Editing with ArcGIS — Tips and Tricks

ArcGIS offers a multitude of tools for creating and maintaining your GIS data. Most editing tools can be used to manually create and modify database features, while others are used to transform and assemble entire datasets. This session will provide useful tips and tricks and time-saving techniques for working with editing tools, constructing vector geometry, editing coincident features, and adjusting data.

http://video.esri.com/watch/79/editing-with-arcgis-tips-and-tricks

---

Video Transcription

00:01 So, morning, everybody, and welcome to Editing with ArcGIS 9.3.1, Tips and Tricks.

00:05 My name is Colin Childs and my compatriot in arms here is Rhonda Glennon.

00:10 I'm an instructor out of the Redlands office and I get to teach people how to use our software.

00:15 And Rhonda is on the editing team as a technical writer and author and she does a lot of testing.

00:22 And Rhonda's responsible for the help doc, and the help doc part of editing...

00:26 ...and also writing and developing the tutorials that you get to try out and practice.

00:31 So, the two of us spend some time at User Conference helping, or trying to help, you with interesting tips and tricks...

00:40 ...that'll help you to be more efficient in working with editing and doing editing with ArcGIS.

00:46 So our topics for this morning will be to talk a little bit about some productive editing techniques...

00:51 ...looking at some things you can do with respect to creating new features, editing existing features...

00:58 ...and some tips and tricks on editing coincident features and topologies.

01:03 And our format is generally to introduce a tip and trick and then to do a software demonstration...

01:09 ...where we illustrate that tip and trick to you.

01:11 So we'll introduce a couple of them, then do a software demonstration.

01:14 And then we'll do some questions and answers at the end of the session if possible.

01:19 It's a little distracting during the session to take questions, and we can get off track...

01:22 ...so please write those questions down, reserve them for us as well.

01:26 Also, there should be some survey forms for this session.

01:29 If you could fill those out when you're leaving later and just drop them in one of the boxes at the back...

01:34 ...that'll give us an idea of things we should work on for next year, and other areas that we should approach and tackle.

01:40 So let's get started and take a look at one of the first tips and tricks that we'd like to introduce you to, and this is getting help.

01:47 So using the help doc is a good way to get started and find information...

01:53 ...but often it can be quite, quite tedious sometimes to find things in the help doc.

01:59 So while you're working, while you're busy working in an edit session or anywhere in our software...

02:04 ...you've got access to context-sensitive help.

02:07 So at any point, if you take the What's This? button, which is the little question mark button...

02:11 ...you'll find in the top right-hand corner of your application, and you point at a menu choice or a button...

02:17 ...you're going to get some very quick, detailed information that's easy to read, right there and then as you're working.

02:24 In a menu, a context menu for example, the same help can be gotten by using the Shift+F1 key on your keyboard.

02:31 So you hover over a menu and you go Shift+F1 and it pops up with some help for you.

02:36 So the What's This? option is very, very useful.

02:40 Obviously the desktop help is also very useful, and usually you have to wade through things to find what you're after.

02:48 I must tell you though, and since it's not a 10 session, but the 10 help is really awesome.

02:52 They've got really cool search engines in them, and they've done a lot of work on reorganizing the 10 help.

02:59 There are professional libraries and advanced libraries and entry level libraries...

03:04 ...and all sorts of really good organization in that as well.

03:07 So it's good if you have some time, and if you don't have 10 installed, but you want to see it anyway...

03:12 ...go to the resources.esri.com page and you can get access to the online version of the ArcGIS 10 help. It's good.

03:19 Now there are lots of training courses out there that you may want to consider as well.

03:23 One of them that has been updated for ArcGIS 10 just recently is one called...

03:27 ...Data Production and Editing Techniques, the acronym DPET.

03:32 And it's a project-based class, so you kind of do some stuff, you learn some new information.

03:36 At the end of the day, you end up getting a raw project that you have to implement the data...

03:41 ...and the exercises that you've been working with during the day.

03:44 So you actually get to practice, and put into practice, everything you've done.

03:48 It's a good course. And Rhonda was one of the technical SMEs, or subject matter experts...

03:53 ...on developing that material. So, it's a good one.

03:57 Now let's talk about working with the sketching tools and the editing tools and being more efficient with those.

04:04 Well, shortcut keys are a really good tip for you here.

04:07 So while you're working with something, you may want to very quickly pan and zoom...

04:11 ...but you don't want to go to the Tools toolbar to get to the Pan button or the Zoom button.

04:16 So using keyboard shortcuts is a quick way to get to and do things while you're busy with something else.

04:23 Things like the C key on your keyboard will let you pan.

04:27 So you may be using the edit tools and doing something, and you hold C down...

04:31 ...and you can pan and release and do something back with the original tool again.

04:35 So these keyboard shortcuts are really, really useful.

04:39 And there is an exhaustive list of them. In fact, the help doc has a very good description of the shortcut...

04:46 ...the actual shortcut keys, and what that shortcut will do for you.

04:51 I like using them a lot for navigating, so I don't want to go back to the Tools menu to do a pan or a zoom in or out...

04:56 ...I just go with my shortcut keys and while I'm working I can move around and do things.

05:03 So, when working with the editing tools, you most of the time are working with sketches...

05:10 ...and you are creating new features or modifying features by modifying vertexes...

05:15 ...and you are creating features by adding vertexes to make a feature.

05:20 But what a lot of people don't realize is that while you're using the sketch tools themselves...

05:25 ...a right-click during that session or that area where you're creating something with the

Sketch tool...

05:31 ...will give you access to something we call a context-sensitive menu.

05:35 And that context-sensitive menu will give you access to a series of sketch constraints.

05:41 So you'll see the menu here. We're showing it to you on the right-hand side of the screens...

05:46 ...and the menu here is the one you would get as you were sketching with, for example, one of the Sketch tools.

05:51 Now what that menu does is it says, Would you like to constrain the next vertex you're creating...

05:58 ...either parallel or perpendicular or at a specific angle or deflection angle...

06:03 ...or would you like the next vertex to be generated at an absolute x,y?

06:07 So you're technically taking what you're doing as construction and manipulating the construction tool...

06:13 ...as needed through a right-click to get to these sketch constraints.

06:18 So the things like lengths and directions and distances and angles and tangent curves are all options...

06:24 ...that you can get to via these sketch constraints with a right-click while you're sketching.

06:29 Again, any help on those, Shift+F1. So hover over the menu choice, Shift+F1, and you get the help.

06:38 So, many of you may be working with data that is still using feet and miles, or you may be working with data that is metric.

06:48 Or you may be working with maps and information that you're entering that is in a combination of these.

06:54 So some data is metric, some of it is in feet, and you potentially have to override...

07:00 ...or you have to do a conversion from one unit of measurement to the other.

07:04 Well, not really necessary at all.

07:06 Anytime you're using some of these sketch constraints, for example the length constraint...

07:11 ...you can type the length in, in whatever unit you wish, and associate or add...

07:16 ...the acronym for the unit that that length is in, and our software will automatically do the conversion for you.

07:23 So you'll see the table points out some of the different varieties of units and the acronym or abbreviation...

07:30 ...that you can add to that length or value and it'll know it's got to convert from that unit that

you're entering in...

07:37 ...to the unit, to the actual map unit that you may be working in.

07:41 Obviously, this is only going to be important if your map unit is different from the unit you're entering a value in.

07:48 So in the example there, our data is in fact in feet.

07:52 Our map units are in feet, as we can see from the lower end of the application, but we're entering a distance in meters.

07:58 So we type the value, an M for the abbreviation, and it'll do the conversion internally for you...

08:04 ....from meter to feet, to generate the new line or segment that you're creating.

08:11 So working with sketches you have access to a series of sketch tools in 9.3.1.

08:17 You've got the common one people call the Pencil Sketch to generate new features.

08:22 But there are sketch tools to create a vertex at the intersection of two lines for example.

08:29 And there are other sketch tools that'll let you create vertexes and features...

08:34 ...or generate features, at tangent curves and other forms.

08:38 Well, one of those sketch tools is called the Trace tool.

08:44 And what the Trace tool will do is it'll allow you to take existing, selected features...

