

# Exercise

## Create and Export a Map Layout for Print

Section 1 Exercise 3

January 27, 2021



## Create and Export a Map Layout for Print

### Instructions

Use this guide and ArcGIS Pro to reproduce the results of the exercise on your own.

*Note: The version of ArcGIS Pro that you are using for this course may produce slightly different results from the screen shots that you see in the course materials.*

### Time to complete

Approximately 30-45 minutes

### Software requirements

ArcGIS Pro 2.7

ArcGIS Pro Standard license (or higher)

*Note: The MOOC provides a separate ArcGIS account (user name and password) that you will need to use to license ArcGIS Pro and access other software applications used throughout the MOOC exercises. This account (user name ending with \_cart) provides the appropriate ArcGIS Online role, ArcGIS Pro license, ArcGIS Pro extensions, and credits. We strongly recommend that you use the provided course ArcGIS account to ensure that you have the appropriate licensing to complete the exercises. Exercises may require credits. Using the provided course ArcGIS account ensures that you do not consume your organization's credits. Esri is not responsible for any credits consumed if you use a different account. Moreover, Esri will not provide technical support to students who use a different account.*

## Introduction

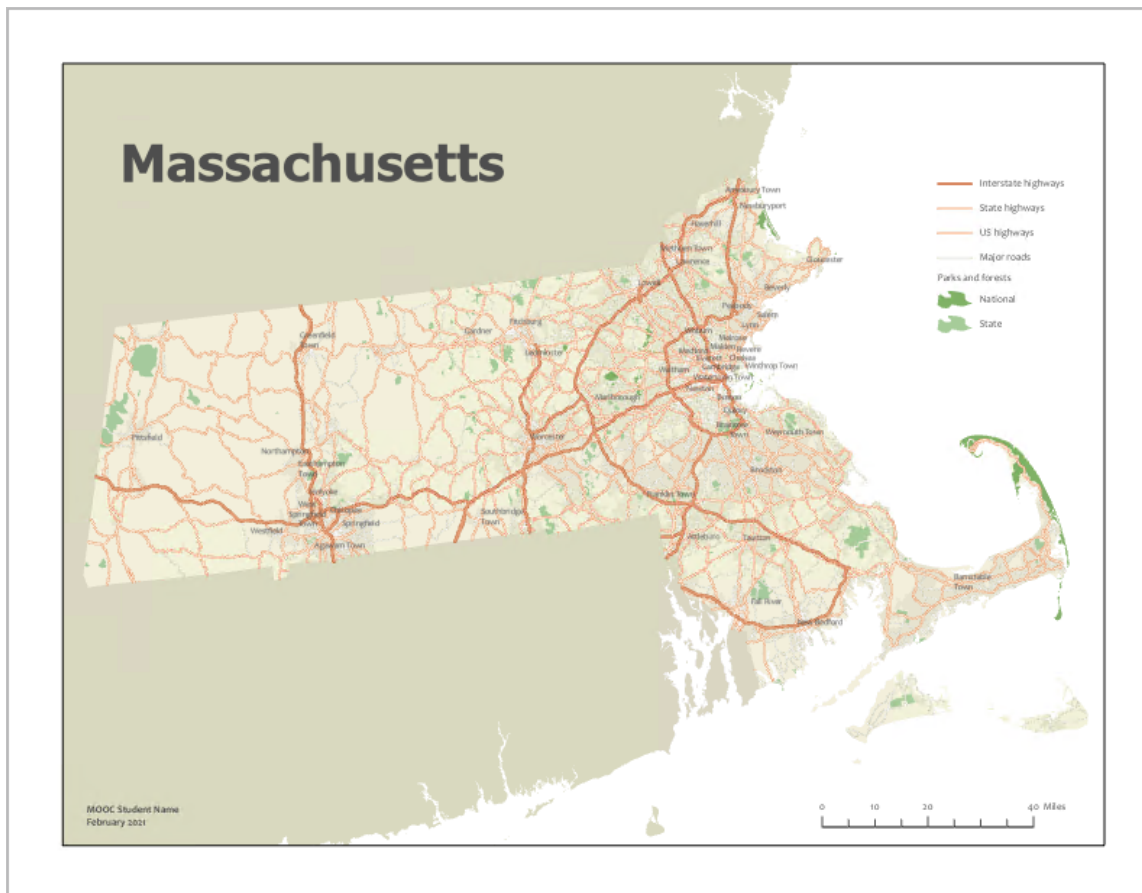
In this exercise, you will finish making the small-format reference map of the U.S. state of Massachusetts to print, which you began in the previous exercises.

*Note: If this is your first time using ArcGIS Pro, you may find the [ArcGIS Pro Terminology Guide \(https://bit.ly/2tjqTmD\)](https://bit.ly/2tjqTmD) helpful.*

## Step 1: Change legend patch shapes

Your goal was to create a printable map. Now that you have enhanced the map by adjusting the drawing order of features and applied different cartographic techniques to better communicate the map's purpose, it is time to prepare the map for printing.

A page layout is a collection of map elements organized on a virtual page designed for map printing. You will create a layout for your map of Massachusetts that includes a legend, scale bar, and title.



