Oregon Extended Assessment Item Development Process

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Oregon Extended Assessment Development Process
Item/Test Development Guide

Step 1: Standards

Essentializing Common Core State Standards (CCSS), OR Science Standards (ORSci), and Next Generation Science Standards (NGSS)

1. Locate CCSS, ORSci, and NGSS Excel spreadsheets.
2. Review all grade level standards and target those standards that were most important to teach, demonstrated the greatest opportunity to learn, and required content knowledge and skills that remained important across grades 3-8 & 11. Standards that were not included are highlighted red. Standards that are included as part of the essentialization for a related standard are highlighted green, with the associated essentialized standard ID noted.
3. Once standards were selected, implement the essentialization process to generate Essentialized Assessment Frameworks (EAFs), which are composed of Essentialized Standards (ES) written at three different levels of complexity (Low/Medium/High)
    a. Essentialization process (see "EssentializationProcess_V6")
    b. Essentialized Assessment Frameworks (see EAF documents in English language arts, mathematics, and science)
4. Linking study – All ES were reviewed by our item writers in order to gather documentation regarding our selection of standards as well as the level of linkage between the ES and the grade level standards. The linking study report will be included in the 2014-15 OrExt technical report. The average rates of agreement are very high regarding standard selection (98%) and linkage ratings are also strong.

Step 2: Item Development

1. All teachers and content experts involved in item development were trained using the materials found in the Training PPTs folder (see " ItemWriter_Training_2014_V4").
2. Training materials included Test Specifications that explained our approach to assessment, provided example items, and also addressed accommodations (see "Test Specifications/OrExtTestSpecs_2014_V6")
3. Teachers were provided copies of the EAFs where each ES had an exemplar item, in which the level of complexity was stratified across all standards (L/M/H).
4. Project leads worked closely with each item writer, reviewing and providing feedback on initial batches of 20-30 items to ensure that writers were on the right track. Review of items and communication with item writers continued throughout item development.
5. We used 8 item writers in ELA, 7 in Math, and 6 in Science. All item writers had MA degrees or higher with one exception who was a PhD student.

Step 3: Item Review

Distributed Item Review (DIR) by Oregon Teachers (http://brtitemreview.com).

1. Once items were written to align to all ES and the three different levels of complexity (L/M/H), items, standards and graphics were uploaded into the Distributed Item Review (DIR) website review system. Item reviewers were trained in person (see " ItemReviews_Fall2014_V5")
2. CSV spreadsheet templates were used to upload test items into the DIR with the following column headings: Item ID, Group (grade), Standards (ES code), Item Information (the item prompt, as written for the Scoring Protocol), Prompt (the item prompt, as written for the Student Materials), and Option A, Option B, and Option C (answer choices), and Correct (correct answer choice location [a, b, or c]).
3. There was also a spreadsheet template (created in Excel and saved as a .csv) for uploading ES into the DIR, with the following column headers: Standard ID, Subject (English, Math, or Science), Domain (the ES), and Description (the L/M/H complexity descriptors).
4. A zipped folder containing graphics files (.png), associated with items as well as graphics location (e.g., which part of the item the graphic goes with—stem, answer a, b, or c) through the developed coding system, was used to upload and associate all items and graphics. The coding system was critical to the above procedures as it was the means to link items with standards with graphics. Additionally, each code provided information as to the grade, subject, ES, complexity level (see 5-7 below).
5. Standards Coding: We coded ES using this approach: M03NOF1.2a. The first letter is the subject (M = Math), the second two numerals are the grade (03 = grade 3), the next three letters are the domain (NOF = Numbers & Operations with Fractions), and the final portion is the standard identifier (including sub-standard, where relevant, the "a" at the end).
6. Items Coding: We matched the item code to the standard it was linked to and then added the complexity level and item number. To tie in with the above example, we would have written: M03NOF1.2aL04. This tells us that it is a low complexity item, and the fourth low item written to the ES. The number of items written to each ES was dependent on the number of ES at a particular grade-level, with L/M/H complexity stratified as evenly as possible across all grade-level ES..
7. Graphics Coding: We matched the graphics code to the item code and the location of the graphic. For example, item S05LFS2.1M21 had graphics associated with the stem and three answer choices (a, b, and c). Thus, the graphics files were named S05LFS2.1M21.png, S05LFS2.1M21_A.png, S05LFS2.1M21_B.png, and S05LFS2.1M21_C.png, respectively. Again, we cannot emphasize how important this coding system became, particularly as we needed to automatize the process using *R* and *InDesign/Illustrator* toward the end. It was probably the singularly most important factor in terms of our efficiency and accuracy.

