

CHEM 3332 Honors
Homework for Ketones and Aldehydes

1. Draw a structure for the following:

A. 4-*tert*-butylcyclohexanone

D. 2-pentanone

B. *cis*-2,3-dimethylcyclopentanone

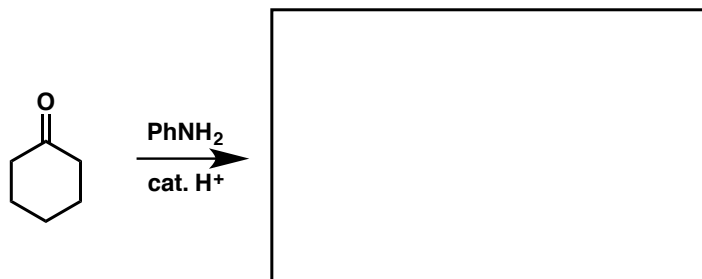
E. dodecanal

C. acetaldehyde

F. 3-methyl-cyclopent-2-enone

2. Predict the major product (or products) for these reactions. Don't forget to show the stereochemistry in the products if the reaction is stereoselective.

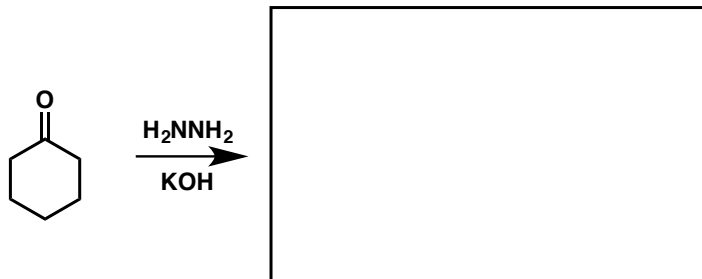
A.



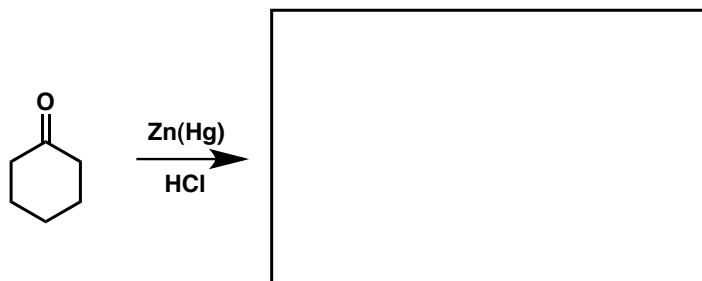
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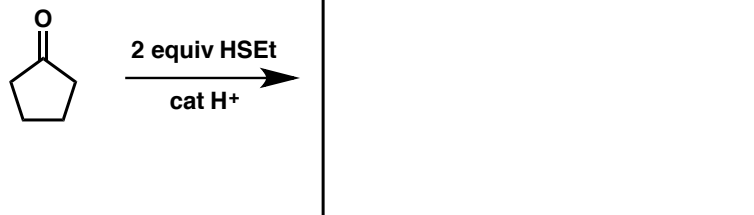
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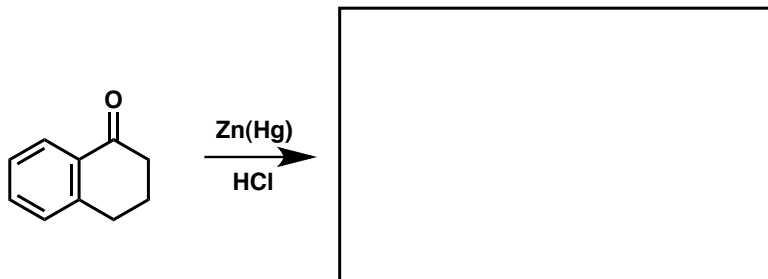
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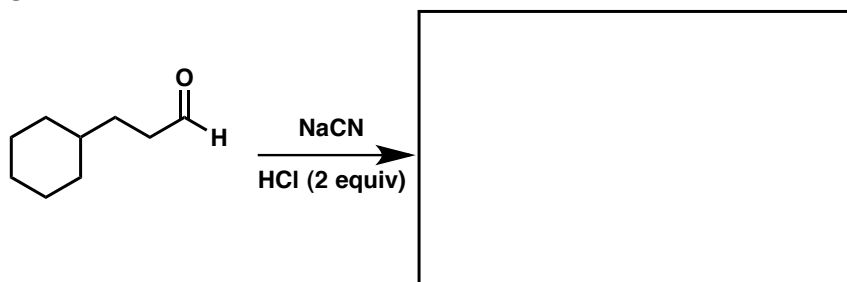
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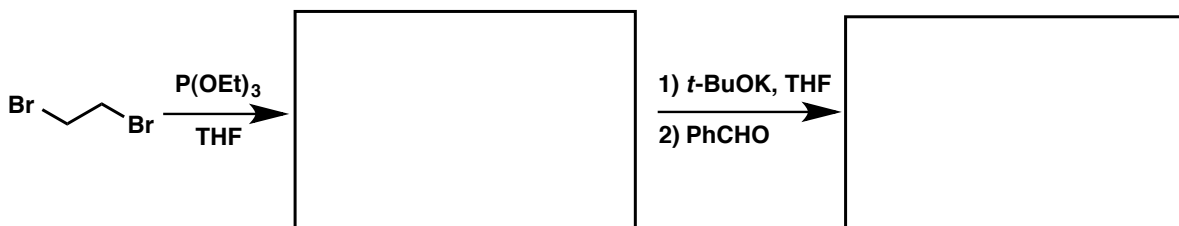
F.



