

# Chem 14D Winter 2021 Midterm 2

CHRISTINA KILKEARY

TOTAL POINTS

**36 / 52**

QUESTION 1

Question 1 10 pts

1.1 Prediction 2 / 4

- + 4 pts Correct product
- + 3 pts Fake stereochem/same product drawn twice/wrong regiochem
- ✓ + 2 pts Incorrect attachments
- + 1 pts Not aromatic
- + 0 pts Blank

1.2 Mechanism 6 / 6

- ✓ + 6 pts All arrows Correct
- + 5 pts 1-2 mistakes in arrow pushing
- + 4.5 pts 3-4 mistakes in arrow pushing
- + 3.5 pts Half the arrows are drawn correct
- + 1.5 pts 1-2 correct arrows
- + 0 pts Blank

QUESTION 2

Question 2 10 pts

2.1 2 a 1 / 2

- + 2 pts Correct product mixture with correct stereochem - R,R, and S,S
- ✓ + 1 pts Epoxide with wrong stereochem/wrong epoxide/stereochem not clearly shown/wrong final structure
- + 0 pts No partial credit
- + 0 pts Blank/Not an epoxide

2.2 2 b 2 / 2

- ✓ + 2 pts Correct product mixture with correct stereochem
- + 1.5 pts Wrong attachments/wrong stereochem/one product

- + 1 pts Not all stereoisomers drawn assuming 1 eq. of Williamson ether synthesis
- + 0 pts Blank/no partial credit

2.3 2 c 2 / 2

- ✓ + 2 pts Correct product mixture with correct stereochem
- + 1 pts Incorrect stereochem/wrong attachments/one product
- + 0 pts Blank/No partial credit

2.4 2 d 1 / 2

- + 2 pts No net reaction/shows product of step 2/just the aryl alcohol
- ✓ + 1 pts Wrong regiochem/wrong attachments/Li and OH present on the same ring
- + 0 pts Blank/no partial credit

2.5 2 e 1 / 2

- + 2 pts Correct product with correct regiochem
- ✓ + 1 pts Incorrect attachments/wrong regiochem
- + 0 pts Blank/no partial credit

QUESTION 3

Question 3 10 pts

3.1 3 a 4 / 6

- + 6 pts All boxes Correct
- ✓ + 2 pts 1st box correct
- + 1 pts wrong attachments/carbon count in 1st box
- + 0 pts 1st box blank/no partial credit
- + 2 pts 2nd box correct
- + 1 pts 2nd box partially correct/E1 and not E2 shown for last step/solvents missing etc
- ✓ + 0 pts 2nd box blank/no partial credit
- ✓ + 2 pts 3rd box correct

+ **1 pts** 3rd box wrong attachments/wrong carbon count/fake stereochem with multiple cyclohexyl products

+ **0 pts** 3rd box blank/no partial credit

### 3.2 3 b 4 / 4

✓ + **4 pts** Correct product

+ **3 pts** Multiple products/fake stereochem/wrong regiochem

+ **2 pts** Incorrect carbon count/wrong attachments

+ **1 pts** Some Aryl molecule

+ **0 pts** Blank/no partial credit

### QUESTION 4

#### 4 Question 4 6.5 / 10

+ **10 pts** All Correct with correct carbon sources and solvents and OM reagents and selectivity properly shown

+ **9.5 pts** Mostly correct with a few small errors/E2 reaction possibility but all solvents, carbon sources, OM reagents, selectivity are proper/missing selectivity on one step

+ **8.5 pts** >75% correct with correct carbon sources and solvents and OM reagents shown and selectivity shown

+ **7.5 pts** Correct with correct solvents but wrong carbon sources/OM reagents not shown/selectivity of reactions not shown/missing selectivity

✓ + **6.5 pts** Mostly correct but possibility of E2 reactions and wrong carbon sources/solvents missing/OM reagents missing/selectivity missing