08:50 ...and use them as a basis from which to create new features in a target feature class or layer.

08:57 So in the example you see here, we have several parcel boundaries selected...

09:01 ...and what I want to do is create a new road centerline to follow the curvature of those parcel boundaries.

09:08 So I preselect the parcel boundaries, I make sure my target layer is the centerline layer...

09:14 ...and I begin by creating a new feature, but instead of using the standard Pencil Sketch, I use the Trace tool.

09:22 And the Trace tool will clone, if you like, the coordinates from the selected feature to generate the new feature for me.

09:30 In the example you see there, however, we wanted to offset the new geometry we were creating by...

09:37 ...with the Trace tool, we wanted to offset it away from the original selected feature's geometries.

09:42 So by holding the O key down on your keyboard, there are additional options to the Trace tool that you have access to.

09:50 And the dialog you see above there is actually showing you some of those options where you can set a positive...

09:56 ...or negative offset from the selected features to trace, and then you can also define the curve.

10:02 Is this going to be a beveled or a mitered or a rounded curve when I generate some features?

10:08 So that's a quick way to, in a way, clone existing geometry to create something new, the Trace tool.

10:17 So modifying selections.

10:18 When you're working with a lot of features and you're editing multiple feature classes at the same time...

10:24 ...sometimes you want to do a selection and you inadvertently get more features than you intended.

10:30 So you may have in the...you may have had roads and other types of things all below...

10:35 ...and all...you may have made a selection and you've got, say 20 features selected.

10:40 In fact, this example here, we're showing where we have multiple features selected...

10:44 ...or we also have the problem where we don't know which layer we're selecting from.

10:50 So in the upper portion here, what you're seeing is, we're using the Selection tab...

10:55 ...and with the Selection tab, instead of having the normal tab, we use the Selection tab...

11:00 ...you can turn layers that you want to select from, on and off.

11:04 So it's a quick way while editing, to turn layers on and off, hold the Ctrl key down, turn them all off from selection.

11:11 Hold the Ctrl key on, it'll turn them back. So you click on one of them with the Ctrl key down, they all get turned off.

11:17 If they're all off, hold your Ctrl key down, click and they'll all get turned on again.

11:22 So the top graphic is illustrating the Selection tab and how you can make certain layers selectable or others not...

11:30 ...and the highlighted one, the one in bold, is in fact the one that you may currently have selected features from.

11:37 So this is selection. The bottom graphic here is describing when you have multiple features selected...

11:44 ...and you want to potentially deselect one of them, or navigate, or copy, one of them.

11:50 So in the Attributes dialog, if multiple features have been selected...

11:55 ...you can deselect a record, a feature, in the Attributes dialog from a selected set.

12:01 Also, in the top graphic again, with the table of content, anytime you have selections out of a layer...

12:08 ...a right-click on that selected layer will give you the option to switch selection to those records...

12:15 ...that are not selected of the layer, to clear the selection, zoom to the selected, and so on.

12:20 Now here's where I was getting to a little earlier. I got mixed up with the slides, by the way.

12:25 If you have multiple features in the same spatial location...

12:29 ...for example, here we have a line feature and two polygon features and we selected.

12:34 But we didn't want to select the line. We actually wanted to select the polygon.

12:38 But we didn't want to select the small polygon. We wanted to get the big one below it.

12:42 Well, that's problematic because I want to edit out of all three layers.

12:45 I have them all three active, but how do I get to focus my selection on the big polygon or not on the line?

12:53 Well, if you issue a selection like that, and multiple features are in the same spatial location...

12:59 ...holding down the N key on your keyboard will cycle you through all geometries that are selectable at that location.

13:08 So the first time I held my N key down, I got the road.

13:12 Hold my N key further, I get the small polygon.

13:15 Hold my N key again, I get the big polygon.

13:18 So I'm essentially cycling through all associated geometries at one specific geographic location that I may be working on.

13:29 So that's an example of working with features that may be overlapping...

13:33 ...where I don't want to turn the layer off from selection.

13:36 I want to keep multiple layers on, but then cycle through the selected features.

13:42 Now, another area you may want to be aware of is, is that while you're editing or modifying features...

13:48 ...something that often happens is you inadvertently move something without intending to.

13:53 So you select something, but you don't realize you've selected more than what you needed to...

13:58 ...you do a move, and boom, things move that you didn't intend to.

14:02 So a way to prevent that is to go to your Edit menu, to Options.

14:06 And on the Edit Options you have the choice to set what is called the Sticky Move Tolerance.

14:12 Now the Sticky Move Tolerance is a distance, in map units, that you physically have to...

14:17 ...or implicitly have to move something before that move stays.

14:23 So it's called a Sticky Move Tolerance, because you have to go beyond the distance you've specified...

14:28 ...for Sticky Move, in order to actually move something.

14:32 So, in a way, it prevents you from unintentionally moving things that may have moved...

14:39 ...if you had not set a Sticky Move Tolerance.

14:42 So this is a way that we help you a little more to not make mistakes, or not do things you didn't intend to.

14:50 Snapping is another area that many people have some confusion with and ask us a lot of questions about.

14:56 And you know that you can create several snap agents when you are working.

15:01 You can set up a snap agent for each layer and you can say that you want to snap vertexes...

15:05 ...or you want to snap to the edge of something.

15:08 So you can create all sorts of different snap agents.

15:11 But when working with these snap agents, it's kind of nice to be able to see which one is being used at that point in time.

15:19 So by turning on the SnapTips, as you're editing, and this is the middle graphic that I'm talking about here is...

15:26 ...as you're editing and you're about to move a vertex or add a vertex...

15:31 ...the SnapTip will show you which of the snap agents...

15:34 ...in this case Demo Buildings Vertexes, are being snapped.

15:39 You'll also see that in the lower end of the application, and this is the upper graphic...

15:43 ...in the lower end of the application, it'll also give you some standard readout saying, this is the layer name...

15:49 ...and this is the snap type, or agent, that is currently being used or will be used at that point in time.

15:57 So this is just a...two options.

15:59 Setting up the SnapTips and then watching the lower end of your application in order to see

which snap agent is used.

16:06 Another area that people often ask us is, How do I know how big the snap distance is?

16:11 Because I typed it in under the Edit Options menu, and I typed it in in pixel units...

16:15 ...or I typed it in in map units, and I really have no conception of the size of that snapping area.

16:22 So what we recommend you do is, as you're editing and you want to visualize or see how big the snapping area will be...

16:29 ...that things will snap together, is hold your T key down on your keyboard.

16:33 The T key will give you, or visualize for you, the actual snapping distance itself.

16:39 So for those of you that set snapping, and I'm sure you pretty much all do...

16:43 ...in ArcGIS 10, your snapping is only in pixel units now, not in map and pixel units.

16:50 And the reasoning behind that is, is that quite a number of things could go wrong in map units...

16:54 ...if you are zooming in and changing resolution.

16:57 So in ArcGIS 10 it's primarily just in pixels now.

17:01 I shouldn't tell you this either, because Rhonda's going to murder me...

17:03 ...but snapping is way cooler in 10. Way, way cooler. It's always on by the way.

17:09 So a lot of people have asked us, you know, When I use the Measure tool to measure things...

17:13 ...can I have the snapping happen so it snaps to something?

17:16 Well in 9.3.1 that wasn't possible, but in 10 it is, because it's always there.

17:21 It's always active. So it's much, much nicer.

17:24 Okay, so controlling how features snap. How do we control how the features snap?

17:28 Well, first of all we need to set the snap tolerance under the Editing Options.

17:32 And there is a customization tool, a little Customize tool, and you'll see that over there at the top, that you can create.

17:41 You can add it to a toolbar and you can have the ability to visualize or show the snapping tolerance visually if you wanted to.

17:49 Now the Snapping Environments window, which is the one at the bottom of the graphic.

17:53 At the bottom is where you generate all those different snap agents.

17:56 So you select the layer and you say which snap agent, vertex, and end of that layer you'd like to create.

18:03 So in the example here, we've actually got three separate snap agents associated to two different layers.

18:09 Within that snapping environment, something else a lot of people don't know is, is you can prioritize your snapping.