8. The questions we used for the ORExt DIR review were the following:
    a. Rate the strength of alignment between the item and the standard(s) (0 = insufficient alignment, 1 = sufficient alignment, and 2 = strong alignment)
    b. Item is free of bias (Yes/No)
    c. Item is accessible to SPED students (Yes/No)
    d. Comments (asked reviewers to comment on any "0" or "No" ratings, particularly with suggested improvements)
9. We used 21 reviewers in ELA and Math and 10 reviewers in Science (3 reviewers per grade level; two SPED and one GenED cohorts). Science had four reviewers per grade level, the fourth a content specialist from ODE, who reviewed items from all three grades (5, 8, and 11). All reviewers were from Oregon and had at least five years of teaching experience.

Step 4:
Review all OR teacher feedback and update items

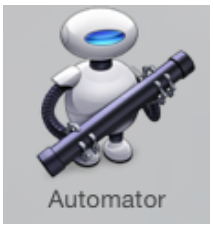
1. The DIR system generates CSV spreadsheets with the ratings for each reviewer, for each item. Reviews were organized by grade level within each content area. Reviewer ratings and comments were organized into a single spreadsheet (by grade and content area) and analyzed for the degree of alignment, bias, and accessibility, typically examining means, counts and percentages of ratings across all items.
2. Every comment for every reviewer was digested (close to 28,000 lines of text for ELA and Math, and about 12,000 for Science). We documented all of our (editing) decisions related to reviewer comments within the spreadsheets within the BRT Response column.
3. All items requiring editing (text, graphics, or otherwise) were edited within Excel, using the DIR as a means to examine items "*in situ*", and saved on Infostore within the DIR folder identified in Step 3.

Step 5: Scaling/Item Selection

1. The vertical scaling plan was a balanced design resulting in a vertical scale in grades 3-8 in ELA and Mathematics.
2. Test blueprints were used to determine balance of items (see "ORExt_TestBlueprint_2015").
3. The Excel spreadsheets identified above were then parsed into separate grade levels and forms in a CSV format.

Step 6:
Creating CSV files for merging into *InDesign*

1. Copy multiple file paths to the clipboard using Automator Tool (Finder – Applications – Automator) and paste into Text Editor. Automator tool is a Mac function and looks like this:



Here is the link to all of the instructions for setting up your Automator. Once it's set up, you will never have to do this again as it system service available by highlighting files and right-clicking: http://www.macyourself.com/2011/12/31/copy-file-or-folder-path-to-the-clipboard-in-mac-os-x-lion/

2. All files will be copied on your clipboard. Open your Text Editor and use CMD-V to paste your filepath names into an Excel/text file.

NOTE: After realizing how long the process of organizing test form information into spreadsheets was taking, *R* programming was used to run all of the functions you see below. Thus, it is best to use our *R* package for this purpose. However, here are the steps if it must be done by hand.

3. Copy/paste the file path names from your text file into a new Excel spreadsheet, and save as something like "Gr3FilePaths" (i.e., the file path spreadsheet).
4. Open spreadsheet with item information.
5. Create new spreadsheet with template headers (see Shawn's Science example G5SCI15_form1_v1).
6. Copy/paste list of form IDs from vertical scale document into template spreadsheet (i.e., G5SCI15_form1_v1).
7. Using Find command (CMD + F) locate the first item in the item information spreadsheet. Hit escape (Esc) to close Find dialog as a shortcut once item file path is found.
8. Select all item information (Shift + CMD + right arrow).
9. Copy/paste selected item information into template spreadsheet under Group column heading – it's okay at this point to have the item ID repeated b/c we'll use it as a double-check later.
10. Repeat this Find – Copy/paste for remaining items in the test form. You may quickly switch between the item information spreadsheet and template spreadsheet using keyboard shortcut (CMD + ~), which allows you to toggle between windows within a given program (i.e., Excel).
11. If necessary, delete column of item changes comments.
12. Highlight column C, and insert a blank column, and use Exact function to double check that your item IDs match. Enter "=Exact(A2,B2)" and drag formula down for entire column. You want to see all "TRUE"s. If you see a FALSE, it may still match, but be an all-caps issue.
13. Delete this information from Exact function column we just created, as it's no longer needed.

14. Under Group column, replace item IDs with grade for all 48 items in test form.
15. Under Item column enter 1 through 48 to indicate items 1-48 on test form.