+ **5.5 pts** 50% correct and mostly on the right track

+ **4 pts** Showed a few steps

+ **0 pts** Blank

### QUESTION 5

#### 5 Question 5 4.5 / 10

+ **10 pts** Correct method with proper carbon sources, OM reagents shown, selectivity shown when applicable, solvents shown properly

+ **9.5 pts** A few small errors but right carbon

sources, OM reagents, selectivity, solvents etc

+ **8.5 pts** Mostly correct with correct carbon sources (or C sources with 3-4 carbons but not a ring), but missing selectivity/OM reagent formation/proper solvents/competing OM reactions

+ **7.5 pts** >75% correct with proper carbon sources, but issues with OM reagents, solvents, selectivity, used Friedel-Craft's alkylation, used OM in presence of alcohol etc.

+ **6.5 pts** >75% correct with proper carbon sources, but missing OM reagent formation/selectivity/solvents

+ **5.5 pts** Correct or mostly correct but wrong carbon sources such as a cyclohexyl ring added/reactions shown that do not work on arenes

✓ + **4.5 pts** About 50% correct and mostly on the right track

+ **3 pts** A few steps shown

+ **2 pts** Something was written

+ **0 pts** Blank

1 looks like you forgot to form your OM reagent to do this reaction

2 three carbons

3 Not the product of a birch reduction

4 selectivity issue

5 4 carbon chain

6 only 3 carbons now

7 5 carbon chain

8 only 4 carbons now

9 this structure is the same as your last

10 cannot use OM reagents in presence of OH

11 you made a 6 carbon ring from a 4 carbon chain

12 selectivity issue

13 ?

### QUESTION 6

## 6 Extra Credit 2 / 2

✓ + 2 pts I am laughing/crying/both

+ 1 pts You tried your best

+ 0 pts Blank

# MIDTERM 2

Monday, February 22, 2021 8:56 AM

## CHEM 14D Midterm 2 February 22, 2021

**\*Full Name on Every Page\* \*Write Dark\* \*Only front pages will be scanned\***

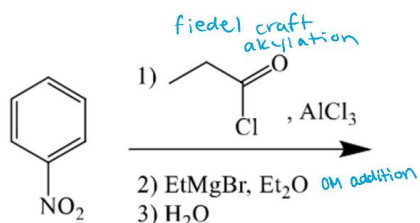
Kilkeary                      Christina                      605 416 454  
Name (Last)                      (First)                      Student ID

Question	1	2	3	4	5	EC	Total
Points	10	10	10	10	10	1	50

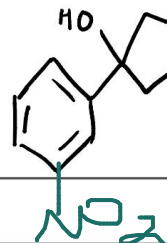
1. Where applicable, answers without a clear indication of stereochemistry will be given partial or no credit depending on the problem. Similarly ambiguous and/or unnecessary stereochemical information will be penalized as well. Additionally, drawing the same product multiple times (unless it's meso) will be penalized.
2. Put in your best effort on every question, you will be graded on effort in the end! Try not to leave any questions blank, and just try to stay calm and focus. Good luck!! Seriously though, I think you, YES ALL OF YOU, have the potential of performing your utmost best on this test and that's all you need to do!! Think of it as a puzzle/game and focus on yourself and your own abilities, the grade will follow suit 😊
3. Academic misconduct disclaimer: I hereby state that I have neither given nor received aid to or from other people during this exam (including external websites and programs). I vouch for the honesty and integrity of each and every answer given.