18:15 So you can take the layer, like parcel, hold your cursor on it, and drag it up in the list...

18:22 ...and that way you prioritize the layer for snapping.

18:25 So parcel snapping will take precedence over street and zoning snapping that might have been set.

18:31 So that's a way where you can go ahead and prioritize snapping.

18:35 Shortcuts. If you want to temporarily suspend your snapping, hold your Space key down while you're editing...

18:40 ...and that'll say, Hey, I'm not going to use any snapping at this point at all.

18:44 And V, the V key on your keyboard is pretty nice as well.

18:49 So as you're editing and you want to view vertexes that you potentially could be snapping to...

18:54 ...hold your V key down on your keyboard and it'll show you all the vertexes within the current extent...

19:00 ...and then if you're busy creating a sketch, you can move to one of those vertexes to invoke the snap.

19:06 One more thing about snapping.

19:07 You can override your snapping by sketch constraints.

19:11 Remember you get to those by right-clicking while you're sketching.

19:15 So if you right-click while sketching, you have the choice to do Snap to Feature.

19:19 That's one of the sketch constraints.

19:21 And if you choose that one, you have four additional, or different, options you can pick from.

19:26 The first two and the last one are actually common ones...

19:29 ...'cause those are the same ones you get to do as existing snap agents.

19:33 But the middle one is unique to the sketch constraints, Snap to Midpoint.

19:39 So you'll notice that if you go back to the snapping environment here, you don't have a midpoint option right there.

19:45 But as you are doing the sketching and you right-click and use the snapping over there...

19:50 ...with Snap to Feature, you have the Midpoint option available.

19:54 All right. So let's switch over and let's show you some of these in practice.

20:02 We're on?

20:03 All right. So in this map I have some parcels...

20:06 ...and those of you guys in natural resource management who get really tired of seeing parcels demos...

20:11 ...let me tell you that the ArcGIS 10 tutorials are all built using data from Zion National Park.

20:17 So I hear you. I hear what you're saying.

20:20 I came from a natural resource management, but bear with me through one more parcel demo.

20:26 So in here I have a neighborhood and I'd like to add in some streets.

20:30 And the streets are being shown by these gray lines.

20:34 So to do this, I'm just going to do the normal start an edit session.

20:40 And by the way, everything that I'm going to show you here today can be done using shapefiles...

20:45 ...and using an ArcView license, unless I specify otherwise.

20:50 So when I'm going to create my features here, the first thing I want to do is just kind of set up my snapping environment.

20:58 So I'm going to go to the Editor menu on the Editor toolbar, go down to the Options, and turn on SnapTips.

21:06 In ArcGIS 9, they are not on by default, but they will be in ArcGIS 10.

21:13 And then I'm going to actually set up my snapping environment.

21:17 So go to the Snapping menu and it opens the Snapping Environment window.

21:22 And by the way, if you have a dockable window that you don't want to dock...

21:26 ...you can hold down the Ctrl key and that will allow it to float.

21:31 So let's dock this here at the bottom, and let's resize it, and I'm going to turn on snapping for my Streets layer...

21:42 ...and let's go for some Vertex, Edge, End for my streets.

21:47 And also I'm going to be working with some parcels, so I'll turn on some, maybe some edge snapping for parcels.

21:53 And I'll just leave this open so I can change my snapping environment while I'm working.

22:00 We'll go ahead and start creating our feature.

22:02 I've got to make sure I set my target, 'cause I've been using ArcGIS 10 for so long...

22:07 ...and it's just so easy when you create a feature, you say, I want to make that feature...

22:11 ...instead of accidentally creating it in some other layer.

22:15 So, be sure to set my target to Streets here, and now I'm snapping, and you see that when I snap...

22:20 ...I get this little tip that says I'm snapping to the Streets layer and using the End snap type.

22:28 I'll click to add my first vertex, and now this segment here, I want to add parallel to my existing one.

22:36 So there's a couple ways I can do that. I'll just right-click over it and say parallel...

22:42 ...or I could also hold down the Ctrl key and press P.

22:47 And so it's going parallel to the feature that I've right-clicked over.

22:52 So now you see that I'm constrained to being parallel.

22:55 If I decide I don't want to be constrained, I can press the Esc key and that'll clear it out.

23:01 So let's actually add a length for this segment too.

23:04 So I could also right-click or I'll use the shortcut, Ctrl+L...

23:08 ...and it brings up this dialog that allows me to enter the length for my segment.

23:13 So, because my map units are in meters, ArcMap automatically interprets what I'm entering as being as meters as well.

23:22 So we'll make it 15.4 meters, and it creates the vertex where the segment would be 15.4 meters.

23:28 So while I'm in the sketch, I can actually change tools and continue my sketch.

23:32 So now that I'm over here, I have some other features that I could use to snap to, to create the rest of my line.

23:45 So I'll go over here and I'm going to change over to the Midpoint tool.

23:48 And the way Midpoint works is it allows me to drag a line and it will place a vertex in the middle of that line.

23:57 So you see as I drag it I have this black box and that's going to be where the vertex is placed.

24:04 So we'll snap to the other edge and maybe we'll make another vertex and do that again.

24:12 You see, well, that's okay, but I have this curve over here...

24:16 ...and I want to capture the curve instead of just making kind of straight segments.

24:21 So I'm going to switch over to the Trace tool now.

24:24 And the way the Trace tool works is by selecting some features and then the Trace tool will trace on those edges.

24:32 So I need to select features, but if I drag a box right now I'm going to select who knows what.

24:38 So I'm going to go over here on my Selection tab of the table of contents, and I only want my Parcels layer to be selectable.

24:46 So I can right-click the Parcels and say, Make this the only selectable layer...

24:51 ...and you see it unchecked all those layers and checked Parcels.

24:55 So now when I drag a box over here, it's only going to select the parcels.

25:05 And we'll go over to the Trace tool and I can start my trace.

25:12 You see, I clicked here, and notice it's tracing right on top of this edge, but really I wanted an offset.

25:18 So I know that my offset's going to be about 7.5 meters...

25:22 ...so the way to enter that is to press the O key to bring up the Trace Options dialog.

25:28 And it will allow me to enter that offset.

25:31 So we'll make it 7.5. Again this is going to be entered in map units...

25:35 ...and I can set my corners to be rounded, and I click OK.

25:41 And notice now that I'm tracing at an offset.

25:44 If it turned out that offset were on the wrong side, I could just press the Tab key and it will switch sides.

25:51 Effectively this is just adding a negative in front of my offset.

25:55 We'll trace over here, I'm going to snap to the end, and finish the sketch.

26:01 And notice that I used three different ways to create this one feature.

26:06 So don't forget that you can switch tools while you're tracing and while you're creating features.

26:13 So now we'll go over and I want to make another feature up here.

26:17 So we'll switch back to the normal Sketch tool, snap to our edge...

26:22 ...and again I want to make it parallel, so I'm going to right-click over the line I want to be parallel to, and press Ctrl+P.

26:29 So in this case, I've been given a measurement that's in feet, and since my map units are in meters...

26:35 ...I can tell ArcMap to convert them for me.

26:38 So I'm going to enter my length, Ctrl+L, and let's say my measurement is 282 and it's in feet.

26:45 So all I do is I type this distance units abbreviation.

26:48 ArcMap, behind the scenes, will automatically convert this for me.

26:52 And I press Enter and it creates the feature.

26:56 We'll make one more. In this case, we'll make it perpendicular.

27:01 And then we'll finish the sketch.

27:03 So now I have two features over here, but I have this nice curve that I want to capture.

27:08 So a tool that we allow you to create a curve with pretty easily is called the Fillet tool.

27:14 And it's on the Advanced Editing toolbar.

27:18 Again, this is going to be available with ArcView as are all the other tools on the Advanced Editing toolbar.

27:23 And so the way it works is, I click the first line that I want to use for the curve...

27:30 ...I click the second line, and it draws this curve in between.

27:34 If I want to set options for it, just like Trace, I can press the O key.

27:39 And here I've set it so that we'll trim off the existing segments where I click.

27:44 So you see, I'm snapping here, and we'll go ahead and click to create this curve between the features.