All 48 test items and all item information for a given test form is now entered into the template spreadsheet. The last step is to find and copy/paste the file paths into the last four columns, as needed, based on the item.

16. Close item information spreadsheet because you will not need it again until you create and populate the next template spreadsheet (i.e., form 2, 3…)
17. Using Find command (CMD + F) locate the first item's file path in the file path spreadsheet. Hit escape (ESC) to close Find dialog as a shortcut once item file path is found.
18. Copy/paste selected file path(s) for the given item into template spreadsheet under appropriate column heading (i.e., @Graphics_Stem, @Graphics_A, @Graphics_B @Graphics_C) – BE CAREFUL, based on how the file path spreadsheet is sorted because they maybe be out of order (i.e., the stem file path will be after paths for answer options A, B, and C in some cases for Math and Science).
19. Copy/paste special (or cut/paste if it's only a stem graphic file path) into item template spreadsheet using keyboard shortcut (CTRL + CMD + V), which brings up Paste Special dialog box, click Transpose and OK to paste into appropriate cells in item template spreadsheet.
20. Repeat this Find – Copy/paste special for remaining items in the test form. Again, you may quickly switch between the item file path spreadsheet and template spreadsheet using keyboard shortcut (CMD + ~), which allows you to toggle between windows within a given program (i.e., Excel).
21. Clear file paths as you finish each item and return to the file path spreadsheet **this is personal preference, but it makes selecting multiple file paths a little easier, and lets you keep track of progress**.

Step 7: Data Merge

Note: Graphics need a ":" instead of "/" in csv spreadsheet. Using CMD + F to conduct replacement of only those columns worked very well as a procedure.

<u>Creating Student Materials templates:</u>

1. Create a new *InDesign* document (File > New > Document) – uncheck 'Facing Pages.'
2. Under the Pages menu on the right hand side, top of the Pages menus, you will have a "none" and a "Master A" template already. Begin with the Master A – double click on the Master A page to format.
3. Create text and graphics boxes using the toolbars, placing placeholder boxes on your Master page. If more than one Master is needed, use the small arrow at the top right of the pages menu and select "New Master."

4. Repeat steps above using the toolbars to places text and graphic boxes where needed.
5. Next, select 'Data Merge' from the 'Utilities' menu. Select your data source. You will now see all of your header fields listed within the data merge menu. You can either click inside the box in which you wish the field to appear, or drag and drop the appropriate field header into the box on your Master template of choice.
6. Within each text box you can center/format font/size, etc. to make them uniform using the font and paragraph formatting in the top tool bar of *InDesign*.
7. To center text and graphics within the boxes:
    - Select Object Styles
    - Create New style (square to the left of the trash can)
    - Double click on new (Object Style 1) – rename (Sev called these graphic frame or text frame depending on what she was formatting)
    - Under Basic Attributes, double click on Text Frame General Options, at the bottom in the Vertical Justification drop down menu select 'Center'
    - Then double click on Frame Fitting Options (last item in Basic Attributes) and in the Content Fitting drop down menu select 'Fit Content Proportionally'
    - Select boxes that include text or graphics and click on the new object style to apply to these boxes

Before actually merging the document, be sure to create an actual document page for each Master template. Click on Page 1 in the lower section of the Pages menu. Go to the small triangle menu in the right hand corner and select 'Apply Master to Pages' – selecting appropriate master. If there is more than one Master, create a page 2 using the small paper icon in the bottom right of the pages menu next to the trash can symbol. Double click on page 2 and select 'Apply Master to Pages' – selecting the next Master template. Repeat this until you have one actual document page for each Master page. This will create one Master template for each item once merged so you can then go back through, select the appropriately formatted page, and delete the unneeded pages.

<u>Scoring Protocol Formatting</u>

1. Because we want multiple records per page, do not create an actual master page. Put the formatting for the first record on page 1. The master page will have the header/footer continued on each page.
2. For the prompt/item information box, go to the paragraph menu (top left hand tool bar) and make sure hyphenate is not selected.
3. For the data merge select multiple records in the drop-down menu.
4. Multiple Record Layout – make sure 'Rows First' is selected.
5. Options – In the 'Image Placement' menu, select 'fit images proportionally.' Make sure the following are selected:
    a. Center in Frame

   b. Link Images
   c. Remove Blank Lines for Empty Fields
6. After Data Merge you will get a notification if there are any graphics or text that are larger than the boxes. If you go through the document in 'Normal' mode the areas with overset text/graphics will have a red +. These will need to be resized by hand.