Signature Chitra King  
ID# 605416454

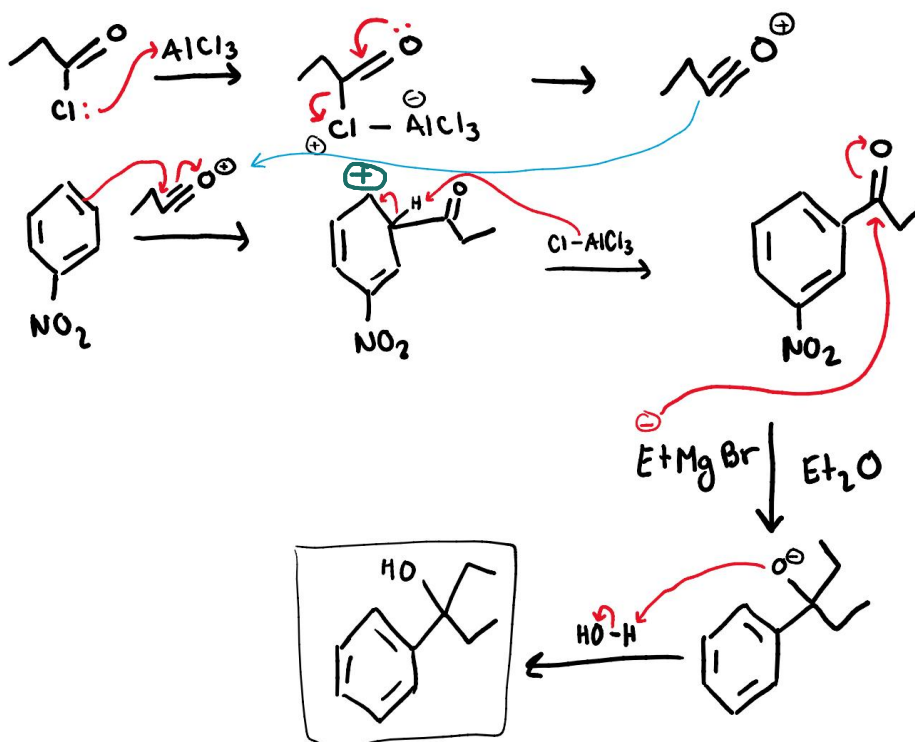
1. [10 Points] Predict the major organic product(s) of the following reactions and draw complete arrow-pushing mechanisms for their formation. If more than one product stereoisomer is formed, draw them all. However, if only one product is formed (unless meso) you should draw only one. However, you only need to show a mechanism for formation of one stereoisomer. Show all mechanistic steps including all organic intermediates and all formal charges, if applicable.



product(s):

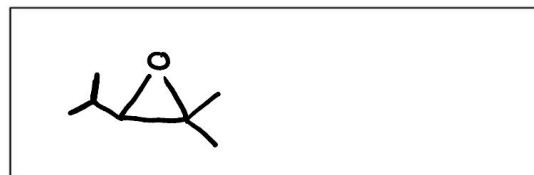
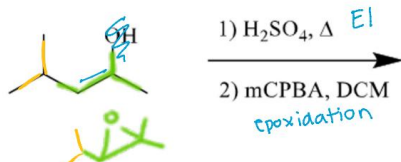


mechanism:

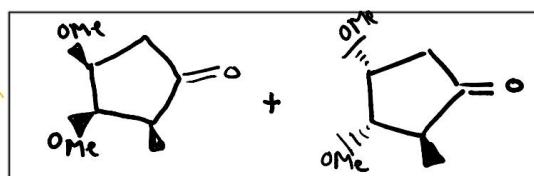
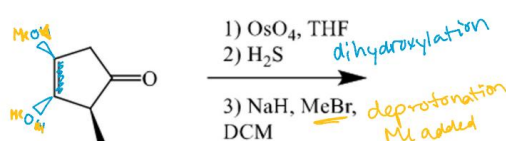


2. [10 Points] Predict the major organic product(s) of the following. If multiple stereoisomers would form in equal concentrations, draw them all. No need to show the full mechanism. If no net reaction would ultimately occur at the end of the given steps, write "No net rxn". No need to draw minor/inorganic product(s).