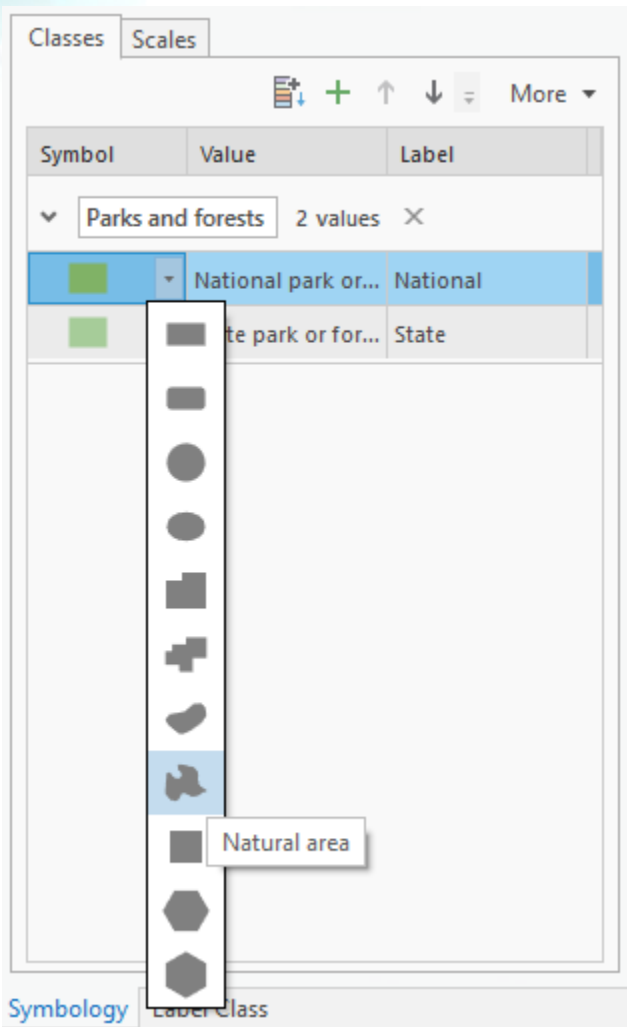
Note: Refer to ArcGIS Pro Help to learn more about *layouts in ArcGIS Pro* (<https://bit.ly/2HcT7ZH>).

- a If necessary, start ArcGIS Pro and open the MyMassachusettsMap\_<your first and last name>.aprx project that you saved in the previous exercise.

First, you will change how the polygon symbols appear in the legend. In the legend, the example symbols are called "patches."

- b In the Contents pane, click the Parks\_MA layer to select it (this layer may be called Public Lands if you completed the challenge steps in the previous exercise).
- c If necessary, open the Symbology pane (on the ribbon, under Feature Layer, click Appearance, and then in the Drawing group, click Symbology).





- g** Use the same process to change the State Park or Forest patch to the Natural Area shape. Now, when you create a legend on the final print map, the patches for the parks symbols will not be a simple rectangles.

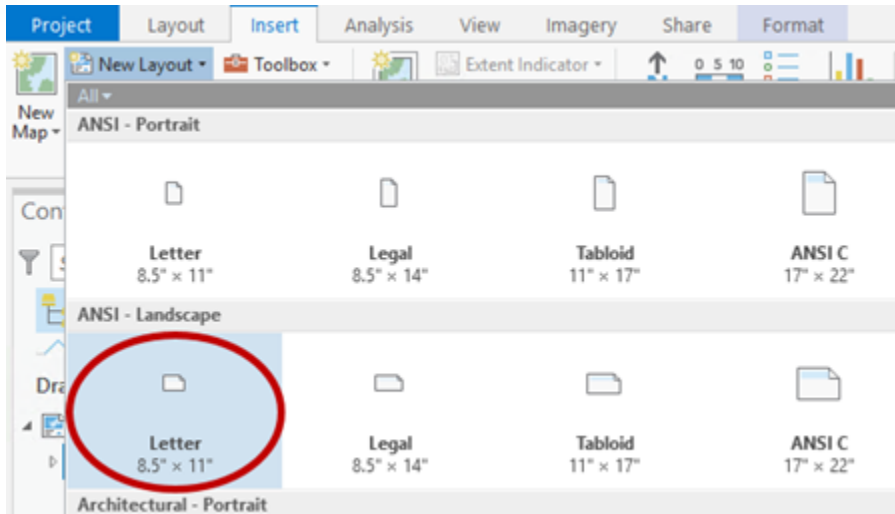
## Step 2: Make a layout

Next, you will create the *layout* (<https://bit.ly/2TVJvZe>). The layout will allow you to add and organize the elements of a print map on a virtual page.

- a** From the Insert tab, in the Project group, click New Layout.

In your map of Massachusetts, the state appears longer horizontally than vertically, so a landscape orientation is most appropriate.