Note: When using an existing template for a data merge, be sure to remove the existing data source and add your new source. You will see a pop-up telling you the fields may not be the same, but as long as all of our spreadsheets have the same header rows the templates apply across all spreadsheets.

1. Format Spreadsheet
   - Replace periods (.) with spaces in head rows
   - Add a single apostrophe and the at symbol ('@) before header in graphics columns
   - Delete all paragraph returns in prompt column
   - Check answer options (some show up as dates instead of fractions, special symbols and exponents are lost and need to be denoted, etc.)
   - Find/replace graphics file paths (swap colons for forward-slashes)
   - If you close or re-open file, add as single apostrophe (') in the graphics headers again

2. Data Merge for Student Materials
   - Open template, when prompted select 'Don't update links' because you will be using a different spreadsheet.
   - 'Data Merge' can be found in the Window menu under 'Utilities'.
   - Use the small triangle on the top, right-hand corner to pull down the data merge menu. Remove data source. Then Select new data source.
   - Click the 'Merge records' option at the bottom right of the data merge menu. It will automatically tell you if you have any overset text or if the program cannot locate any graphics, in which case you have to go back to your spreadsheet and graphics folders and track down the graphics. Overset text can be formatted by hand as you edit the SM document, so don't address that yet.
   - 'Save As' right away after the merge is complete. Select the pages menu and go through by hand to decide which template you want to keep per item, then drag the un-needed pages into the trash (bottom right of pages menu). Make sure that you select the appropriate template for each item, as it is time-consuming to rebuild the item if the template is not selected correctly. We always ended up with 48 pages total, when finished.
   - Once the necessary pages are selected, go back through each and added back in the soft returns where needed (a space in between paragraph returns is included) and resize the 'square' graphics.

- Go to each of your master pages and update the grade level in the header, if necessary, as you proceed.
- Add a page in the beginning just as a placeholder title page (this will appear as page 2, so drag to the left of page 1 to get this as the first page) – select apply master then select 'None'. The subject and grade, form number, and SP or SM, are on the title page.
- Done! Now export to PDF either under File – Export or (CMD + E).

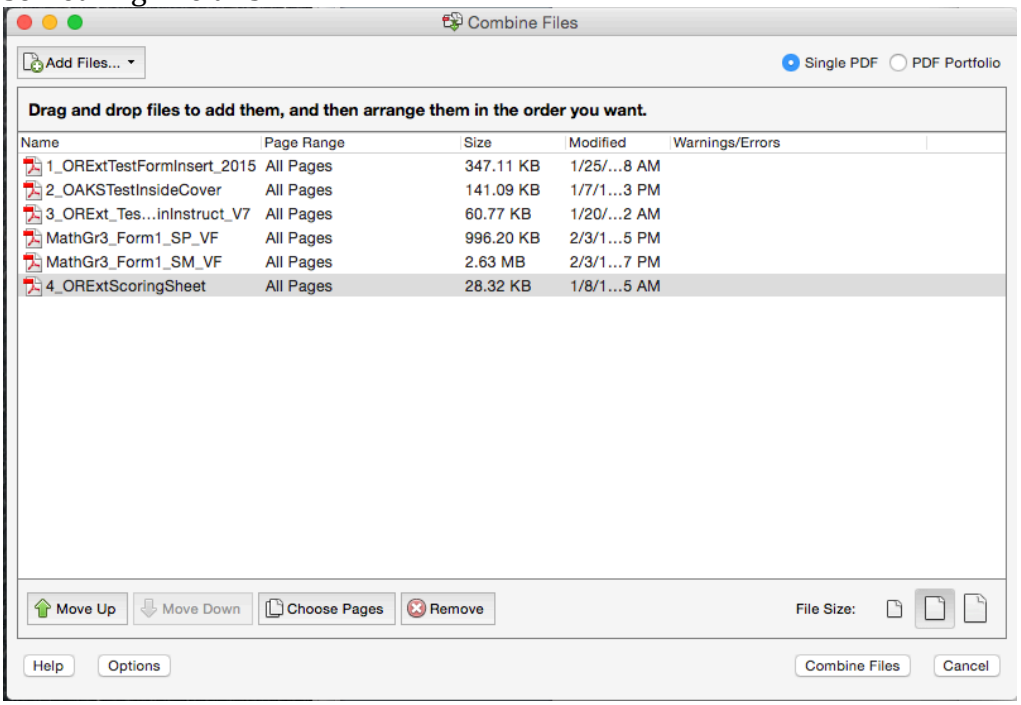
3. Data Merge for Scoring Protocol
    - Open template, when prompted select 'Don't update links' because a different spreadsheet is used.
    - 'Data Merge' can be found in the Window menu under 'Utilities'.
    - Use the small triangle on the top right hand corner to pull down the data merge menu. Remove data source. Then, select new data source.
    - This will most likely have overset text, which must be formatted by hand.
    - 'Save As' right away again.
    - Now go through by hand and edit the overset text boxes. There will be a red + on the right side of the box when the text is overset. It may be necessary to shift the answer options and scoring boxes to fit the text in the item information box. Note: It was a good indicator that items had too much text if they did not fit in the SP template, however.
    - Go to each master page and update the grade level in the header if necessary.
    - Now that all is formatted, go back to page 1 – do the same as SM and create placeholder title page. Insert new page, drag to right of pg. 1 to get to appear first. Select 'Apply master to pages' – 'None'. Then create placeholder title page with subject/grade/form/SP.
    - And SP is done! Export (CMD + E) to PDF.