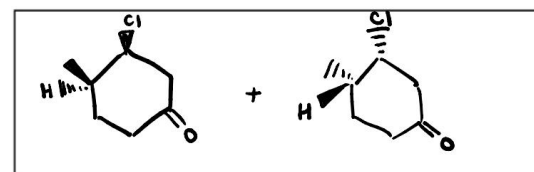
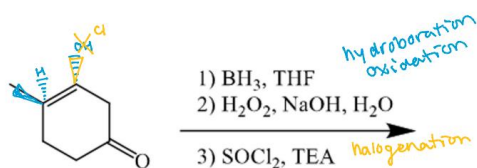
(a)



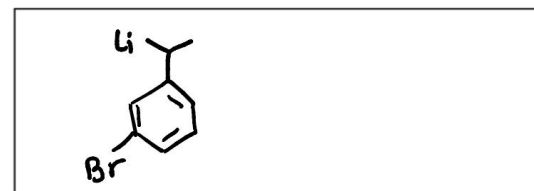
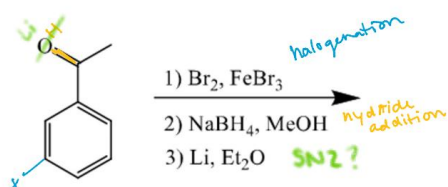
(b)



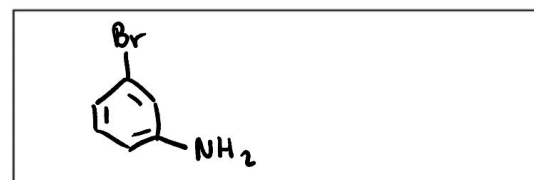
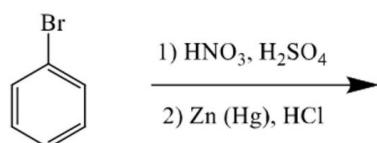
(c)



(d)

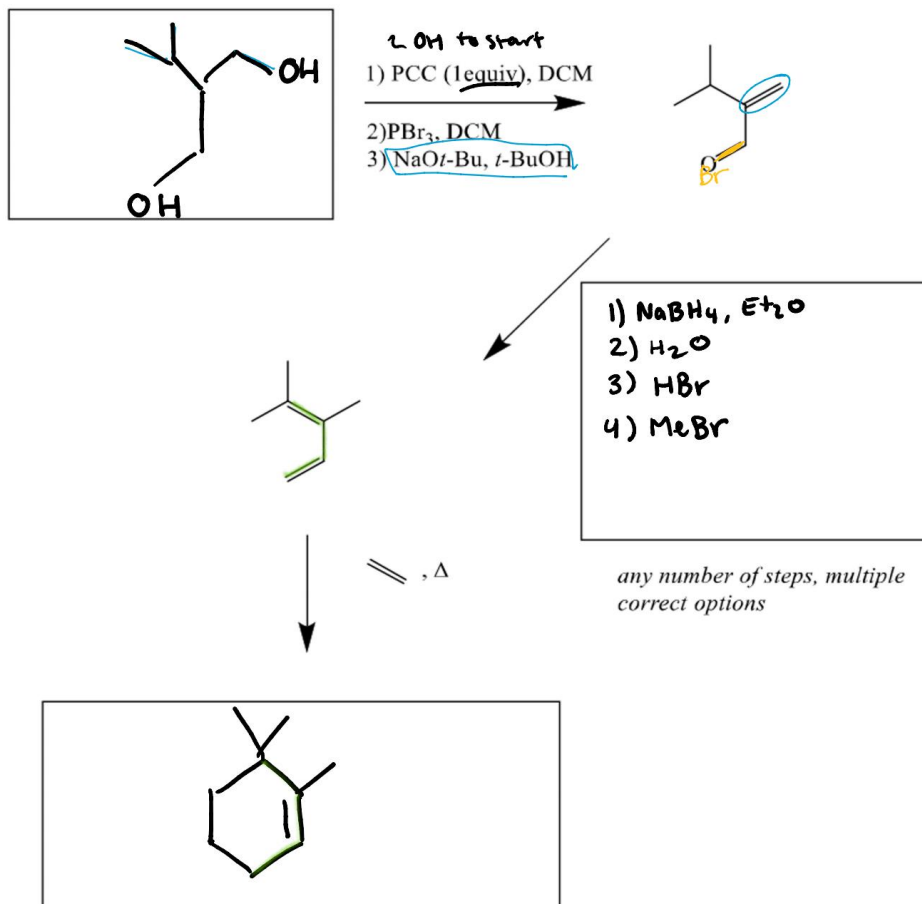


(e)

