## Set Grid/Graticule

There are four options, each slightly different:

- Create new map graticule
- Create new UTM grid
- Modify graticule
- Modify UTM grid

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80.00.00 80.00.00 40	Which do you want to create?
	<ul> <li>Graticule: divides map by meridians and parallels</li> </ul>
	Measured Grid: divides map into a grid of map units
лгs-	Reference Grid: divides map into a grid for indexing
	Grid name: Graticule1
	< Back Next > Cancel
o <b>c</b> raticula for lat/lang. or man	wind arid for LTM. You can put both on the same man
Create a graticule	
Create a graticule	
Create a graticule	Appearance
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-90.+13509 -90.163331 -89.92315+	Which do you want to create?
	O Graticule: divides map by meridians and parallels
	Measured Grid: divides map into a grid of map units
	Reference Grid: divides map into a grid for indexing
	Grid name: Measured Grid

4. Pick measured grid for UTM. You could change the grid name; something like "UTM zone 15N NAD83" might help you.

-90.413509 -90.163331 -89.973154	Appearance
	C Labels only Style:
	<ul> <li>Lind and labels</li> </ul>
	Coordinate System
	<pre><same as="" data="" frame=""> GCS_North_American_1983 Properties</same></pre>
<b>7</b> 8	Intervals
	X Axis: 0.122589 Decimal Degrees
	Y Axis: 0.112571 Decimal Degrees

5. Note that this says we will get an GCS grid, because we have a GCS map. Since we want UTM, we need to modify the "Properties". "projected coordinate system" to get UTM, then UTM, then the datum like NAD83, and finally the UTM zone.

X Axis:     1000     Meters       Y Axis:     1000     Meters	Appearance         Labels only       Style:         Tick marks and labels         Grid and labels         Coordinate System         Transverse_Mercator         False_Easting: 500000.000000         False_Northing: 0.000000
	X Axis: 1000 Meters Y Axis: 1000 Meters

- 6. Set the spacing intervals. You will have to adjust the interval depending on the scale of the map, and should use the same spacing in x and y. The style button lets you pick the line width and color. Other changes on this and the following steps in the wizard allow you more control if you want to experiment, but you should be able to accept the defaults. Note that the coordinate system does not tell you UTM, but does indicate Transverse Mercator, and if you scroll down, you will be the zone's central meridian and the scale factor of 0.9996.
- 7. Accept all the other defaults.

## **Modify Map Graticule**

D	ita Frame Properties				
[	Feature Cache Annotation G General Data Frame	roups Extent Indicators Coordinate System	Frame Illuminal	Size a	and Position Grids
	Reference grids are drawn on to	p of the data frame in Layout	view only.		
	🗹 Graticule		Ne	w Grid	
	Measured Grid		Rem	iove Gri	d
			S	ityle	
			Proj	perties	
			Convert	To Gra	phics
		OK	Cance		Apply

- 1. Pick View, Data Frame Properties on the menu, or Right click on the  $\leq$  Layers icon in the map's table of contents and pick "Properties".
- 2. Pick the Grids tab.
- Highlight an existing graticule.
   Pick the intervals tab.

Axes Interior Labels L	abels Lines H	latching Intervals	
Interval			
X Axis: 0	° 1	0.000000	•
		,,	
Y Axis: 0	1	0.000000	
Origin			
OUse origin from the	current coordinat	e system	
Define your own or	igin		
X Origin: -180	° 0	0.000000	
Y Origin: -90	° 0	0.000000	
-			
Degrees-Miputes-S	econda		
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O Degrees and Decim	al Minutes		

5. Set the spacing You will have to adjust the interval depending on the scale of the map, and should use the same spacing in x and y. The style button lets you pick the line width and color. Other changes on this and the following steps in the wizard allow you more control if you want to experiment, but you should be able to accept the defaults.

Reference System Properties	
Axes Interior Labels Labels Lines Hatching Intervals	
Display Properties	
<ul> <li>Show as a grid of lines</li> </ul>	
Show as a grid of ticks	
O Do not show lines or ticks	
Symbol:	]
OK Cancel	Apply

- 6. Navigate to the Lines tab, where you can set the Symbol button for the color and line width. Other changes on this and the other tabs allow you more control if you want to experiment.
- 7. Diagonal You must be in Layout view to see the graticule or grid (select on the lower left corner of the main display frame).