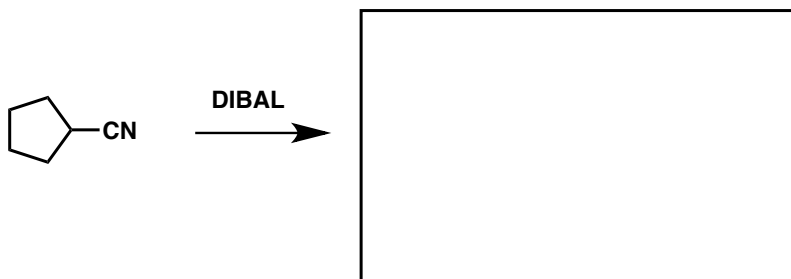
G.



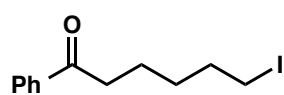
H.



I.



J.



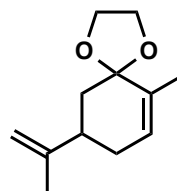
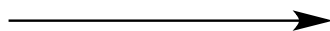
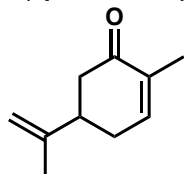
1) Ph_3P
2) NaOt-Bu
3) heat



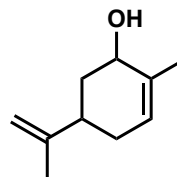
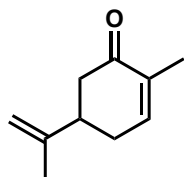
3. Give reagents to perform the following transformations.

A.

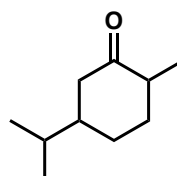
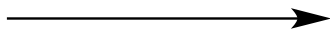
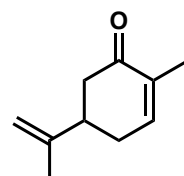
Carvone
(spearmint oil)