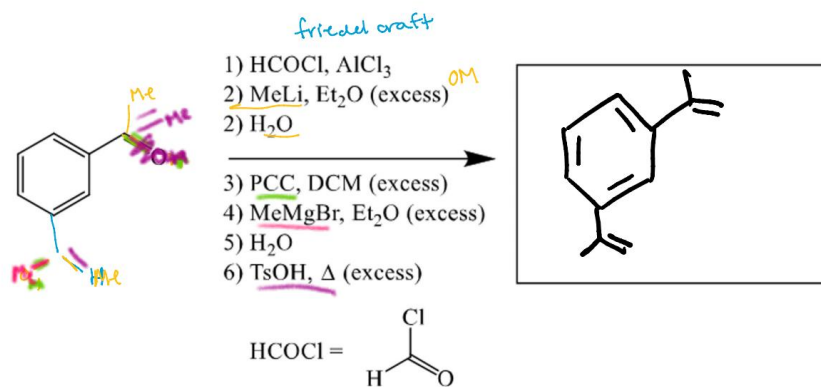


3. [10 points] Predict the missing reagent(s)/reactant(s)/product(s) to complete the following transformations. Specify stereochem where needed appropriately. No need to show the full mechanism.

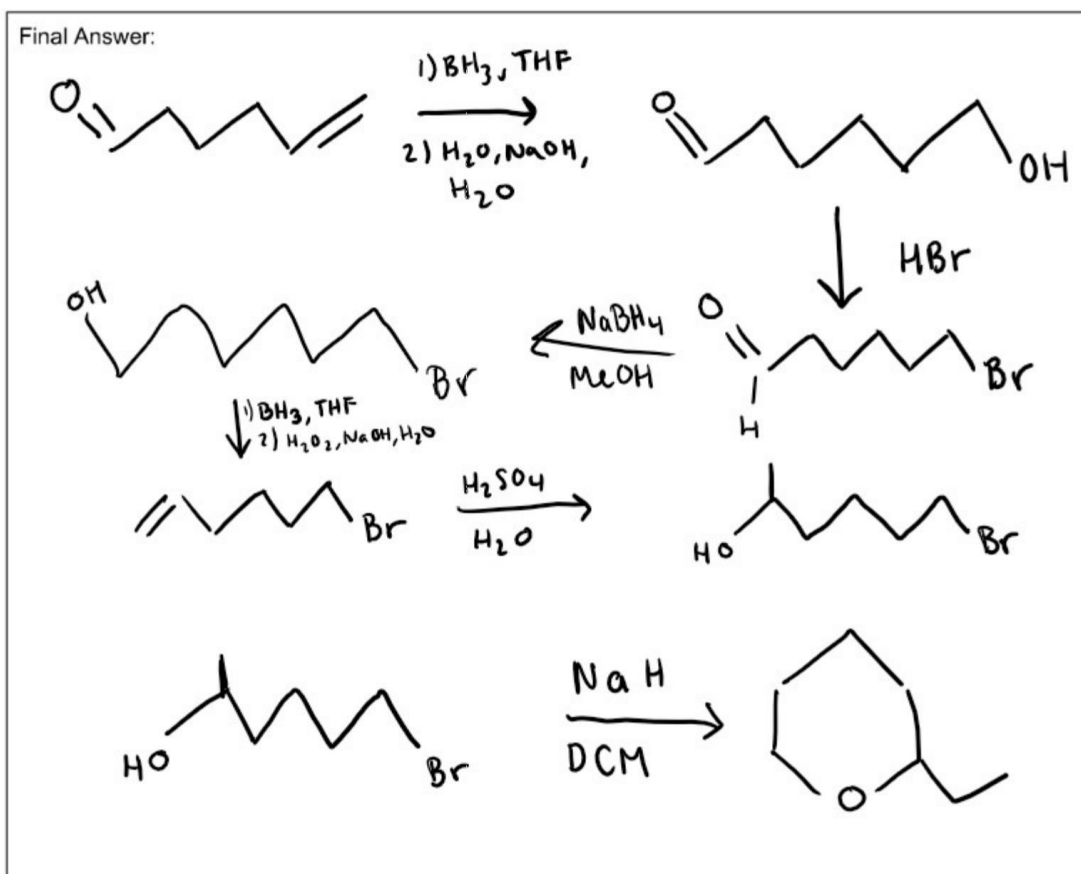
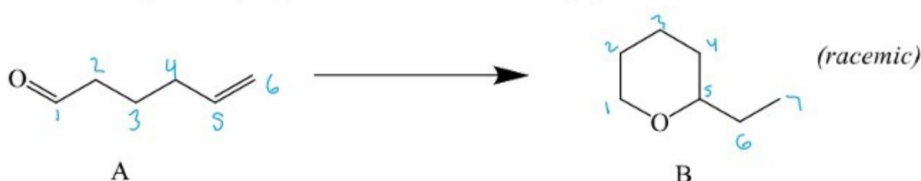
(a)