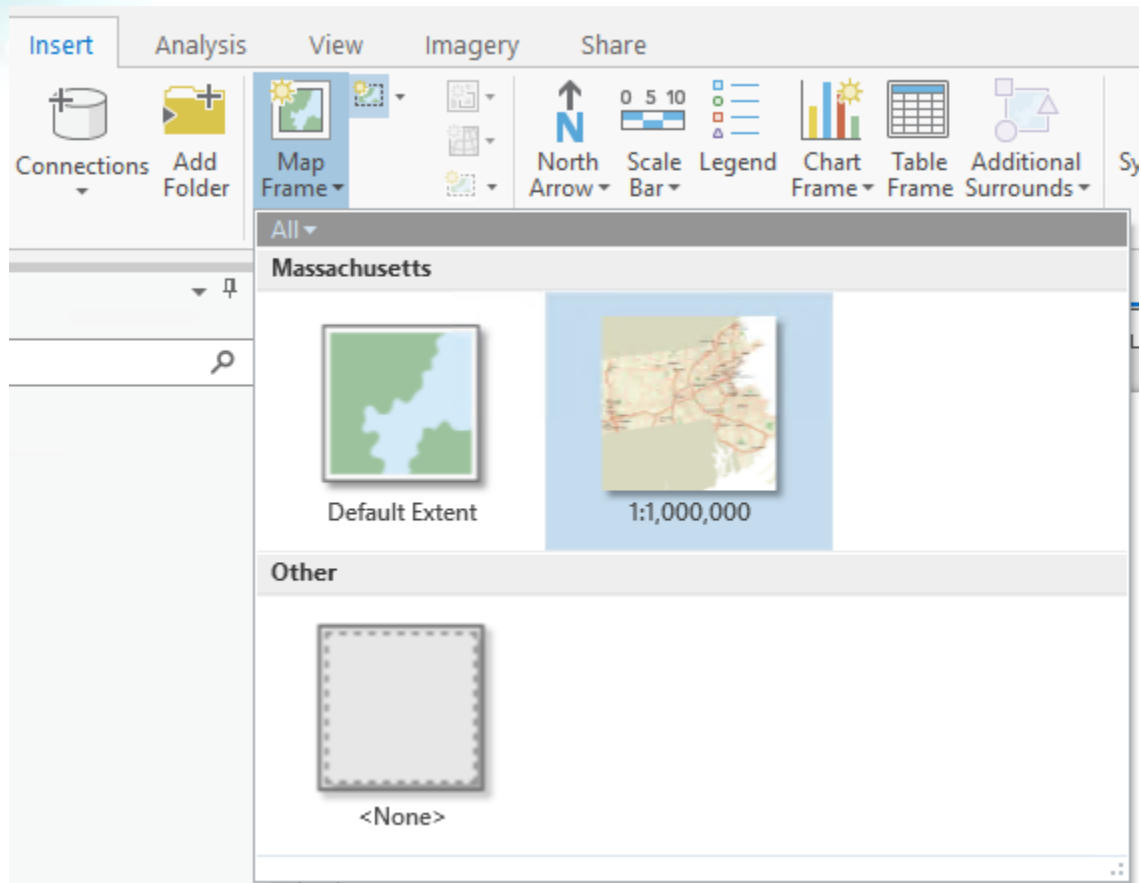
- b From the drop-down list, in the ANSI - Landscape section, click Letter (8.5" x 11").



A new blank layout opens. On the ribbon, a Layout tab appears. This tab contains tools unique to layouts.

Next, you will add a map frame, which is a page layout element used to display the contents of a map on a layout.

- c From the Insert tab, in the Map Frames group, click the Map Frame down arrow.

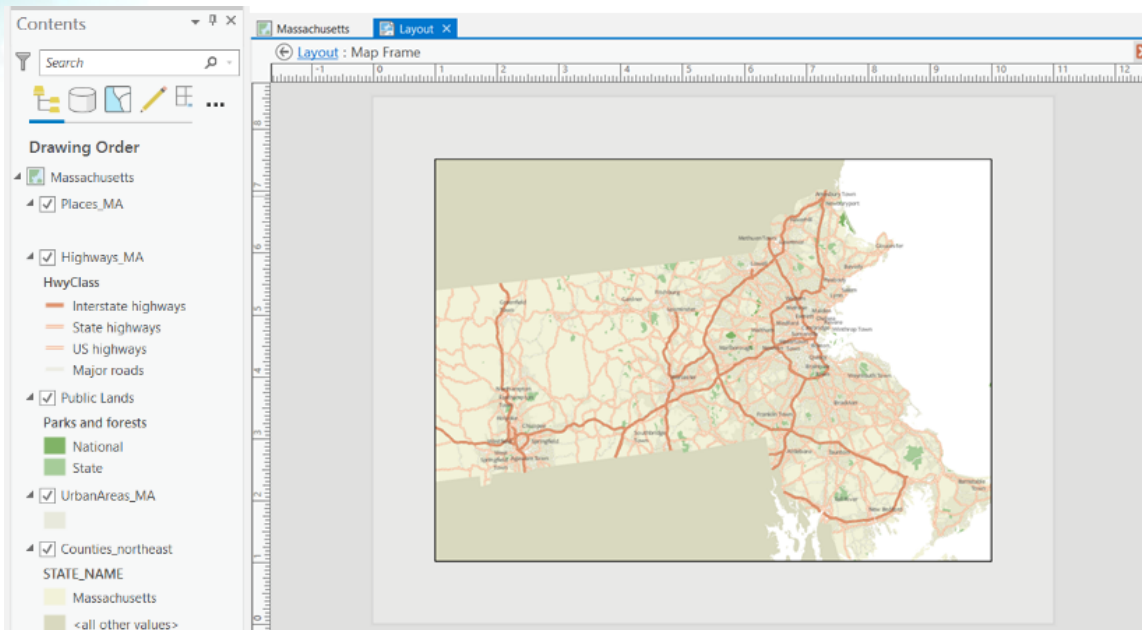


- d Under Massachusetts, click the thumbnail labeled 1:1,000,000.
- e Click near the upper-left corner of the layout page and drag a rectangle toward the lower-right corner to place the map frame.

The map in the map frame must be activated before you can navigate and interact with it.

- f In the Contents pane, right-click Map Frame and choose Activate.





- g At the bottom of the map, in the map scale control box, type **1250000**, if necessary, and press Enter.

*Note: You can type just the denominator of the scale without commas into the box, and the ratio will be determined by ArcGIS Pro.*

- h From the Layout tab, in the Map group, click Close Activation.
- i Use the handles of the map frame to resize it on the page so that all of Massachusetts is shown in the frame.