NOTE: All final graphics that resulted from many rounds of editing are housed within a common folder on our server.

Step 8:
Final Test Package Creation Process

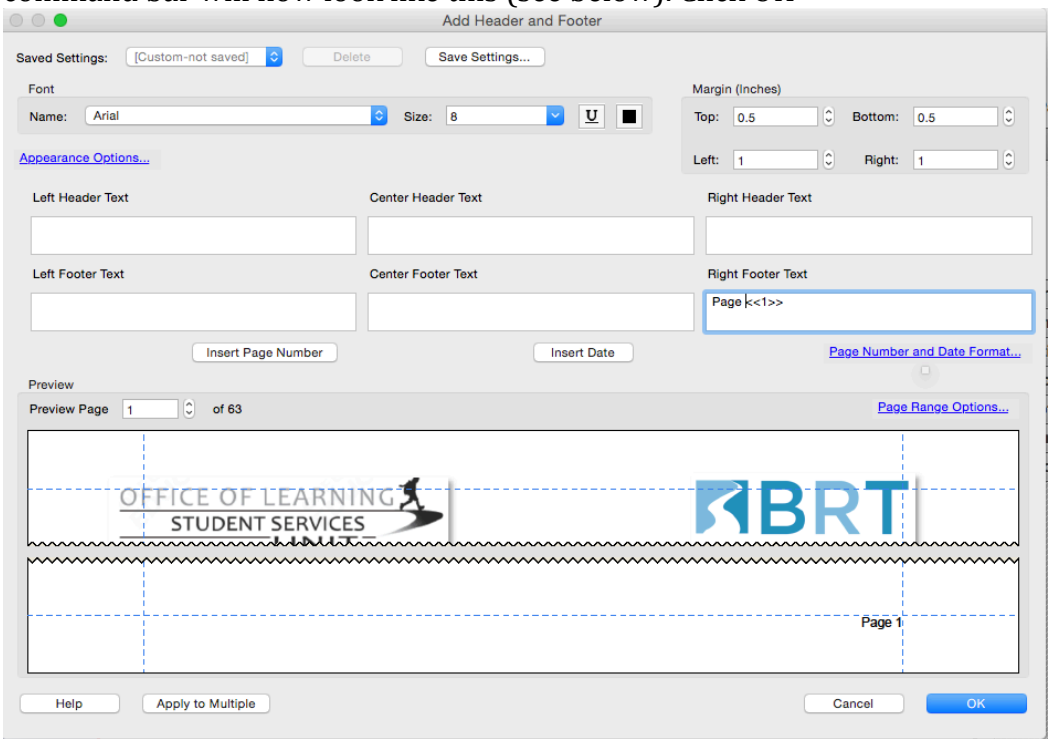
1. Open *Adobe Acrobat Pro X* (the directions are a bit different in XIV)
2. Select "Combine Files into PDF"
3. Drag/place the first insert, "1_OREXtTestFormInsert_2015.pdf"
4. Drag/place the second insert, "2_OAKSTestInsideCover.pdf"
5. Drag/place the third insert, "3_OREXt_TestAdminInstruct_V7.pdf"
6. Drag/place the relevant Scoring Protocol
7. Drag/place the relevant Student Materials