(b)

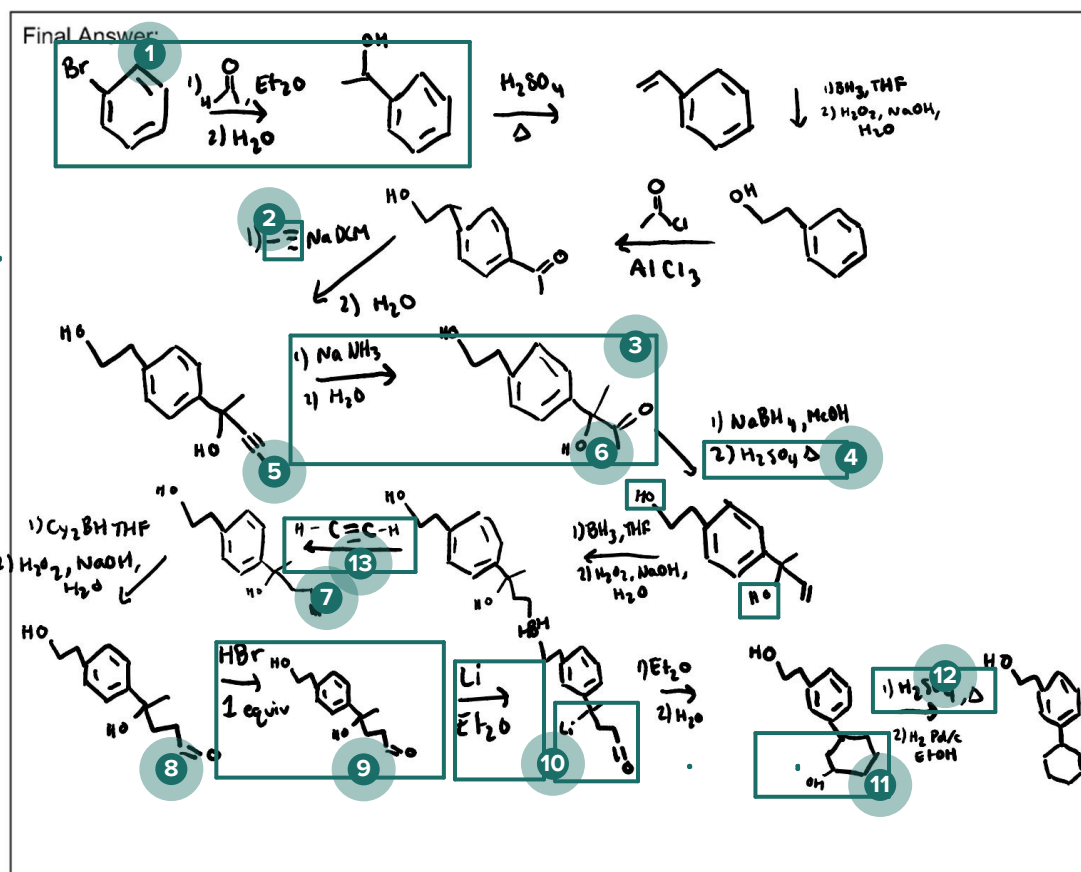
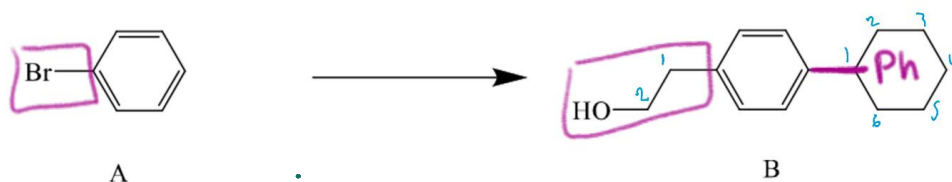