27:52 So now I have three features and I want to merge them into one so I have one line.

27:58 So just go to the Editor menu and go over to Merge, choose the feature to merge into.

28:04 This'll be the one that supplies the attributes.

28:07 In this case, it doesn't really matter, 'cause they all have the same attributes.

28:10 We click OK, and now I have one long feature.

28:15 And we'll fill in our last road here by snapping parallel and snapping on the other side.

28:23 So we've filled in all of our lines...

28:25 ...but let's say that our organization recommends that each line be split at its intersection.

28:32 So like everything else in ArcGIS, there's a lot of different ways to do it.

28:37 So the simplest is using the Split tool.

28:42 So if I select the line I want to split, go to the Split tool on the Editor toolbar...

28:47 ...it's using the snapping environment right now, and you see I get a SnapTip to indicate

where I want to...

28:54 ...where it's going to be splitting. I click it and now I have two features here.

29:00 So that's okay, but we have a lot of lines here that we need to split...

29:04 ...so like everything else, there's probably a better way.

29:07 So depending on your license, you may have other options for splitting your lines.

29:12 So I'm going to use a method now that is available only with ArcEditor and ArcInfo licenses.

29:22 So we'll turn off my selection for my parcels and I'm going to go add my Topology toolbar.

29:31 You don't have to have a topology to use this tool, but you do need to have ArcEditor or ArcInfo.

29:38 So I'm going to select all the lines that I want to split, and then go to the Planarize Lines command.

29:47 And it brings up a dialog box where I can enter a tolerance.

29:51 In most cases, you should just accept the defaults.

29:54 We'll press Enter, and now you see it's split every one of these lines at its intersections.

30:01 So when you're working in ArcMap, how would you know which is the best way?

30:06 Well, quickly you can just click the What's This? button and click a tool...

30:12 ...and it will bring up a little bit of a help topic here that shows you what a tool does specifically.

30:19 And this is really useful, because you don't have to stop your work and go into the help and that sort of thing.

30:24 And it's also useful if you have a tool that you just can't figure how to get enabled.

30:29 Like, Planarize Lines, for example. If I want to use it, but it's disabled, why might that be?

30:35 Well, it says it's disabled if no line features are currently selected.

30:39 It's also disabled if you're using ArcView.

30:42 So for those of you using Windows 7 or Windows Vista, when you try to get this help...

30:47 ...you'll need to install a patch from Microsoft.

30:50 There's a window that comes up that says, For more information, click here from Windows.

30:55 So make sure you install this patch to make it work.

30:59 In addition, in the help we also do have a lot of topics on splitting lines.

31:06 So one more thing I want to show you in this area is, let's go back to the Display tab...

31:11 ...and you see I have one data frame here called Editing and I also have another data frame down here called Imagery.

31:19 So let's say I want to view these simultaneously.

31:21 Maybe I have multiple monitors on my computer.

31:25 So what I can do is, on the...this is the Tools toolbar here. There's a tool here called the Create Viewer Window tool.

31:32 And I just drag a box and it opens up a view of my data frame.

31:40 So this is pretty cool, 'cause I can actually interact with it.

31:42 I can pan, I can zoom. I can actually edit inside of this window.

31:46 So it's kind of like having two ArcMaps at the same time.

31:50 And if I go down here to my other data frame, I'll activate it, and I'll also do the same thing over here.

31:58 So another way to get a viewer window is to go to the window Viewer menu.

32:05 And now if I go back over here to my editing and activate it...

32:09 ...you see that I now have all these different windows that I can work with in ArcMap.

32:17 And it's really useful for multiple monitors, especially, 'cause you can just resize this...

32:22 ...and make it the whole size of your monitor and get another view.

32:26 So let's go back to the slides now. All right?

32:31 Thank you, Rhonda. So I guess you see the power of seeing a demonstration.

32:35 See everything's in practice and you can see how it gets put together.

32:38 Now let's take a look at a few additional things that we get a lot of questions about.

32:43 So many of you may be in the process of migrating data from shapefile...

32:49 ...or other formats into geodatabases and into feature classes.

32:53 And sometimes you go through import tools to import the data into a feature class...

32:58 ...or you may use an export tool to export from the data format into a new geodatabase feature class and so on.

33:06 But what if you have some spatial data that you would like to copy, and put, or plug in...

33:12 ...somewhere inside of an existing feature class that you might be editing inside of an edit session?

33:19 So a lot of people don't realize is that ArcMap's Copy and Paste tools work just as well.

33:24 So select the features that you want to paste or copy into a target layer that you're editing.

33:31 So you copy them with the Copy tool, make sure your target layer is the correct layer you want to paste them into...

33:38 ...and use the Paste button in ArcMap. It's as simple as that.

33:41 If the geometries are the same, which is what they need to be, polygon to polygon...

33:45 ...Copy/Paste works perfectly fine if the features you're copying in have the same schema...

33:51 ...in other words, the same field names and field definitions, they'll bring all the attributes across as well.

33:57 This is a very common workflow for people working with CAD data.

34:01 They may display the CAD data inside of ArcMap, select something they want to grab out of the CAD dataset...

34:07 ...they select it or copy it, and copy it and then paste into a target feature class that they may be working on.

34:13 A few pointers here though, that sometimes when you're copying features...

34:18 ...the source data may be at a different resolution or scale.

34:21 And that's particularly common, for example...

34:24 ...maybe with CAD data, you may actually have it at a different scale to the scale that you're working on.

34:29 So the Copy/Paste tools here might not necessarily be appropriate...

34:34 ...but on the Advanced Editor toolbar there's a Copy Features tool...

34:38 ...which will allow you to take the selected features you have and copy those features into your target layer...

34:44 ...but at the same time, size and position them.

34:47 And that's what you see in the little graphic that we're showing you here...

34:50 ...is some CAD data that needs to be fitted into a new residential subdivision that has been laid out and designed.

34:58 So Copy Features tool if you need to size or scale the features you're copying over...

35:04 ...or just the standard Copy/Paste will work very, very well and very easily for you as well.

35:10 So a few more things that people ask us a lot about when they come down to the islands are...

35:15 ...you know, How do I make a donut hole in an existing polygon?

35:18 So in other words, How do I cut out a piece for a lake or for some other reason.

35:23 And it's pretty simple to do. Have your underlying feature available and ready...

35:28 ...digitize or create the new feature you want to cookie-cut or donut out, select that feature...

35:35 ...that whole feature that you'll...the cookie-cut area that you want to cut out...

35:40 ...and then go to the Editor menu, and on the Editor menu is a choice called Clip.

35:45 When you bring up the Clip option, the thing you need to be careful with here is...

35:49 ...is to check on the Discard area that intersects option from the menu.

35:53 And what it'll do is it'll take the selected feature and essentially cut it out...

35:59 ...and create a donut hole in the underlying feature below it.

36:03 And that's an example of donut holes.

36:06 Now anytime you create or add or make a donut hole in a feature, you're generating a multipart feature.

36:13 So the one that you cut out of becomes a multipart feature...

36:17 ...and in that case you can see it's multipart if you take a look at the Edit Sketch Properties.

36:22 And this graphic is showing you the Edit Sketch Properties and you'll see that that particular feature there...

36:27 ...the big square polygon, consists of parts 0 and 1, two parts.

36:33 So, another question we get is, If I have a donut, how do I delete it?

36:37 Pretty simple. Go to the Sketch Properties, right-click on the part number, 0 or 1, hit Delete, and it's gone.

36:45 In this case, you might want to select - the 0 part is the actual donut. So you right-click on it and delete it.

36:53 If you take a look at the sketch tool, the Sketch Properties tool, by the way...

36:57 ...it's here where you can get to the actual x,y pairs of the vertexes that make up the features.

37:01 So anytime you want to modify at that level, you can do it in the Edit Sketch Properties as well.

37:09 So when working with line features, generally when we're creating things like geometric networks...

37:16 ...or we're working with transportation networks...

37:18 ...we're very interested in the directionality of the linear features.

37:22 Rivers, water pipelines, and so on.

37:25 They need to be aware of the directionality and you want the directionality to be correct.