8. Drag/place the fourth insert, "4_ORExtScoringSheet.pdf" It should now look something like this:

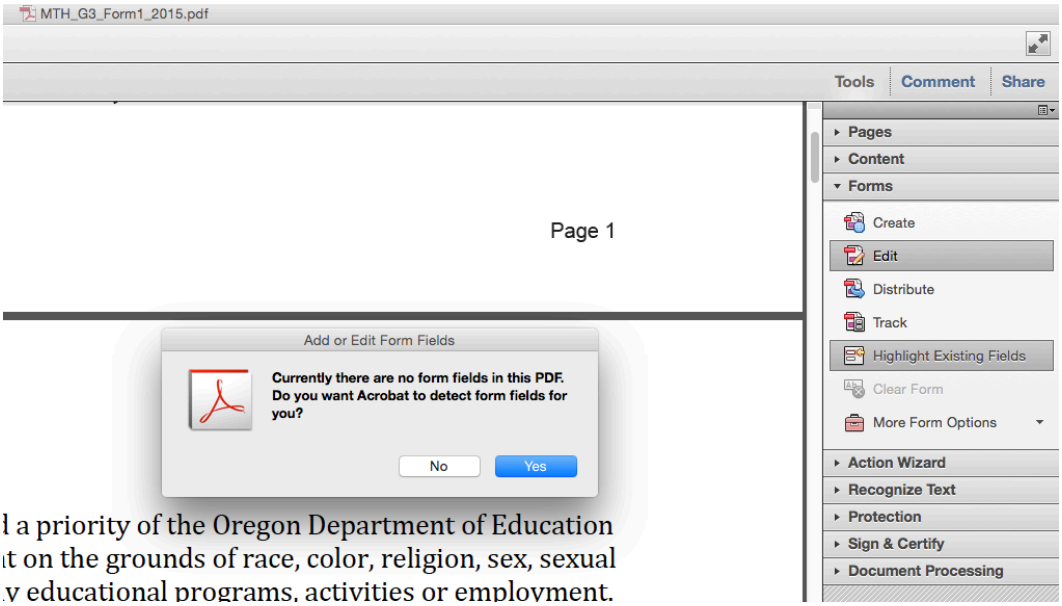


9. Select "Combine Files"
   Adobe Acrobat Pro will generate a "Binder" Save the Binder file using the following convention, subject, grade, form number, year. Here is an ELA, Grade 3, Form 1 example: "ELA_G3_Form1_2015"
10. Select "Tools" then "Pages" then "Header and Footer" Insert a page number in the right-hand footer (Arial, size 8). Add the text "Page" and one space prior to the number with the double less than and greater than signs (Page <<1>>). Your

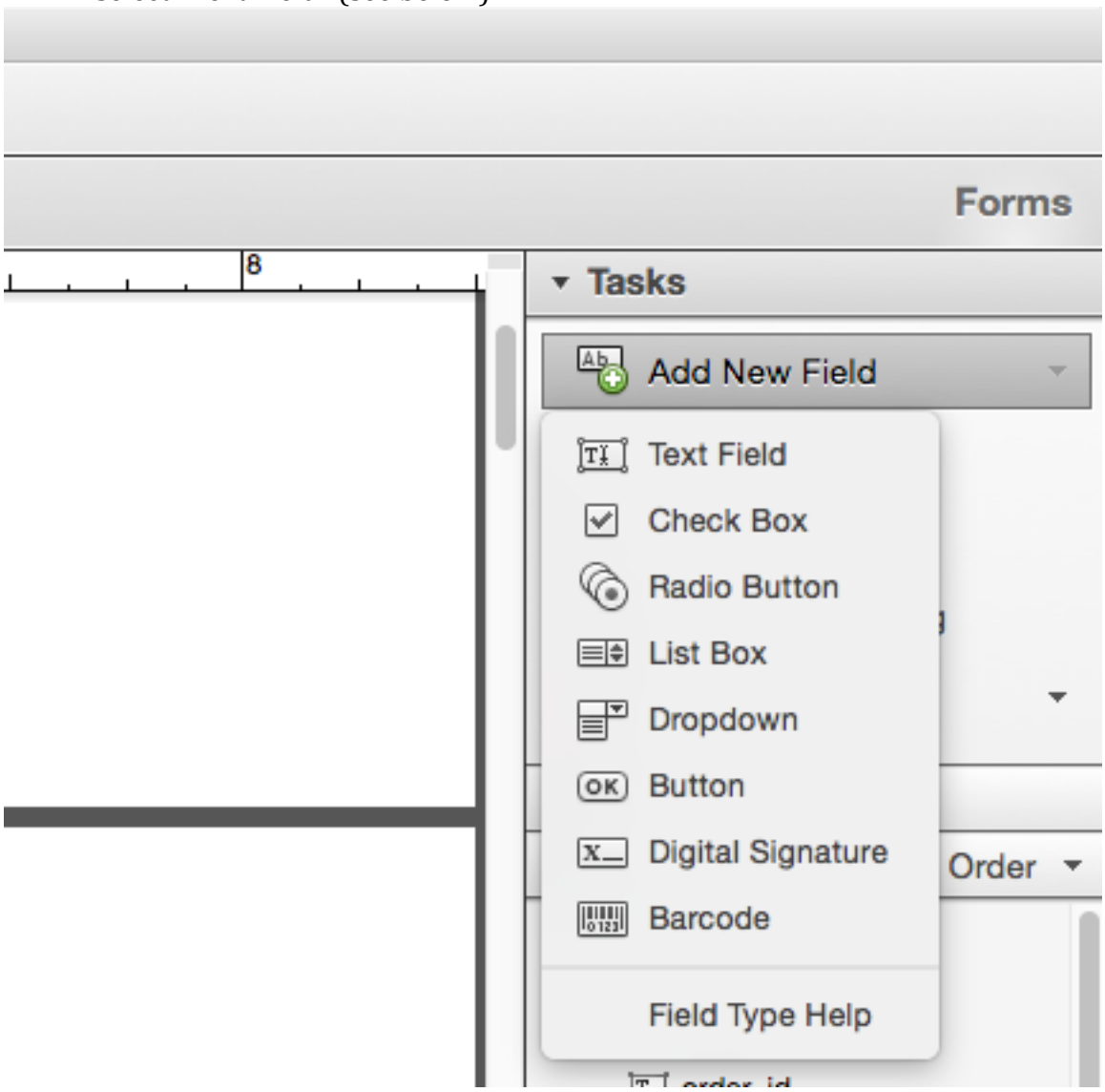
command bar will now look like this (see below). Click OK