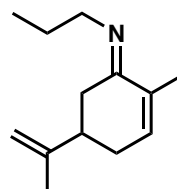
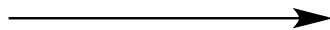
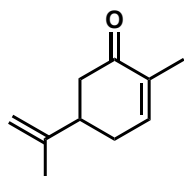
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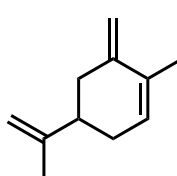
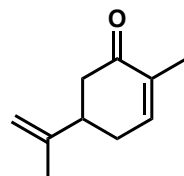
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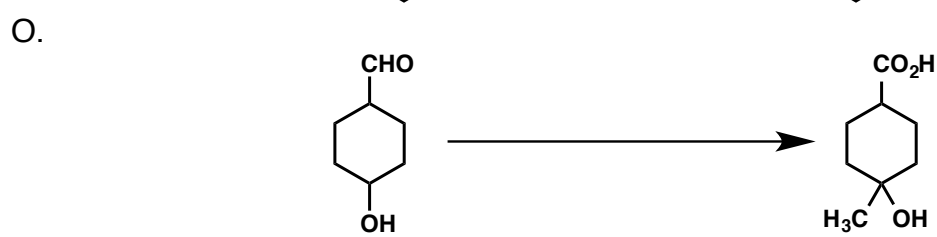
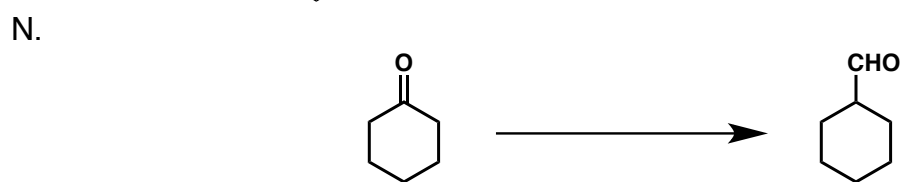
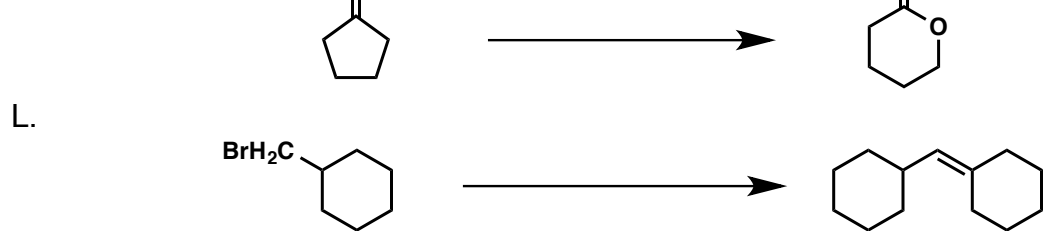
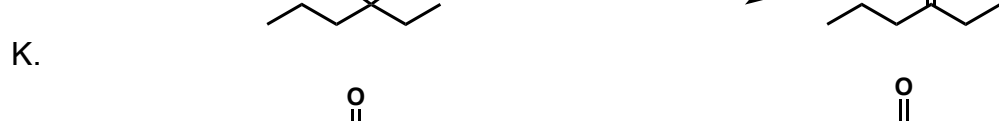
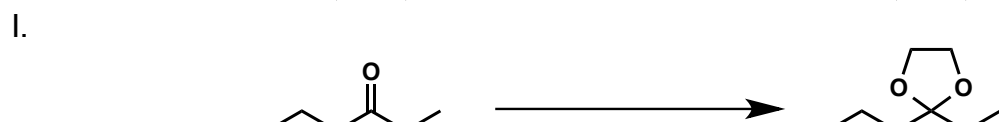
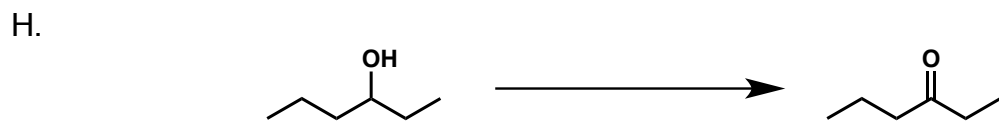
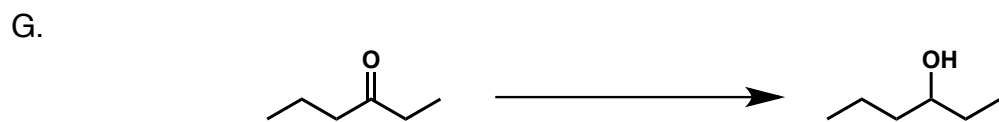
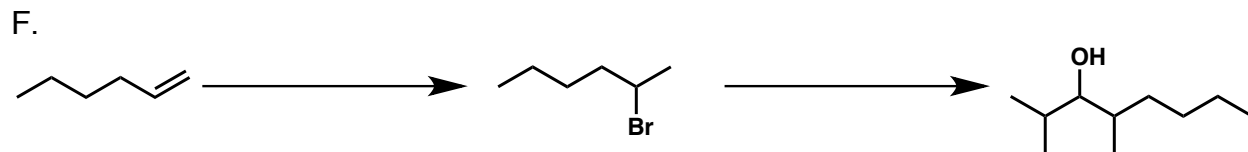


D.