Modify Map UTM Grid
Data Frame Properties
Feature Cache       Annotation Groups       Extent Indicators       Frame       Size and Position         General       Data Frame       Coordinate System       Illumination       Grids         Reference grids are drawn on top of the data frame in Layout view only.       New Grid       New Grid         Image: Coordinate Grid       New Grid       Style         Image: Coordinate Grid       Style       Properties
Convert To Graphics OK Cancel Apply
<ol> <li>Pick View, Data Frame Properties on the menu, or Right click on the          ✓ Layers icon in the map's table of contents and pick "Properties".     </li> <li>Pick the Grids tab.</li> <li>Highlight an existing grid and pick properties to modify. Pick the properties button.</li> </ol>
Reference System Properties
Axes Labels Lines System Intervals  Use the data frame's current coordinate system Use another coordinate system Properties
OK Cancel Apply

5. If your projection system matches that of the map, Arc will say that. If you want to verify what the data frame's current system is, select "use another coordinate system"

	Reference System Properties	×
	Axes Labels Lines System Intervals	_
	O Use the data frame's current coordinate system	
	Our Search Stress Use another coordinate system	
	Transverse_Mercator False_Easting: 500000.000000 False_Northing: 0.000000 Central_Meridian: -93.000000 Scale_Factor: 0.999600 Latitude_Of_Origin: 0.000000	
0	OK Cancel App	ylc

6. The bottom portion of the form will display the details of the projection. It will not indicate that the projection is UTM, but you can tell that from the central meridian and the scale factor of 0.9996. If you pick Properties, you will be taken to the correct UTM zone selection (same as the image in the Select UTM grid directions).

☆ Coordinate System X/Y Domain	
Type here to search	9 8 G • #
Favorites	
Geographic Coordinate Systems      Figure 2	
Current coordinate system:	
World_Plate_Carree	
WKID: 54001 Authority: ESRI	
Projection: Plate Carree	
False_Easting: 0.0	
False_Northing: 0.0	
Linear Unit: Meter (1, 0)	
Linear onic, meter (1.0)	
Geographic Coordinate System: GCS_WGS_1984	
Angular Unit: Degree (0.0174532925199433)	

8. The current coordinate system at the bottom is not what you want, so highlight "projected coordinate system" to get UTM.

7.

<y coordinate="" sy<="" th=""><th>stem X/Y Domain</th><th></th><th></th></y>	stem X/Y Domain		
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Scale_Facto	r: 0.9996		
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	SKRITTU 10597		×

9. Pick either NAD83 or WGS84, and then the correct zone. This is the same process you use when you set the projection for the map, or assign it for a data set, although the exact controls differ slightly. The values used in this projection are listed in the bottom part of the window. Click OK when done.

Interval	
Units:	Meters
X Axis Interv	val: 1000.0000000
Y Axis Interv	vat 1000.000000
Origin	
💿 Use origin	) from the current coordinate system
🔿 Define yo	ur own origin:
X Origin:	-100.000000
Y Origin	20.000000

- 10. The key variable is probably the grid spacing. You should set the spacing to be the same in both the horizontal and vertical directions. Standards for maps are 10 km for 1:250K scales and 1 km for 1:25K or 1:50K, but you might have to vary these. If you are using a UTM projection you can use the origin from the current coordinate system; if you have another, you can set the origin at 0,0 since you want your grid lines to be on even intervals.
- 11. You should be able to accept all the other defaults. If you want to change any other parameters, the most important would probably be the line color and width.
- 12. You must be in Layout view to see the graticule or grid (select on the lower left corner of the main display frame).

## ArcMap will let you add additional grids.

Data Fran	ne Prope	erties						×			
Feature Cache         Annotation Groups         Extent Indicators         Frame         Size and Position           General         Data Frame         Coordinate System         Illumination         Grids								ion			
Reference	Reference grids are drawn on top of the data frame in Layout view only.										
✓ Graticule					New Grid						
Measured Grid1					Remove Grid						
					Style						
					Properties						
							Convert To Graphics				
				ок	Cancel		Apply				
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The map above has a graticule in red, and two UTM grids in green and black for NAD27 and NAD83, showing the datum shift in this area to be about 200 m (there is no scalebar, but the UTM grids are both 1 km). Because the UTM grids are parallel to the map edges, this must be a UTM map projection. Since we are not near the center of the UTM zone, the red graticule is rotated with respect to the UTM grid.



We can add a third grid, in blue, for the adjacent UTM zone (16N). This will be rotated with respect the UTM zone 15N coordinates of the map, but because we are almost on the UTM zone boundary, we will probably have to deal with coordinates in both zones and a map with both grids could be useful. We should probably remove the NAD27 grid, since this might be starting to get too complicated. We can either delete that grid, or just uncheck it for display but leave it in case questions arise about the datum shift.

## **Conic Projections**

If you have a conic projection on your map, either the Albers or the Lambert, you must be careful that you do not get its grid. The conic grids are used for plotting, but are not generally shown on maps. If you have a conic map, and the grid is parallel to the map edges, you almost certainly have the conic grid unless you in the center of the country. Otherwise there will be a definite rotation visible between the conic grid and the graticule, and between the conic and UTM grids. Only the UTM grid is commonly plotted on maps.