37:30 So we often get questions related to, Well, how do I know the direction of my line? How do I see it?

37:36 In other words, How can I figure out or visualize what is the from and what is the to direction?

37:41 So my suggestion here for you is, is to use a symbol with an arrow.

37:45 Some of the symbols allow you to display arrows at the begin or the end...

37:49 ...or along the middle of the line feature you're symbolizing...

37:52 ...and in this way, you can visually see the directionality of a line.

37:57 If you need to flip or switch the directionality around, on the Edit Sketch context menu...

38:04 So remember, select the feature for modifying, right-click...

38:07 ...there's an option in that Constraint menu which is called Flip...

38:11 ...and that'll flip the from and to, to the to and from, or the other way around for you.

38:16 For bulk processing of multiple features, there is a VB6 developer kit sample available from the Resource Center...

38:26 ...which you can then implement as a tool, and this is a bulk flip of selected lines.

38:32 So if you select a multiple of line features, you can do a flip or a bulk flip of those lines.

38:38 So those are some things to think about with line features.

38:41 So I've kind of mentioned already that if you need to get to the x,y coordinates that make up the geometry of your spatial features...

38:49 ....maybe you want to modify a line's curvature or so, by changing the actual x,y pairs...

38:56 ...the Edit Sketch Property menu is where you would go to.

38:59 In this case, right-clicking on any of the x and y pairs will give you access to them...

39:05 ...and you can type in the new x,y pair values there if you wish to.

39:09 If your features are m-aware or z-aware, you also have access via the same menu to the measure, or m-value...

39:18 ...or to the z-value if you have z-values as well.

39:21 In case you're curious, m-values, or measure values...

39:24 ...are used when you do dynamic segmentation and are interested in linear referencing of line features.

39:30 It's like having an alternative measure value such as length or time...

39:35 ...or fuel usage for road, for example, as an additional property for your spatial data.

39:41 If you're interested in that, linear referencing is the topic to look at in the help doc.

39:45 So, the next thing you might want to be looking at is updating attributes.

39:50 Now, updating attributes can be done in several different places.

39:54 You can either update the attributes in the Attribute table, or alternatively...

39:58 ...you can update the attributes using the Attribute Editor dialog while you're editing.

40:03 So if you select some features, you can click the Open Attributes window.

40:07 It'll open up the attribute's Editor dialog during your edit session, and you can go to...

40:13 ...if you like, the individual feature records, or attributes, like that.

40:19 So you can either go to the individual features that you've selected and modify their attributes.

40:24 Or, as an alternative, if you want to do a kind of batch update...

40:29 ...rather than select the individual features themselves, is select the layer name at the top of the Attribute Editor.

40:36 And if you select the layer name and you make an edit change there...

40:39 ...it cascades to all the selected features that you've currently got selected.

40:44 So that's a pretty nice way of modifying or updating edits.

40:48 Something else that people kind of forget too, is when you have the attribute table open...

40:53 ...there is an option called Find and Replace.

40:57 And sometimes if you've made a typo somewhere or you want to create...change something from lowercase to uppercase...

41:03 ...Find and Replace is a very quick, easy function in the Table dialog, to modify and change an attribute.

41:12 I just thought about that one, by the way.

41:14 So you can do that from the table itself if you wish to.

41:17 Now, working with tables, when you work with a table, remember you can hide fields.

41:22 You can make certain fields fixed in position.

41:25 You can also scroll down and across the columns very easily.

41:30 And there's a whole bunch of shortcuts to do this.

41:33 So you can either use mouse keys or keyboard shortcuts.

41:37 And the help doc has a very extensive list of these table navigation shortcuts.

41:43 So just as you can have shortcuts for editing, like panning and zooming...

41:47 ...you also have similar shortcuts for when working with the Attribute table.

41:52 Now something I particularly like about the attribute tables, is they've got a new option.

41:57 Well, it's been around for awhile, but with 9.3, it was added with 9.3 for Calculate Geometry.

42:03 Now, a lot of times I'm working with my spatial data...

42:06 ...my area or my perimeter is calculated in feet or in meters, but I want to know the area in hectares.

42:13 Or I'd like to know the total acreage of a polygon feature.

42:17 And in the past I had to add an empty field...

42:20 ...and I had to know what the expressional formula was to calculate acreage or hectare.

42:25 Well, I can add an empty field now, right-click and use Calculate Geometry...

42:30 ...and the Calculate Geometry dialog will give me the ability to fairly quickly calculate what I need to know...

42:36 ...the area or the perimeter, and you can even use this dialog to extract out the x- and y-coordinates...

42:42 ...of a point feature to two separate fields if you want to.

42:46 So this is pretty nice, something that you do very often and you need quite commonly.

42:52 Let's switch over to Rhonda and take a look at a demonstration of these. Oops. There we go.

42:59 Okay, so in this area, I have some parcels with some new buildings that have come in from another layer.

43:06 But I want to get them into my main Buildings layer.

43:09 So you see the buildings are in red here. They're in a layer called New Buildings.

43:13 If I turn that off, you see I don't have any gray buildings in my Buildings layer.

43:18 So a simple thing I can do is just copy and paste.

43:21 Now I'll go back over to my Selection tab, make sure that the New Buildings layer is selectable, and I will drag.

43:33 Simply go to the Copy command.

43:37 Make sure my target is my regular Buildings layer, and just say Paste.

43:44 And now you see they are pasted right on top of my existing one.

43:48 So if I needed to put them in another location or if I needed to scale them...

43:53 ...I could use the Copy Features tool on the Advanced Editing toolbar.

43:57 In this case, it worked really nicely, just to copy and paste them.

44:03 So now that I have these buildings in here, I want to work on this polygon containing...this is a lake inside of a park.

44:15 So what I want to do is manipulate this polygon in the middle here.

44:21 So we'll go back over to our selection.

44:23 And I'm going to set my Parks and my Lakes to be selectable...

44:28 ...and you notice here, I just clicked the map and I got the top feature selected.

44:33 But what if I wanted the park underneath it?

44:36 I press the N key and you see it cycles through the selection.

44:40 And notice over here on the Selection tab, it's changing the bold and the number of selected features as I do that.

44:50 And actually, in ArcGIS 10, this is a lot nicer, because instead of just randomly cycling through kind of like that...

44:57 ...I get this visual pop-up that allows me to click and choose the exact feature I want from a drop-down list.

45:06 So let's say that in this lake, maybe the water level has lowered and there's now an island that's visible in the middle of it.

45:14 So how do I create that island?

45:17 I'm going to use the Cut Polygon Features task and then draw in the sketch of the location of the island.

45:26 So you can use Cut Polygon Features for both cutting holes in polygons...

45:30 ...and also just slicing them in half and making multiple features that way.

45:39 So let's go over to the Sketch tool and just start drawing in my sketch.

45:49 So the reason that actually worked was because I had made sure that my feature closed in on itself.

45:58 But what happens if I did something like this?

46:02 How many of you guys have gotten this error that says "The Cut Polygons task could not be completed, et cetera"?

46:08 So one thing to do is make sure that you turn on edit sketch snapping on the Snapping window.

46:17 So you see that when I close my polygon here, I get that pop-up that says 'Edit sketch

vertices.'

46:25 So it's just one way to make sure that I've closed the line and I don't get that error message.

46:32 So let me turn off this Parks layer so you can see kind of what's going on here.

46:38 So now I have two features. I want to delete that center one so I'm just left with my outer shell.

46:46 And the way this is implemented in ArcMap is that this is, again, called a multipart polygon.

46:51 Multipart polygons don't have to have holes in the middle.

46:54 They can also be features like maybe the islands of Hawaii or something like that...

46:58 ...where it just references one row in an attribute table.

47:05 So how do I work with this?

47:06 Well, I can go into my Sketch Properties dialog and from here, if I wanted...

47:12 ...I could change my x- and y-coordinates, and z- and m-values, and that sort of thing.

47:17 But, let's say for example, that now the water level's back up.

47:20 We had a nice rain and a nice wet season. So how do I delete this?

47:24 It's just as simple as choosing the correct part. You notice the part flashes.