*Note: Be sure to keep a reasonable margin (about half an inch) between the edge of the map frame and the edge of the page.*

- j If necessary, re-activate the map frame and pan the map to re-center it within the frame after you have resized it.
- k Save your project.

### Step 3: Add a legend to the map

Layout elements (<https://bit.ly/2Qjf5h4>) are specific types of supporting elements associated with a map, such as a legend, a scale bar, a title, and information about the map author.

A legend tells the map reader the meaning of the symbols used to represent features on the map.



- a From the Insert tab, in the Map Surrounds group, click Legend.

Your pointer symbol changes to equal-armed crosshairs.

- b In the upper-right corner of the layout's white space, click and drag a rectangle.

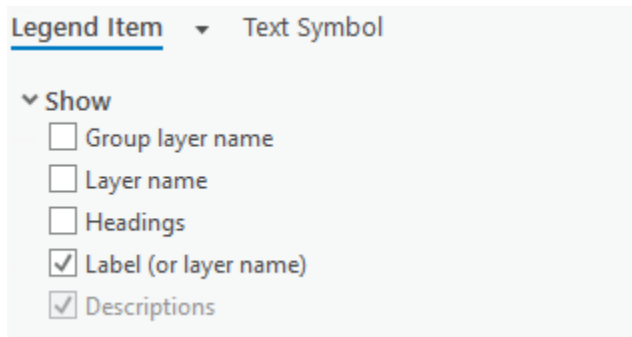
Your map legend is added to the layout. Your legend includes all the layers from your map. However, you do not need to include all the layers, so you will remove unnecessary ones from the legend.


- c In the Contents pane, expand Legend, and then uncheck the boxes for Places\_MA, UrbanAreas\_MA, and Counties\_northeast to remove these items from the legend display.

- d In the Contents pane, under Legend, right-click Highways\_MA and choose Properties.

The Element—Format Legend Item pane opens on the right.

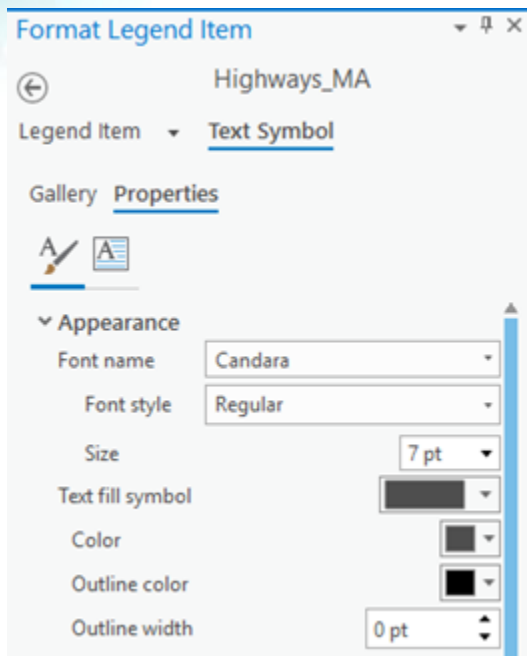
- e In the Format Legend Item pane, in the Show section, uncheck all the boxes except Label (Or Layer Name).



- f Click the Text Symbol tab, click the General tab , if necessary, and then expand Appearance.

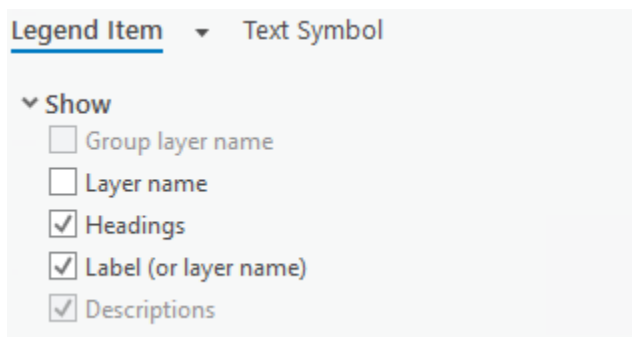
- g Set the following font parameters:


- Font: Candara Regular, 7 pt
- Color: Gray 70%



Note: The appearance of your pane might vary slightly from this graphic.

- h Click Apply.
- i In the Contents pane, under Legend, select Parks\_MA (or, if you renamed it, Public Lands).
- j In the Format Legend Item pane, click the Legend Item tab.
- k In the Show section, uncheck the box for Layer Name.