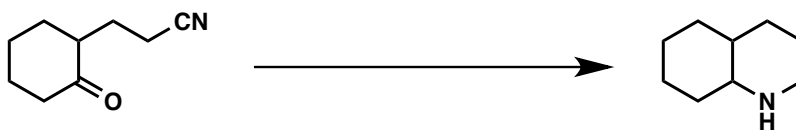


E.

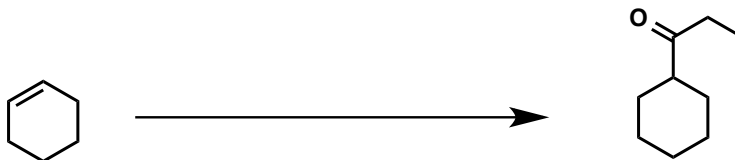




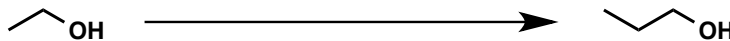
P.



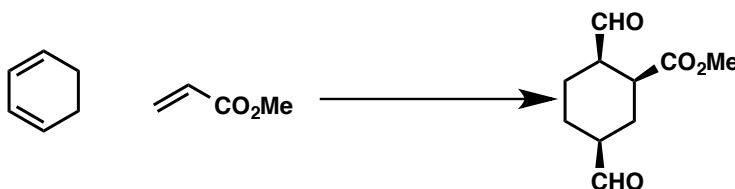
Q.



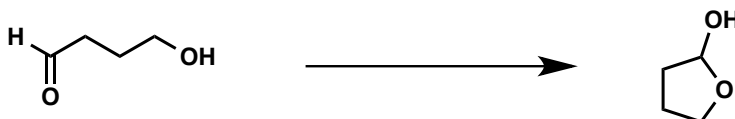
R.



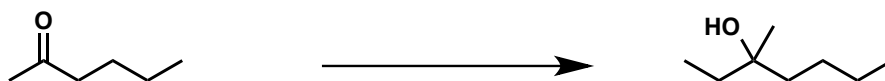
S.



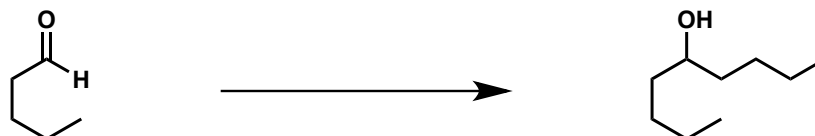
T.



U.

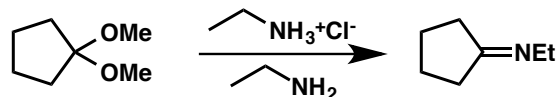


V.

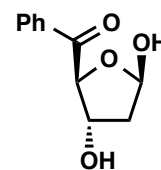
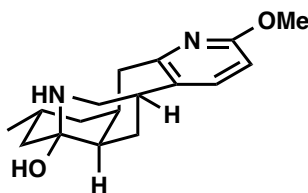
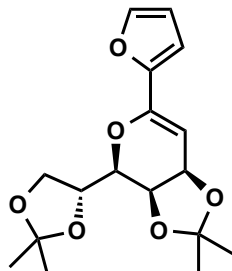


4. Write a full mechanism for the following:

A.

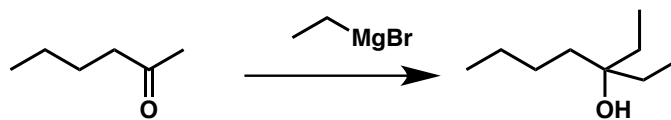


5. Label each carbon of the following structures with its oxidation state.

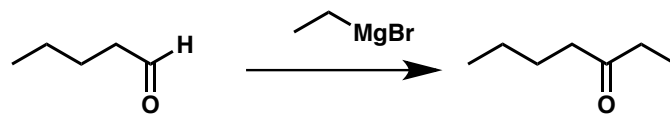


6. What is wrong with the following?

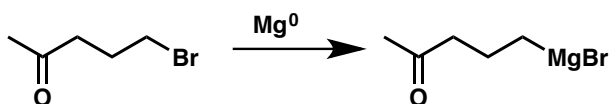
A.



