

Writing Instructions



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**Over the course of your career,
you'll write "instructions" constantly**

**Protocols for how to perform experiments or
do data analysis**

Methods sections for papers and talks

Work procedures for subordinates

Lesson plans for teaching

Management plans for projects

**The purpose of written instructions
is to get somebody to do something in
exactly the right way**

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Instructions must include:

The “ingredients”

The equipment needed

A chronological, step-by-step explanation of what to do

Periodic built-in checks to assess correctness



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Instructions should emphasize:

Hazardous materials or conditions

Likely mistakes and how to avoid them



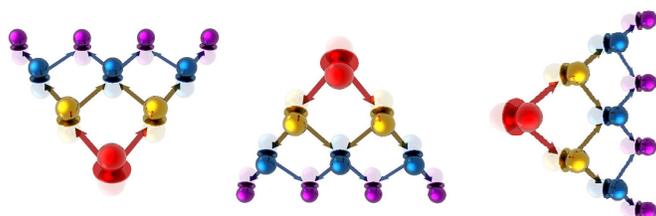
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Instructions should have an obvious logical structure

Chronology (first to last)

Priority (most important to least important)



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Each step should consist of *only one* discrete action

1. Place all dry ingredients in a medium bowl
2. Stir with a fork to mix ingredients thoroughly
3. Make a well in the center of the ingredients
4. Add the egg yolks, sugar, and vanilla to the well
5. On medium speed, beat with an electric mixer for 3 minutes
6. Gradually add the whipping cream while continuing to beat the mixture for an additional 5 minutes

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Point out possible failure points or likely mistakes



Reduce heat to “LOW” after adding the brandy.

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Build in checkpoints so the user can assess progress and ensure success



1. After adding the reagent, check the pH—it should be at least 5.2.
 2. After shaking, the fluid should be bright green (between 8 and 10 on the color scale).
- | | | | | | | | | |
|---|---|---|---|---|---|----|----|----|
| 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|----|----|----|
3. Turn the fume hood **ON** before adding the solvent.
 4. Check to see that the water is turned off at the main before dismantling the toilet.

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Avoid ambiguous language—think about how readers will interpret your words



**Advice from Celia's grandmother:
"It's impossible to make anything foolproof,
because fools are so ingenious."**

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No jargon! Use the simplest word that accurately and unambiguously conveys your meaning



Lost in Jargon

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To recap:

Analyze the audience—what do they already know? What will confuse them?

Be sure to list all “ingredients” and all “equipment”

Anticipate likely mistakes and failure points

Include only one action per step

Write precisely and use familiar language

Remember IITMAFBFASI—but still *try*



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Team Assignments:

Team Cuisine: Starting with canned tuna, make a tuna-salad sandwich, garnished with lettuce and tomato, and serve it with chips and a pickle.



Team Halloween: Make a jack-o-lantern and illuminate it.



Team Ferrari: Check the oil in your car (it's a quart low) and add oil.



Team Camp-Out: Build a campfire and make S'mores.



Team Ice Cream Party: Make liquid nitrogen ice cream for 20 people. Choose your favorite flavor.



Tip: Start by making an outline—tools, ingredients, steps, hazards

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