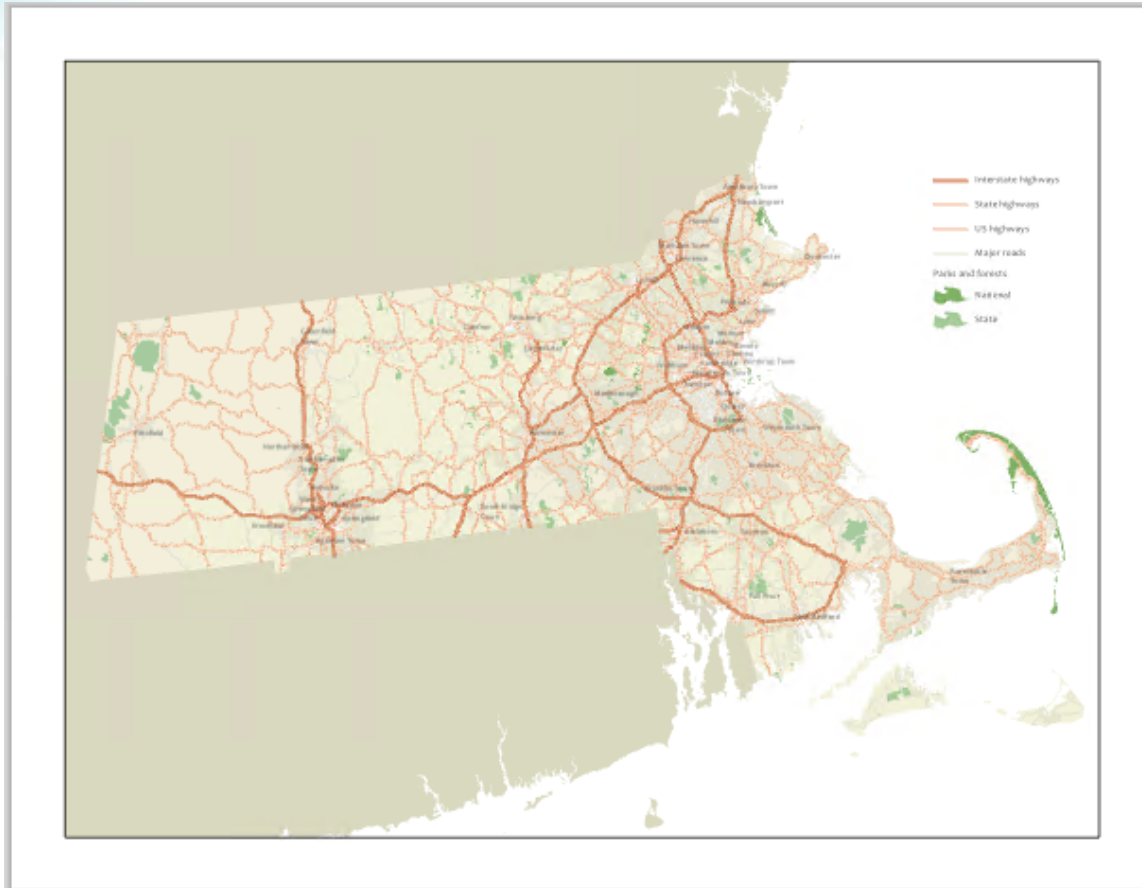


- l Click the Text Symbol tab, click the General tab , if necessary, and then expand Appearance.

- m Set the following font parameters:
  - Font: Candara Regular, 7 pt
  - Color: Gray 70%
- n Click Apply.
- o Close the Format Legend Item pane.
- p Use the handles to resize the legend as necessary.



- q Click and drag the legend to place it near the upper-right corner of the page, roughly top justified with the northernmost part of the state and roughly right justified with the easternmost part of the state.



*Note: In the Contents pan, be sure to expand your legend so that the Highways and Public Lands (Parks And Forests) information is visible.*

**r** Save your project.

You have now added a legend to the map layout.

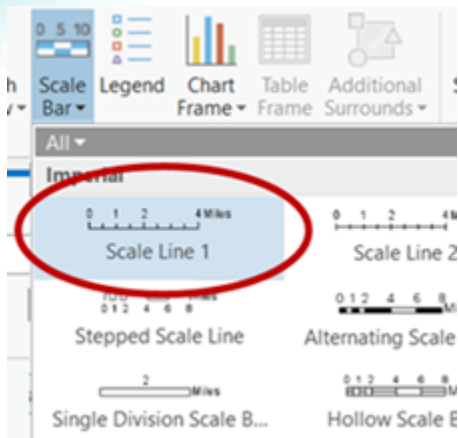
### **Step 4: Add a scale bar to the map**

Next, you will add a scale bar to the map.

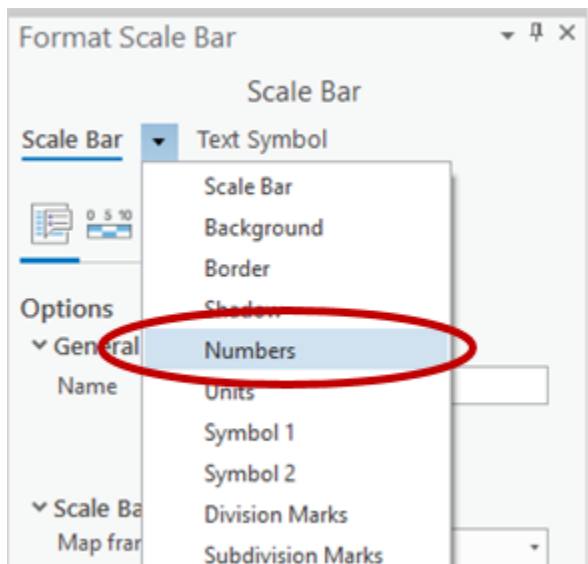
Scale bars (<https://bit.ly/2U4J4u8>) provide a visual indication on the map of the size of features and the distance between features on the map.

**a** From the Insert tab, in the Map Surrounds group, click the Scale Bar down arrow.


**b** In the Imperial section, click Scale Line 1.



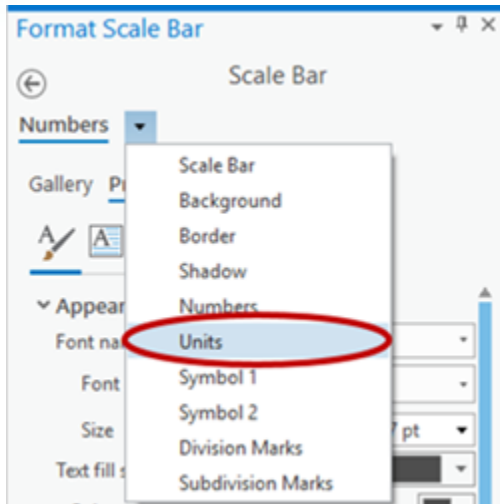
- c In the map, in the lower-right corner, draw a rectangle to place the scale bar.
  - d In the map, right-click Scale Bar and choose Properties.
- The Element—Format Scale Bar pane opens on the right.
- e At the top of the Format Scale Bar pane, click the Scale Bar down arrow and choose Numbers.