4. [10 points] Propose a synthesis for the following conversion (in other words, make compound B using compound A as the starting material). You can use any other sources of carbon that are 2 carbon or less as you wish, as long as every new source of carbon is explicitly shown. Every step must either be shown with different arrows, or, numbered separately. You may use common reagents and solvents learned in class. If you use an organometallic reagent, you must show how it is made from the corresponding halide. Do not show arrow-pushing mechanisms in your answer. Steps DO NOT need to be selective. However, if you use a step that yields to equivalent major product, you have to show both and select/circle the one you will use for subsequent steps. [Hint: can be done in 5 steps].





5. [10 points] Propose a synthesis for the following conversion (in other words, make compound B using compound A as the starting material). You can use any other sources of carbon that are 2 carbon or less as you wish, as long as every new source of carbon is explicitly shown. Every step must either be shown with different arrows, or, numbered separately. You may use common reagents and solvents learned in class. If you use an organometallic reagent, you must show how it is made from the corresponding halide. Do not show arrow-pushing mechanisms in your answer. Steps DO NOT need to be selective. However, if you use a step that yields to equivalent major product, you have to show both and select/circle the one you will use for subsequent steps. [Hint: can be done in around 8 steps].

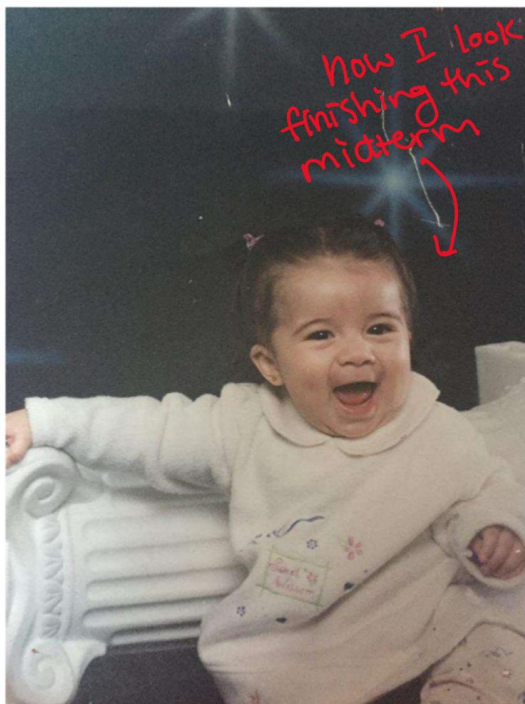


Full Name: Christina Kilkeary  
UID: 605416454

**Extra credit: You will earn more points based on creativity and/or your ability to make me laugh...or cry...or both!**

1. [1 point] Identify this Learning Assistant (LA) from their photo below.

Picking  
random  
name  
from LA  
list ....  
drumroll  
.....  
.....  
.....  
Hailey  
Kim!



Now I look  
finishing this  
midterm

PS sorry to  
who has to  
grade  
the last  
synthesis  
problem