>	<b>Lr</b>
232.0381	231.0359	238.029	237.0482	(244)	(243)	(247)	(247)	(251)	(252)	(257)	(258)	(259)	(260)

2. A tertiary carbocation is more stable than a secondary carbocation because of: \_\_\_\_\_ .

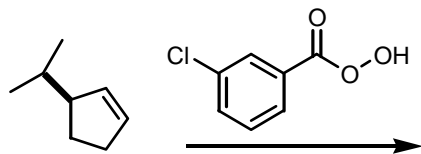
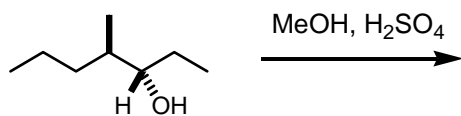
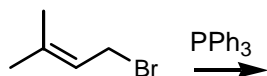
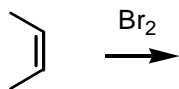
3. Draw a diagram like those in class that illustrates the above concept.

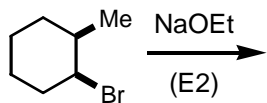
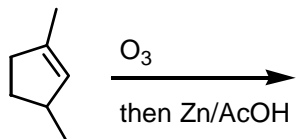
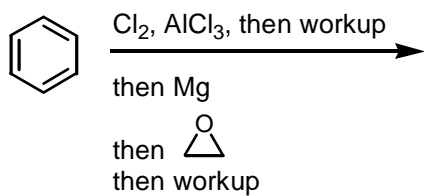
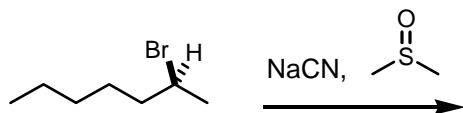
2. Explain why a polar protic solvent is better for SN1 reactions with alkyl halides than a polar non-protic solvent.

2. What is the most important question in chemistry?

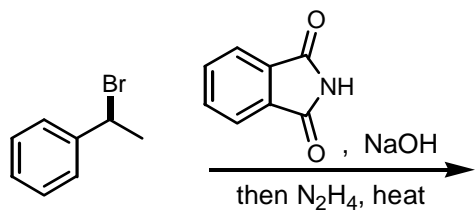
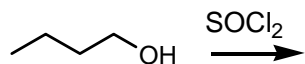
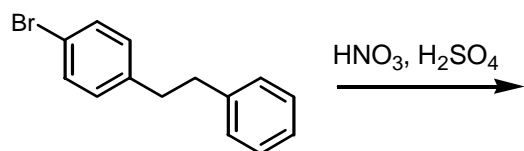
4. What are two of the “black box” rules discussed in the first weeks of class?

Show the products from the following reactions, including stereochemistry where possible. If more than one product is expected, indicate which is the major. 4 marks each





This E2 rxn fits who's rule?



Propose an efficient synthesis of the following molecule using any reagents you want provided that none adds more than 5 carbons at a time to the final product.