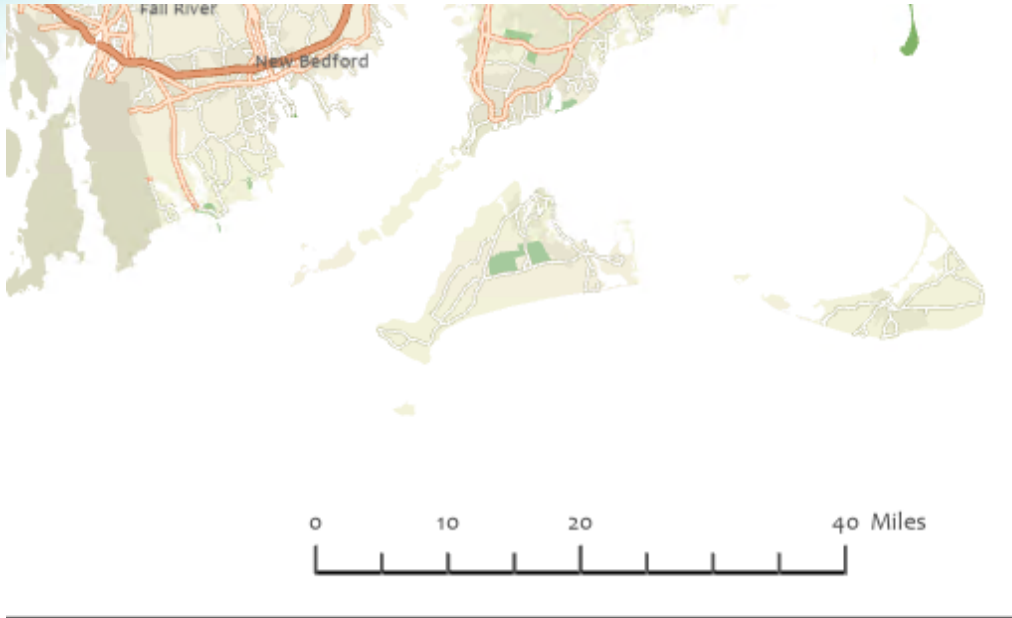
*Note: The appearance of your pane might vary slightly from this graphic.*

- f If necessary, click the General tab , and then expand Appearance.
- g Set the font to Candara Regular, 7 pt, Gray 70%, and then click Apply.

- h At the top of the Format Scale Bar pane, click the Numbers down arrow and choose Units.