47:29 And I just right-click and say Delete, and now when I finish the sketch, it's gone.

47:35 So in ArcGIS 10, this is a lot nicer because we actually have more interactive selection ability.

47:41 So I can actually select the part that I want to work with using the map...

47:45 ...instead of having to scroll through that list on the Edit Sketch Properties window.

47:50 So when you guys go home and you've forgotten all these steps...

47:53 ...let me remind you to look at the "Common polygon editing tasks" section of the help.

47:59 So if you scroll down, it describes many of the tasks that you guys ask us about...

48:05 ...and in fact, some of these have even come from the User Conference.

48:09 A couple of years ago we had a user come up to us and said...

48:11 ...How do I reshape a polygon to match a line that doesn't overlap it?

48:16 So we actually wrote up the steps.

48:20 So here's a section on creating and editing multipart polygons...

48:23 ...creating new donut holes and island polygons. Does this sound familiar?

48:27 Set the target layer to the polygon.

48:29 Set the task to Create New Feature.

48:31 Click the Sketch tool.

48:33 Digitize the outer boundary, et cetera.

48:38 So this is just a really good way of trying to remember what task you're supposed to perform...

48:44 ...and the exact steps, 'cause some of them can be pretty complicated.

48:48 And we'll go back to Colin for a little bit more demo, a little more slides now.

48:52 Yeah, we have one more demo after this so...

48:58 All right, so the next topic we're going to look at is coincident features.

49:03 So it's pretty common for you to be working with spatial data that shares a common boundary.

49:10 Land parcels often share boundaries with each other.

49:14 Roads may form the edges of parcels.

49:18 Forestry compartments may be formed by rivers...

49:21 ...or some boundaries on compartments and forestry compartments may be formed by rivers.

49:26 So from time to time it's pretty common for us to need to modify and edit things that are common...

49:33 ...in more than one feature class or across multiple feature class...or within the same feature class for that matter.

49:40 So the tools that we have to modify and change common things that are coincident with each other...

49:46 ...are located primarily on the Topology Editing toolbar.

49:50 So the Topology Editing toolbar has many different tools on it, several of them.

49:55 It has construction tools for constructing topologies.

49:59 It has tools to validate topology.

50:02 It has tools to fix errors that are discovered by the topology tools themselves for you.

50:08 And then it has some tools for editing coincident geometries.

50:11 Now, in order to use all of these tools, you will need an ArcEditor or ArcInfo license level...

50:19 ...and some of these tools will require you to predefine a set of topology rules and then to validate those rules...

50:27 ...in order to discover errors and then to fix them with the tools that are there.

50:31 But for the simple tasks where you don't necessarily want to have a validation of a series of rules...

50:39 ...you may want to consider using something we call map cache.

50:43 What the map cache is, is we're taking a subset of the tools on the Topology toolbar...

50:48 ...and we're making them available for you to use without having to go through the entire geodatabase topology.

50:55 And the map cache is developed, sorry, map topology is developed using the little Map Topology tool...

51:00 ...which you'll see is on the toolbar right over here.

51:03 Now, depending again on the license level that you're using...

51:07 ...you may get more or fewer of these tools available with a map topology.

51:13 Now map topologies are available with an ArcView license, and you get fewer of the tools.

51:18 With your ArcInfo license, you get more of the tools. In fact, you get Planarize as one of them.

51:23 So map cache, map topology, when you're working with it, will also work with shapefile features...

51:30 ...for features out of shapefile and geodatabase.

51:33 Whereas a full geodatabase topology will just work with features from a geodatabase.

51:40 So here's the scenario.

51:41 You're working with some data, you've got some shapefiles, they have forestry compartments...

51:45 ...you've got a feature class that has some rivers, and the rivers need to be coincident with the boundaries...

51:51 ...of these forestry compartments, and they're not, and you need to do some work on them.

51:56 So what would you do? So you begin by building a map topology.

52:00 So you temporarily create, or ask the software to look for coincident features within the extent you're currently working.

52:08 So the map topology will go and look to see are these things coincident or not.

52:13 And it'll give you the ability with map topology to see who is coincident.

52:18 Who's participating in something?

52:20 And then you'll get some available tools that'll allow you to select...

52:24 ...and edit those coincident features and modify them if necessary.

52:28 So if we look at some examples, here is an example of a boundary or a line...

52:33 ...that is being shared by multiple polygons, two parcels in this case.

52:39 I built the map topology. I used what is called the Topology Edit tool to select that common boundary.

52:47 Now you'll remember that if you use the standard Edit tool in the Editor menu...

52:52 ...when you select something the color is cyan. Remember?

52:57 If you select with the Topology Edit tool, the color of the feature being selected is magenta.

53:03 So this cues you visually that you're selecting something that has some kind of coincidence with something else.

53:11 So to view the coincident features that are participating right now in that particular possible edit you're doing...

53:18 ...you can use the Show Shared Features button, and it'll show you which layers the common features...

53:24 ...are being derived from and which object IDs.

53:27 In other words, which identifier of those features you're currently working with.

53:32 And you can choose to check off and remove some of the features from being modified at the same time.

53:37 Now in the example that we're using above there, we're modifying both parcel lines...

53:42 ...parcels, and zoning data at the same time.

53:45 Three different feature classes that all have some coincidence at that location.

53:51 Now to modify the feature, I've selected it with the Topology Edit tool and I've moved it.

53:56 I used the same Edit tool to move it and notice how it rubber-banded.

54:01 When I've completed the move, it immediately maintained all the connectivity that was needed...

54:07 ...and it modified all three feature classes at the same time.

54:13 So this is an example of using coincident geometry editing tools.

54:19 And this is available with an ArcView license, so you have no excuse for not using it.

54:23 They're very powerful, very, very useful to use.

54:26 Looking at some other things you can do to a selected topology edge.

54:31 We call them topology edges and topology nodes, by the way.

54:34 So other things you can do is to reshape the edge.

54:37 So there's a task under the Task list to Reshape Edge.

54:42 And Modify Edge is another of the tasks that you can perform.

54:46 Modify Edge is very similar to modifying an existing feature.

54:49 You can add vertexes, delete vertexes, and move existing vertexes around...

54:54 ...but you're moving them around not on a single feature...

54:57 ...but on all of the features that are being modified in a coincident manner at the same time. That's very, very powerful.

55:06 Now some other things you might want to do, and this is a little more advanced when working with a topology edge...

55:11 ...is to take the topology edge and split it at some locale.

55:16 Then to take the portion that you split away and modify it independently of the other portion that remains.

55:24 So in this example, we selected an edge, we split the edge. This is a topology edge.

55:30 We split it at a locale, took the segment that we had gotten on the left-hand side of the split...

55:36 ...moved and modified it, and then completed the edit...

55:39 ...and you'll notice that we have created a slightly different feature.

55:43 We've got that kind of step there instead. Now that's a little more advanced.

55:47 To add a little more advance to that, we can do this as well.

55:51 What if you have a topology edge that you would like to remain anchored at the bottom...

55:57 ...but you want to disconnect it from the top, move and snap it somewhere else at the top, but the bottom's got to remain anchored?

56:04 So in this case, what we would do is, we select the topology edge...

56:09 ...and we make sure that we get the edge by holding the E key on our keyboard...

56:13 ...with the Topology Edit tool active to select the edge.

56:17 Then we hold the N key on our keyboard down and select the node at the top as well.

56:24 So I'm really selecting the topology node, that common point, and the common line, or edge, shared by multiple features.

56:32 So the N key and the E key, to select those two.

56:36 And then, to disconnect them from their parent, or from the other features, I hold the S key down on my keyboard.

56:44 And the S key will change the cursor to a four-arrow cursor as you see in the middle graphic that I'm showing you here.

56:52 And once that happens, you know you have now disconnected both the edge and its node...

56:57 ...and you can move it and snap it somewhere else and then release and complete the edit.

57:02 Little more sophisticated, but it's fairly common. You know, you have to move a boundary in one locale...

57:06 ...after the surveyor's come back and said, It was wrongly put in. So you may need to do that.

57:13 So let's switch to a demonstration of some of these things...