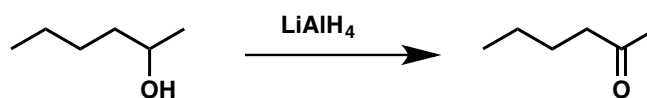
B.



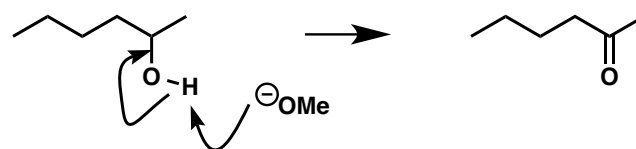
C.



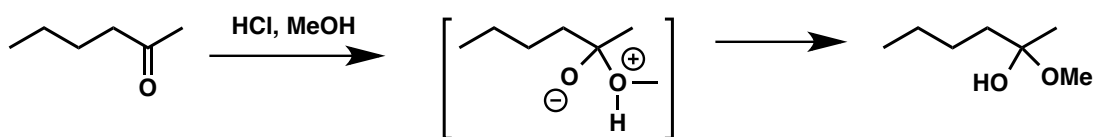
D.



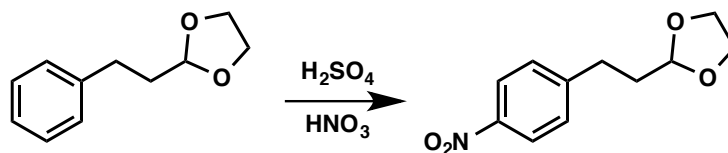
E.



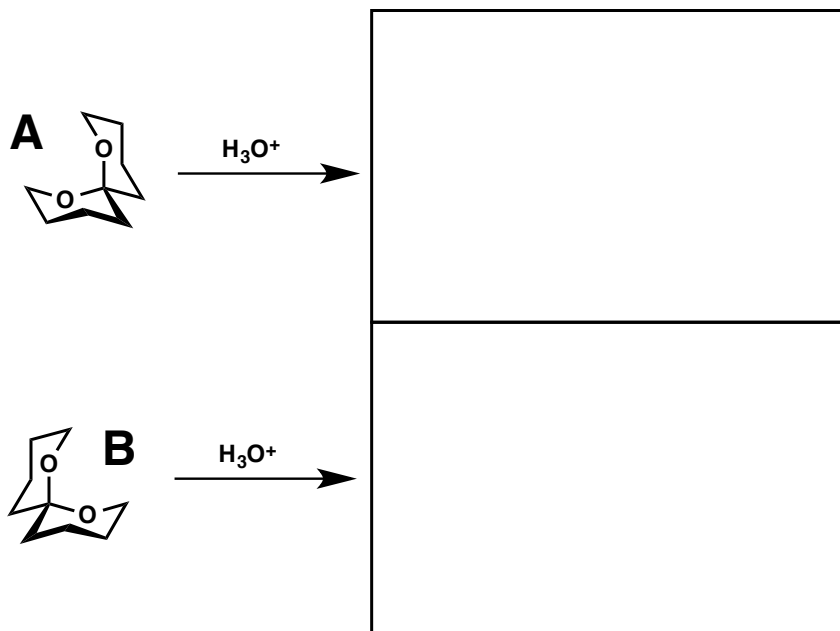
F.



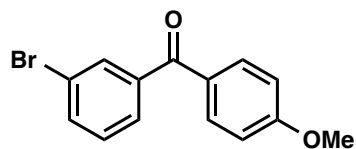
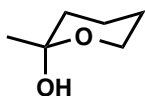
G.