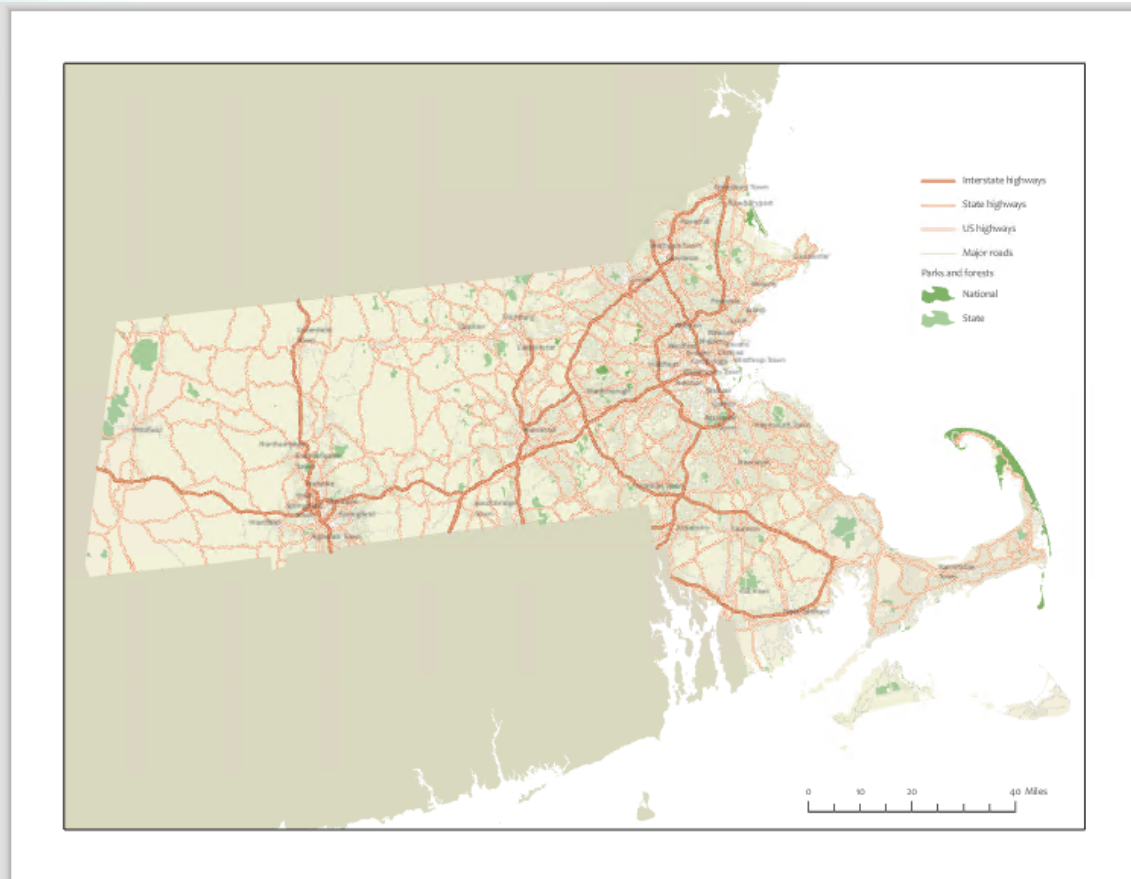


- i Set the font to Candara Regular, 7 pt, Gray 70%, and then click Apply.
- j Repeat the previous steps to change the color of Division Marks and Subdivision Marks to Gray 70%.
- k In the map, resize the whole scale bar by clicking and dragging the handles until the scale bar is about 2.5 inches wide and shows a distance of 40 miles.



- 1 If necessary, reposition the scale bar to the lower-right corner of the page, roughly right justified with the easternmost portion of the state.





**m** Close the Format Scale Bar pane.


**n** Save your project.

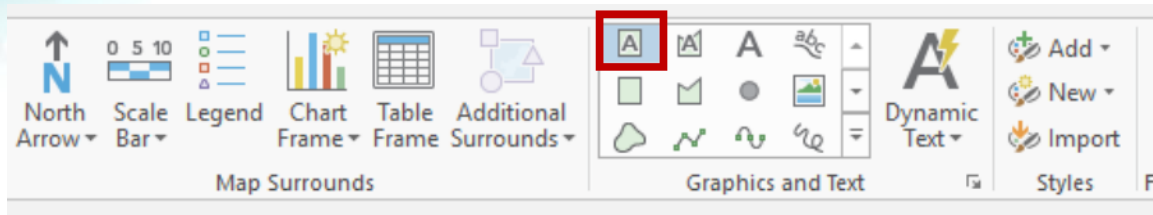
You have now added a scale bar to the layout.


### Step 5: Add text elements to the map

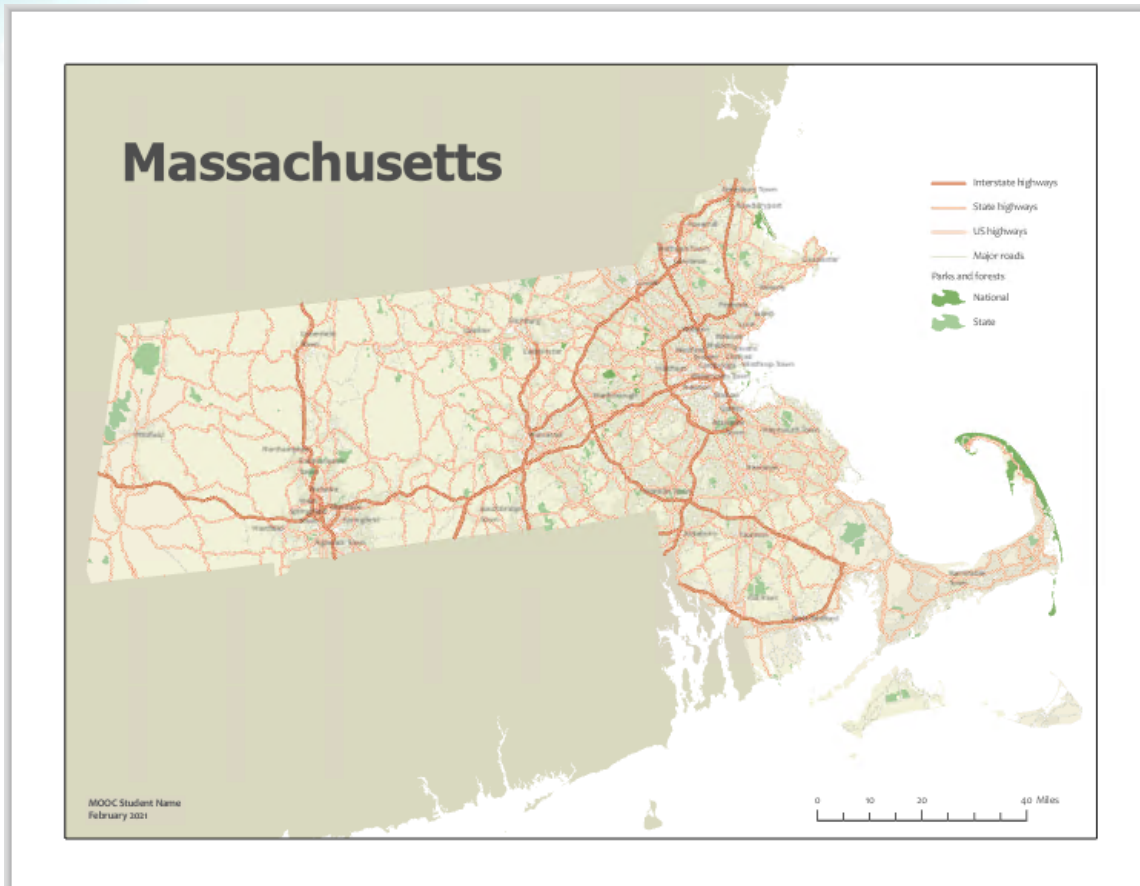
Text elements can be added to the map surround to provide additional information for the map reader.

First, you will add a title to the map surround.