57:16 ...and then we'll finish up after the demonstration with a couple of slides on new stuff in ArcGIS 10...

57:21 ...and then we'll take some questions after that. All right.

57:25 Okay, so in this area I have some parcels that...they're currently one big parcel...

57:31 ...but we've recently decided that these are going to be able to become...from single family...

57:39 ...to multifamily from the zoning commission.

57:42 So I've added in some of the lines where I'm going to be splitting these big polygons...

57:47 ...but I still need to add in one more right here.

57:53 So to create this line, I've been given an offset value...

57:58 ...so the line actually needs to start somewhere offset from this point right here.

58:03 Well there's not actually a very good way to do that.

58:06 As you guys have probably found out, that it's completely acceptable to create a construction line...

58:11 ...or some kind of temporary feature or temporary segment to get your work done.

58:16 So I know that one way I could do this is to create a segment of the length of the offset...

58:22 ...and then go back and delete that segment later.

58:27 So I also know that I'm going to be selecting a lot of features, but I don't want to actually be moving them.

58:32 So now's probably a good time to turn on the Sticky Move Tolerance.

58:36 So I go to the Editor Options, and we'll just kick up the Sticky Move Tolerance to maybe 10 pixels, and say OK.

58:45 So now I click this parcel, and you see I really have to move it.

58:50 It's not actually going to move until the feature has been moved greater than 10 pixels.

58:58 So let's go ahead and create that first segment and my line to split my parcel.

59:03 So I changed my target over to my boundary lines, lot lines subtype...

59:08 ...we'll snap to the end, and then enter that offset value I was given.

59:14 So make the length say, 11 meters, snap to this edge, and then I want to create this other segment perpendicular.

59:28 So right now it's snapping using the Perpendicular to Sketch option. You see, right there it is.

59:35 And we'll click to create that vertex and then finish the sketch.

59:39 So what I want to do is go back and delete this vertex right here.

59:43 So I just right-click and say Delete Vertex, and when I finish the sketch...

59:47 ...I'm left with a feature that's exactly where I wanted it.

59:51 So let's use this feature to split this polygon here.

59:54 So I'm going to show you a couple of methods to do this, and so depending on your license, one may work better for you.

1:00:02 So I've already shown you Cut Polygon Features, so let's use that again to actually split a polygon across.

1:00:08 So I'm going to select my polygon, and then go up to Cut Polygon Features.

1:00:14 So I could just sit here and trace this line, or snap to this line, and cut through it.

1:00:21 But let's say that this line were actually a little more complicated.

1:00:25 So I'm going to quickly reshape it just to kind of show my point here.

1:00:32 So what if my line looked like this? Or what if it's curved?

1:00:35 How can I get this shape into the line I want to use to cut my polygon with?

1:00:41 Well, here's the way to do this.

1:00:43 So I'm going to snap to the end here, right-click and say Replace Sketch...

1:00:49 ...and notice how my sketch just kind of sucked up the shape of that line that I created there.

1:00:55 So again, that was called Replace Sketch.

1:01:00 And now I've finished the sketch, and you see that I have this polygon that's now created using that exact shape.

1:01:07 So why didn't I use Trace here?

1:01:09 And the answer is because in ArcGIS 9.3, Trace just won't work with cutting polygons.

1:01:17 The problem is that Trace requires the line to be selected, but Cut Polygons requires the

polygons to be selected...

1:01:25 ...so the way to get around that in 9.3 is to download a developer sample called Cut Polygons Without Selection...

1:01:31 ...and it will allow you to use the Cut Polygon Features without requiring it to be selected...

1:01:36 ...which therefore allows you to use Trace.

1:01:39 So in ArcGIS 10 this is fixed by the way...

1:01:41 ...so you can use Trace without a selection, and so reshaping and tracing all work fine.

1:01:49 So let me show you another method now.

1:01:51 So if you have an ArcEditor or ArcInfo license, you can use this way.

1:01:56 It's on the Topology toolbar, but I do not need to have a topology to use it.

1:02:02 So I'm going to set my target layer to my parcels, 'cause that's what I want to split...

1:02:09 ...and I will select each line that I want to use to make the split.

1:02:18 Then I go to the Construct Features command.

1:02:23 Construct Features is quite powerful, because it allows you to both create new polygons using selected features...

1:02:30 ...to create polygons using the existing features...

1:02:33 ...but it also allows you to split your existing features in the target layer...

1:02:38 ...which is my parcels, using these selected lines.

1:02:42 In ArcGIS 10, we've actually pulled these apart into two separate commands...

1:02:45 ...so it's much easier for you to figure out what you're supposed to be doing.

1:02:49 We have one that creates polygons and another command that splits polygons.

1:02:54 So I click OK. And now you see that I end up with a whole bunch of new polygons.

1:03:00 So it split each one of these using that line. So now let's go ahead and attribute these features.

1:03:07 Remember I said that we've been approved to change these from single family to multifamily residential.

1:03:14 So I'll turn off my selection from my other lines and just drag a box and select the whole thing, all my parcels here.

1:03:21 I'm going to go to the Attributes window. You see it lists every single feature that I have selected in my Parcels layer.

1:03:31 So if I click one of these features here, and I change the zoning from residential to

residential multifamily...

1:03:39 ...it only updates that one feature.

1:03:42 But remember, I have all these that I need to change it to.

1:03:45 So what I can do is go up to the layer name and it will allow me to change the attributes for every single feature in the layer.

1:03:58 So now when I go to all my other features, it's changed them. And by the way, this is called a coded value domain.

1:04:06 This is how you get a drop-down in your Attributes window. It's a coded value domain.

1:04:12 It's available for ArcView licenses, but you must create a geodatabase to use it. It cannot be used inside of shapefiles.

1:04:22 So let's think about what these updates did to my coincident features.

1:04:28 I now have a lot of shared features that I didn't have before.

1:04:32 So you can either build a map topology if you have ArcView...

1:04:35 ...or in my case, I actually have a geodatabase topology, because I wanted to set up some rules that say...

1:04:41 ...my parcels should not overlap each other, my parcels should not have gaps, and those sorts of things.

1:04:48 So that's the advantage of a geodatabase topology...

1:04:51 ...is it's much more stringent in terms of the spatial integrity that it allows you to apply to your data.

1:05:01 So I'm going to use the Topology Edit tool.

1:05:03 And again you can use this with either a map topology or a geodatabase topology, and if I select an edge...

1:05:09 ...I can open the Shared Features window and it will show me which features share that particular edge.

1:05:18 So you notice I'm sharing the boundary and also the parcels layer.

1:05:22 So if I needed to make an update to this feature, or this edge...

1:05:26 ...I should probably be using the Topology tools instead of the regular editing tools.

1:05:30 So let me show you why. Let's say that this line here, this is my road, it needs to be reshaped...

1:05:38 ...and it's going to be extended to look more like this one over here.

1:05:42 So the road will be expanded and it'll go over here...

1:05:45 ...so I need to change this corner of my parcels once the road gets expanded.

1:05:50 So if I go to the Reshape Feature task, Reshape Feature is only going to update one selected feature.

1:06:01 So right now you see that I have my parcels selected and it only updates that one.

1:06:06 So if I cut off that edge, you see that it left me with that boundary line not being updated.

1:06:13 So that's not what I want. I really need to be using the topology editing tools.

1:06:17 So if I go back to the Topology Edit tool, select that edge, and I change my task down to Reshape Edge.

1:06:26 So you see, that's under Topology tasks compared to being under Modify tasks.

1:06:31 And now when I draw that same line, it updated both of those features at the same time.

1:06:38 And the same thing would apply if I went to modify the edge. Like let's say I needed to insert a vertex here.

1:06:45 It's actually going to be inserted on both of my features.

1:06:52 All right. Back to Colin.

1:06:55 All right. Our last topic, if you have not already gone to some sessions on ArcGIS 10...

1:07:01 ...just a few brief things to look out for that are new and improved...

1:07:04 ...and fun things to start exploring when you do get your hands on ArcGIS 10.

1:07:10 Some interesting things. No longer the same options on the Editor toolbar for you to choose the layer, choose a task.