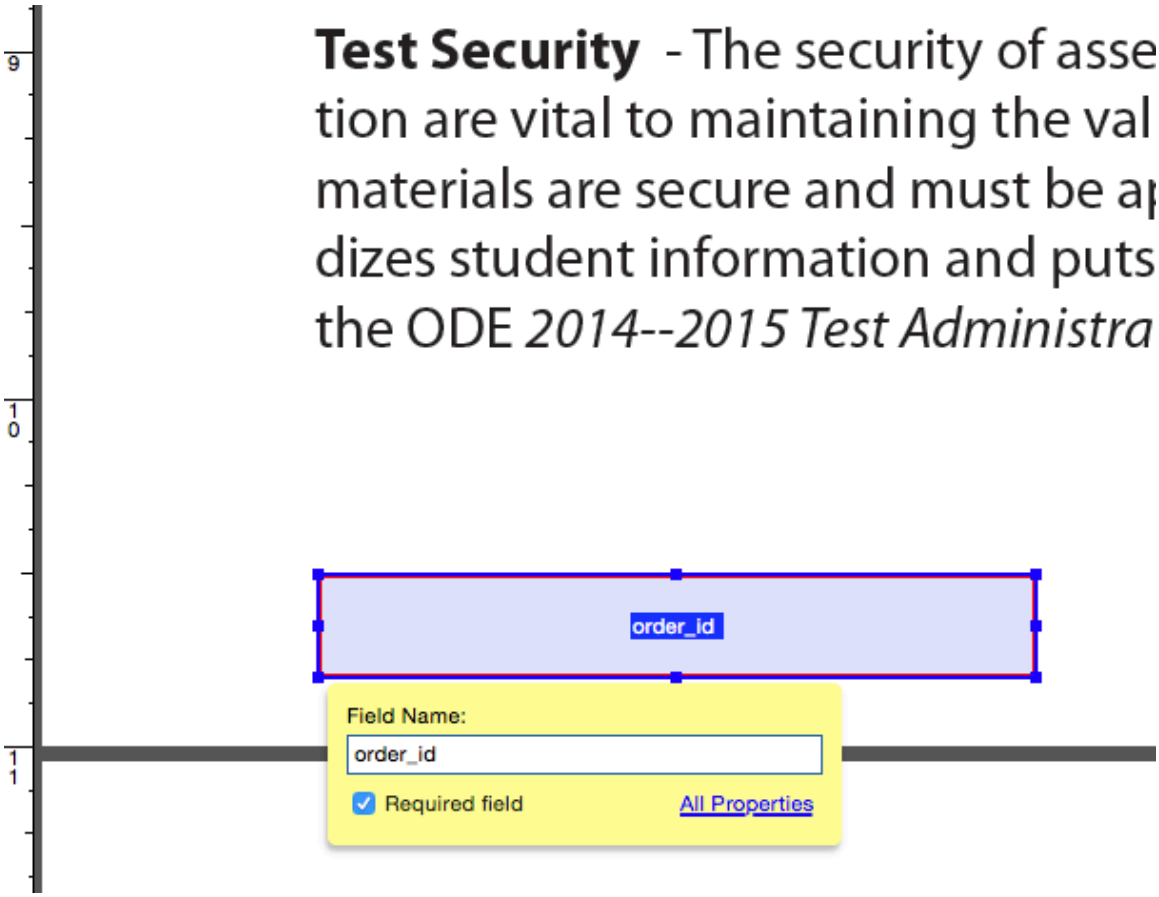
11. Select Forms, then select "Edit". You will be asked if you want Acrobat to find the form fields in the document. Select "NO"