**a** From the Insert tab, in the Graphics And Text group, in the gallery, click the Rectangle Text button .



- b Click near the upper-left corner of the map, and then type **Massachusetts** as the title for your map.
  - c In the Contents pane, right-click the Text element and choose Properties.  
The Element—Format Text pane opens on the right.
  - d In the Format Text pane, click Text Symbol, click the General tab , if necessary, and then expand Appearance.
  - e Set the font to Candara Bold, 36 pt, Gray 70%, and then click Apply.
  - f If necessary, click and drag the text frame to resize it and move it above the state.
- To finish your map, you will add your name and the date.
- g Repeat the previous steps to add your name and the date to the lower-left corner of the map in Candara Bold, 7 pt, Gray 70% font.



- h** Save your project.

You have now created a map layout that can be exported or printed.


### Step 6: Export or print your map

When you are finished with your map layout, you can export it or print it.

- a** From the Share tab, in the Export group, click Layout.

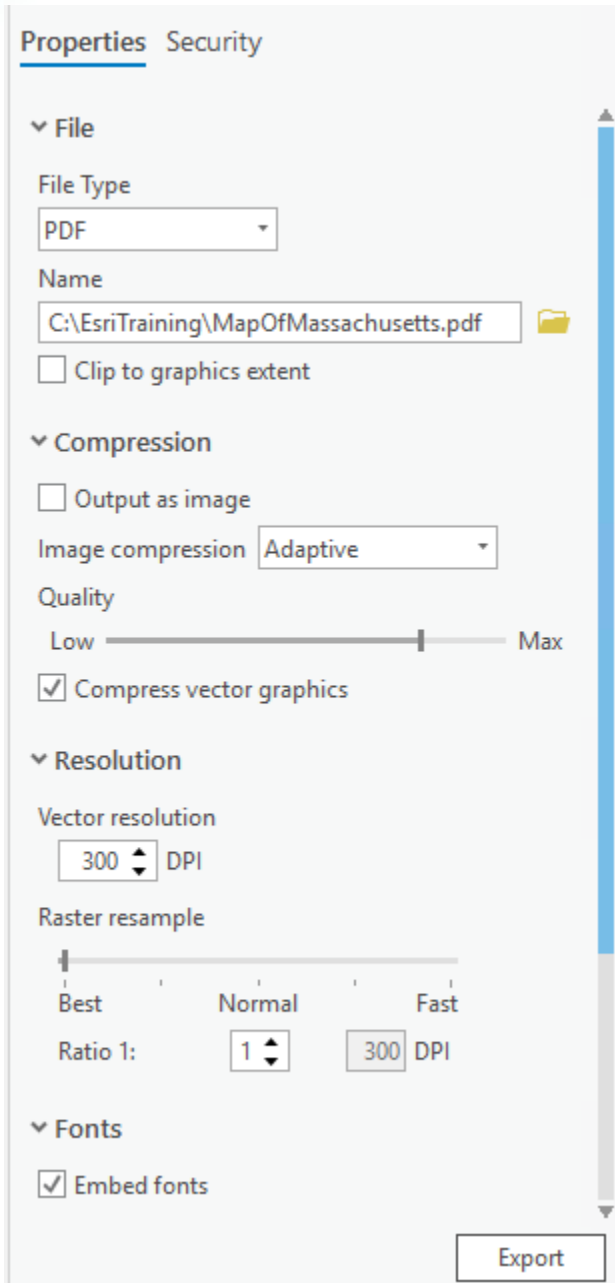
The Export Layout pane opens.

- b** For File Type, choose PDF.

- c** For Name, click the Browse button  and browse to where you saved the data for this exercise.

- d** For File Name, type **MapOfMassachusetts**.

- e Do not change the other defaults.



- f Click Export.
- g If you are connected to a printer and want to print your map layout, from the Share tab, in the Print group, click Layout.
- h Save your project and exit ArcGIS Pro.

### Conclusion

Congratulations! If you are new to ArcGIS Pro, you have made your first map. You have explored much of the ArcGIS Pro user interface, including the ribbon, the Catalog pane, the Contents pane, and detailed property panes for symbology, labeling, and legend elements. You have worked with a map, layers, and a layout within a project.

You have learned how to symbolize and label layers, some basic symbol editing and label placement techniques, and how to work with color. You went beyond the defaults by setting a map projection and a reference scale and establishing symbol layer drawing.

You will become familiar with the many areas of the app that you worked with as you go deeper into the properties and settings in the upcoming exercises in the course.

### Stretch goal

Throughout this course, you will see exercise stretch goals. These goals include ways that you can continue or enhance the work that you completed during the exercise. Stretch goals are community supported and a great opportunity to work together to learn together.

If you would like to continue to enhance the map that you just made, you can complete the following high-level tasks:

1. Give it a different look.

- Maps are graphic communication. Give your map a different style and message by using a different color palette, different symbols, different fonts, or a different layout arrangement.

2. Adjust the map scale.

- What would you change if you were making a map of the Boston area in Massachusetts? Think about the reference scale, symbol sizes, and labeling choices. Would you be able to add additional data?

3. Add additional data.

- The project database includes a layer of institutional buildings (Institutions\_MA) that is not used in the main exercise. How would you show these buildings (with clarity) on a larger-scale map?

4. Spell check text elements.

- You can review all text in text elements using the Check Spelling tool, which is accessed from the Layout tab, in the Review group.

Use the Lesson Forum to post your questions and observations. Be sure to include the **#stretch** hashtag in the posting title.

If you did some experimenting on your own beyond the steps of an exercise, we would love to hear about and see what you did! If you completed a map based on the exercise steps, that is awesome! However, there is no need to share it in the Forum.