1:07:17 No need to do that anymore. When you start editing in the ArcGIS 10 ArcMap environment...

1:07:24 ...you're immediately going to get what's called a Create Features window.

1:07:28 And so all available layers that are editable will appear in the Create Features window for you...

1:07:34 ...and you'll notice something interesting there, is that they actually follow...

1:07:37 ...and have the same symbology as they had in the layer.

1:07:40 Also, for each of the editable layers it's possible to have it create a features template...

1:07:46 ...and in the feature template you can predefine symbology and the appropriate editing tools...

1:07:52 ...that should be used to create or edit those kinds of features.

1:07:56 So you can remove tools or disable certain tools that you don't want somebody else to use

when creating a parcel.

1:08:04 You can leave them with just specific editing tools to create parcels with.

1:08:08 So these are things that you need to look for.

1:08:10 There are feature templates that are stored with the layer and with the map document for layers that are editable in ArcMap.

1:08:18 And then there's a Create Features window to manage all those feature templates as well.

1:08:23 Also, the editing environment honors all the layer properties.

1:08:28 So in your layers, if you had a definition, so you preselected only 20 features out of a couple of hundred...

1:08:36 ...and your layer consisted of that selected 20, then the edit tools will honor the selection of those 20...

1:08:43 ...and only let you edit the 20, not all hundred of them.

1:08:46 This is pretty good. So any of the definitions that were there, any of the layer properties that were set...

1:08:51 ...such as symbology and preselections, and so forth, are honored by the editor.

1:08:57 You'll notice the new snapping environment when working with the editor.

1:09:01 With editing in ArcGIS 10, snapping is always on, so you don't have to go and create snap agents.

1:09:08 You don't have to modify or do anything. It's always there.

1:09:11 What's nice is that there's a new little snapping menu that has different varieties of snapping that you can invoke and use.

1:09:19 Also, if you do, and you really like the old snapping, there is an option to turn on what is called classic snapping...

1:09:27 ...so you can get your old snapping back if you wish to. But it's one or the other.

1:09:32 So you either have classic snapping or the new variation of snapping, and not both of them.

1:09:37 So that's something to be aware of.

1:09:40 So snapping is much simpler, and as we said, always enabled...

1:09:44 ...and works across the board with multiple tools, not just the editing tools.

1:09:48 So you have access when working with ArcGIS 10 to a much quicker way of getting to the toolbars.

1:09:54 So you'll notice in the graphic below, I'm busy sketching, and as I'm sketching...

1:09:59 ...a toolbar is there right at the point that I'm sketching...

1:10:02 ...saying, hey, by the way, these are some of the construction tools you can use while sketching this feature right now.

1:10:08 So you'll notice those constraints for parallel and perpendicular that used to be right-clicks...

1:10:14 ...they're on that little menu there right away for you.

1:10:16 So they're appropriate, they're in front of you, they're right there.

1:10:19 So the whole workflow is much, much simpler, and much easier to use in ArcGIS 10.

1:10:25 So it's much easier for you to edit existing features.

1:10:28 What's another area that's really nice is that when you're editing or modifying an existing feature...

1:10:34 ...there's a new Vertex Editing menu that'll pop up as well, and you can select multiple vertexes to target for a delete.

1:10:42 You can insert vertexes very easily and delete a vertex very easily with the Vertex Editing.

1:10:47 So select, move, and delete multiple vertexes.

1:10:51 The thing Rhonda mentioned about selecting things that are in overlap.

1:10:55 Remember, I told you to use the N key to kind of cycle through selected features that are in overlap.

1:11:00 Well, there's actually what they call a chip that pops up for you...

1:11:04 ...when you have multiple...or features that are in overlap that can be selected.

1:11:08 The little chip gives you a drop-down menu and says, Which are the features do you want in this locale?

1:11:14 So a lot more response and feedback for that.

1:11:17 To start editing, you don't have to go to the Editor menu either.

1:11:21 You can just right-click on an editable layer and as you would have gone to its properties...

1:11:25 ...one of the choices in the table of content right-click is Start Editing.

1:11:29 So you can invoke or start the editor right there and then if you wish to in the table of content.

1:11:35 You have a lot better on-screen display feedback as well.

1:11:39 So things like snapping will give you much better feedback.

1:11:42 There are enhancements to topology editing and there are several new geoprocessing tools

for editing.

1:11:49 So you can automate some batch processes through these geoprocessing tools...

1:11:54 ...so you may want to add them into, for example, a Python script to be used to do some batch processing.

1:12:00 So there are several tools there.

1:12:02 And there are also some new workflows, a lot of new workflows in fact for editing parcels.

1:12:07 And I would recommend, take a look at the help doc.

1:12:09 Rhonda's done an awesome job of writing that and creating the tutorials and helping with different workflows and scenarios.

1:12:17 And remember, resources.esri.com is a good locale to go to get some additional help.

1:12:24 So, there are a few, few more editing related topics around today.

1:12:30 Geodatabase Editing Workflows is on at one-thirty, Web Editing with ArcGIS Server at one-thirty...

1:12:36 ...and Editing Parcels in ArcGIS in room 3 at one-thirty as well.

1:12:41 And tomorrow there's a What's New session, which will cover some editing stuff too.

1:12:45 Also the island downstairs is open till one-thirty, and at this point there are some Virtual Campus classes...

1:12:51 ...that you may want to consider and some instructor-led classes.

1:12:55 The Data Production and Editing one's a pretty good one...

1:12:57 ...and then there are two introductory ArcGIS classes, Desktops 2 and 3 that also cover some editing processes.

1:13:04 So we're open for some questions.

1:13:07 I'm going to relax and Rhonda's going to take the questions. I'm being naughty.

1:13:12 Okay.

1:13:13 And don't forget the survey forms everybody please.

1:13:16 Okay. [Audience question] If snapping's always turned on in ArcGIS 10, will the Spacebar disable it?

1:13:21 Okay, the question is, Because snapping is always enabled, can I still disable it using the Spacebar in ArcGIS 10?

1:13:27 And the answer is absolutely. You can, when you're sketching, if you just hold down the Spacebar, and you say...

1:13:34 ...I don't actually want to snap to that, it'll just, no snapping happens at all.

1:13:42 Any more questions? Yes, sir?

1:13:43 [Audience question] Is ArcGIS 10 going to have the Topology toolbar also?

1:13:49 The question is, Does ArcGIS 10 have the Topology toolbar? And the answer is yes.

1:13:52 There's not really too many major changes to the way topology works in ArcGIS 10.

1:13:58 The big things were just little enhancements.

1:14:02 For example, we did add six new geodatabase topology rules that'll be pretty useful for you guys.

1:14:08 And then the other thing is, when you're actually editing topologies, you may have seen these demos...

1:14:14 ...where you're using the Edit tool, and then you can select multiple vertices and drag vertices and delete vertices...

1:14:23 ...and that sort of thing, so all that's also available inside the Topology Editing tool as well.

1:14:32 If you have suggestions, by the way, come down to the island...

1:14:34 ...and talk to the developers about suggestions for the topology tools if you like for future.

1:14:39 Yeah, we're actually looking into that area, what we can do to enhance it and for some future release to make it easier. Okay.

1:14:49 [Inaudible audience question]

1:14:52 Is there a way to clear the snapping environment?

1:14:54 [Inaudible audience question]

1:14:56 Okay, the question is, How do I uncheck multiple layers in the Snapping Environment window?

1:15:03 And unfortunately the answer is, it's not very easy.

1:15:07 This came up yesterday I think.

1:15:10 Someone asked us that on the island and we were sure holding down the Ctrl key would work.

1:15:15 [Audience comment] They actually said that in one of the classes, but I...

1:15:17 Yeah, it's probably the EGUG or something like that, and we tried it out and we couldn't believe it didn't work...

1:15:25 ...so we think that was a bug, that it may have worked before...

1:15:27 ...and doesn't work now or something like that. So we'll look at that.

1:15:31 This gentleman had a question. [Inaudible audience comment]

1:15:34 Oh, okay. So any other questions? No? Alright, thank you very much for attending, everyone.

1:15:42 Great. Have a great rest of the conference and enjoy the party tonight.