7. Predict the product for each of these reactions. For either A or B, draw the full mechanism for the transformation.

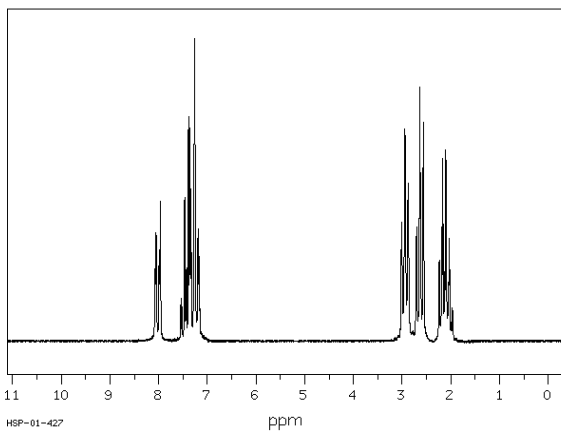


8. Make the following from a monosubstituted benzene or starting materials and reagents that add 4 carbons or less:

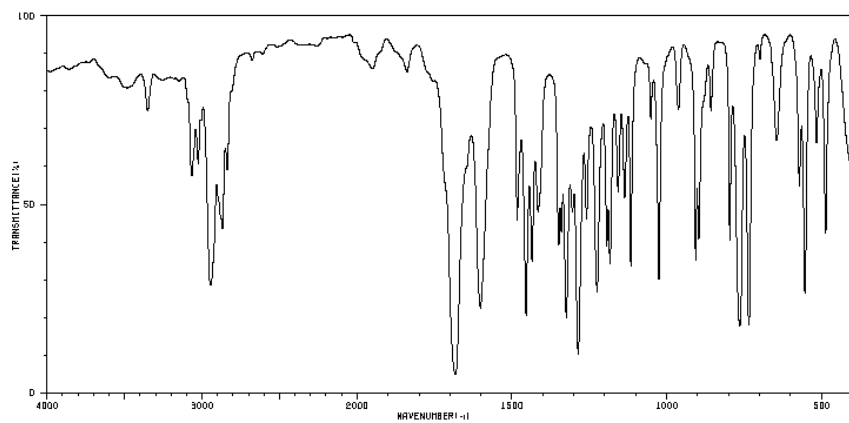
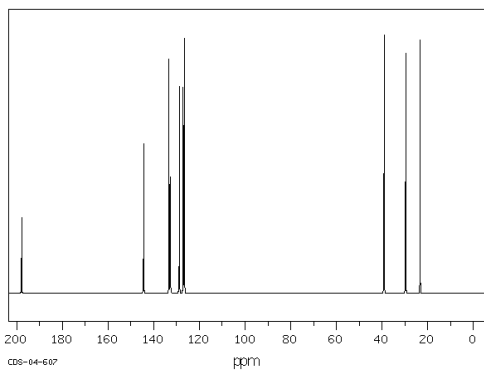


9. Provide the structure for the following:

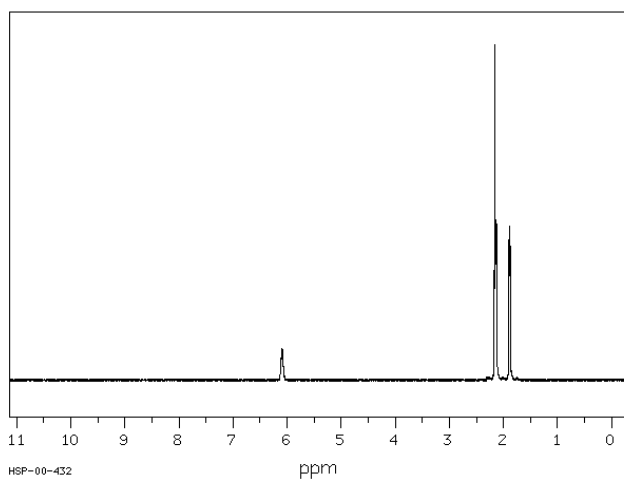
A. $C_{10}H_{10}O$



	shift in ppm	integration	multiplicity
A	8.01	1	d
B	7.46	1	dd
C	7.33	1	dd
D	7.21	1	d
E	2.93	2	t
F	2.63	2	t
G	2.11	2	m



B. C₆H₁₀O



	shift in ppm	integration	multiplicity
A	6.09	1	s
B	2.16	3	s
C	2.14	3	s
D	1.89	3	s