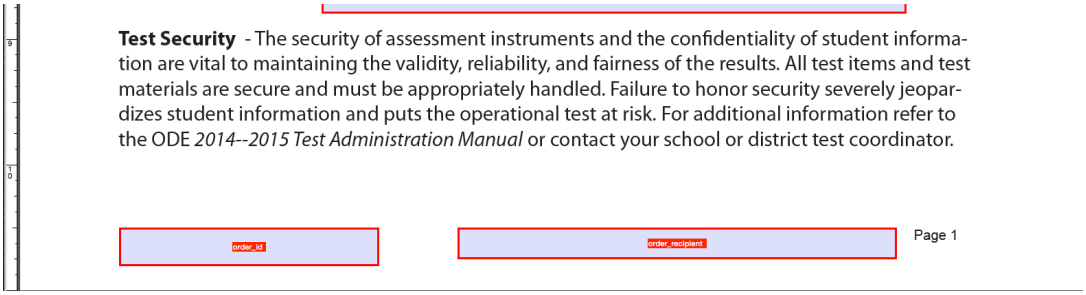
12. Add two form fields in the footer. First, you will select "Add New Field" then select "Text Field" (see below).



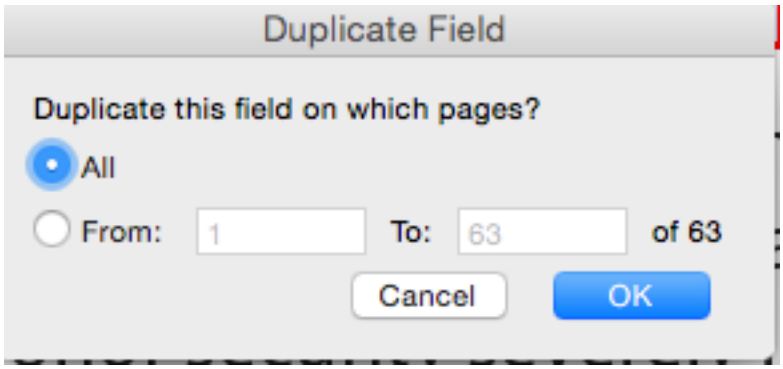
13. Now, this part is a bit more complicated. On the first page, scroll down to the bottom. The top of the first text box must have its top at 10.5" and its bottom at 10.75" (this makes the field .25 inches high). The left side of this text box is right where the Secure Test notice text above begins. The right side extends to 3". Once the box is placed and sized, enter "order_id" as the field name and select the "Required field" setting (it may be necessary to right click and select "Rename field" to be able to change the name if it isn't automatic). It should look just like this now:



Now, enter the second footer box. This box has the exact same height settings as the first, but runs from 3.5" to 7" on the width. This places it just to the left of the page number you entered earlier. Name this text field "order_recipient" and then save the document again. It will now look like this:



14. This is the final step before an overall QA of the document. All that is needed once "order_id" and "order_recipient" are spelled exactly as they are on the first page next to Test Form ID and Assessor Name, simply duplicate this test form field across every page of the document. This is done by right-clicking and selecting "Duplicate". When asked, select OK, which performs this operation to the default setting, which is All pages. It should look like this:



The document should now have this footer on every page. Select "Close Form Editing" to exit the form editing portion of Acrobat Pro.

15. Verify overall document contents:
    a. There should be 63 total pages.
    b. The test should be cover page, ODE inside cover, two-page test administration instructions, SP, SM, then scoring sheet.
    c. Make sure that everything looks good, editing as needed/appropriate.
16. Save a copy to Infostore and save a copy on your laptop.
17. Move on to the next form!