



GIS FUNDAMENTALS | 3

| Introduction to GIS – ArcGIS Pro

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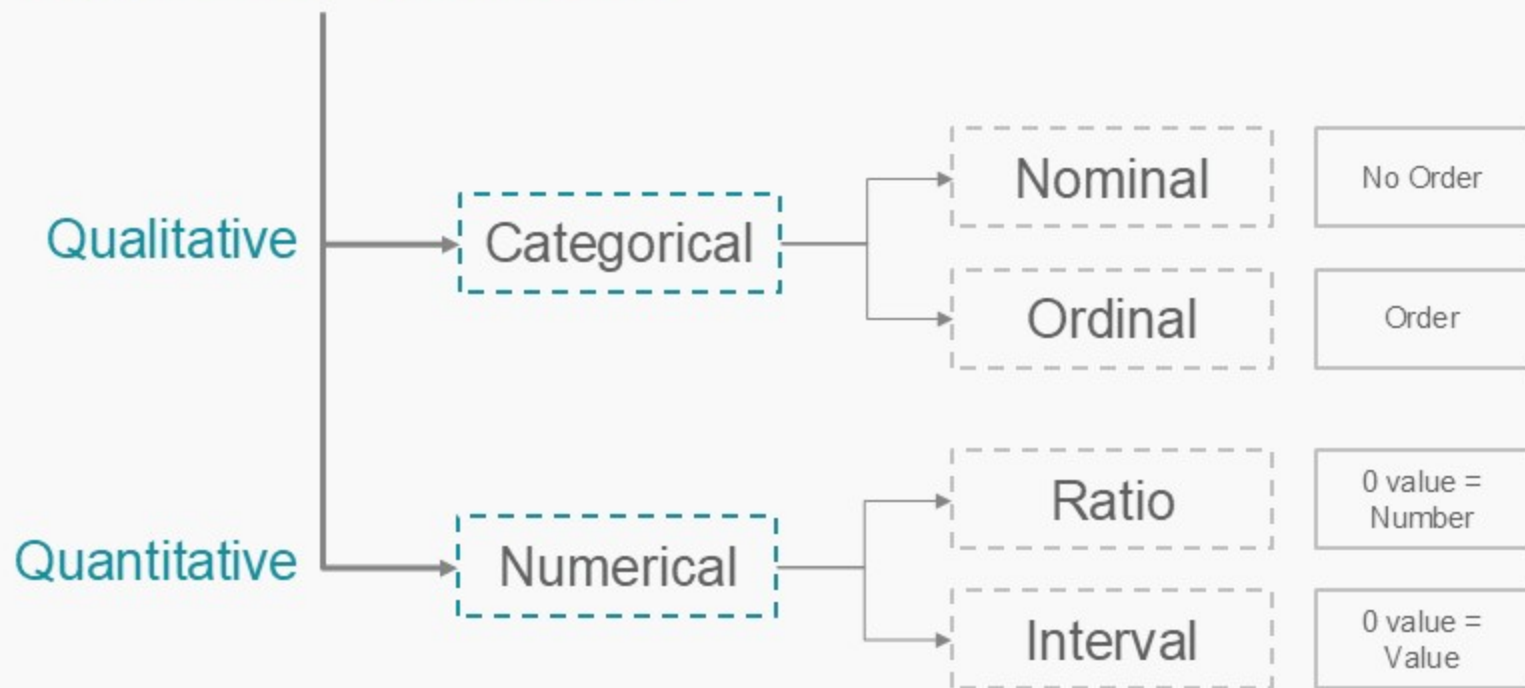
Selection

01

Types of Variables

Qualitative Vs Quantitative

Types of Variables



02

Controlling Layers

Zoom – Group – Scale Range – Query

Map Layer

- Name
 - Symbology
 - Visibility
 - Order
 - Scale
-

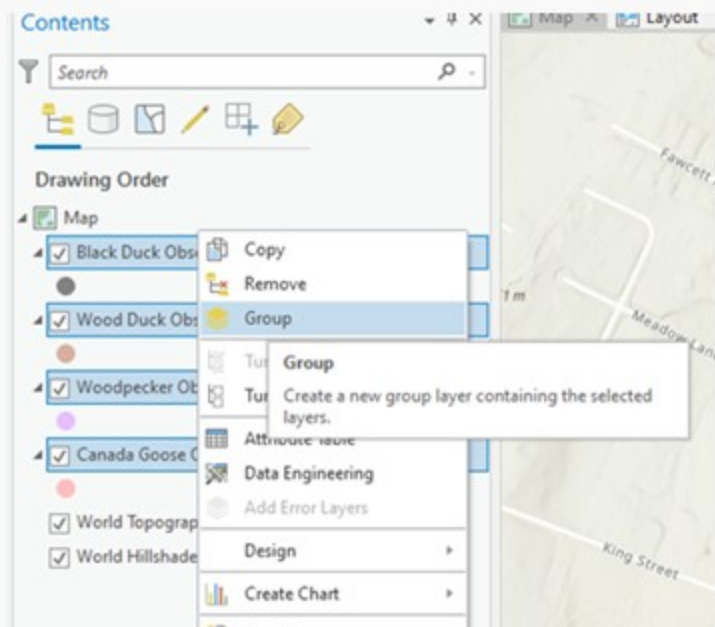
Zooming

- Zoom to Layer
 - Zoom to Selection
 - Fixed Zoom In
 - Fixed Zoom Out
 - Full Extent
 - Bookmarks
-

Bookmark

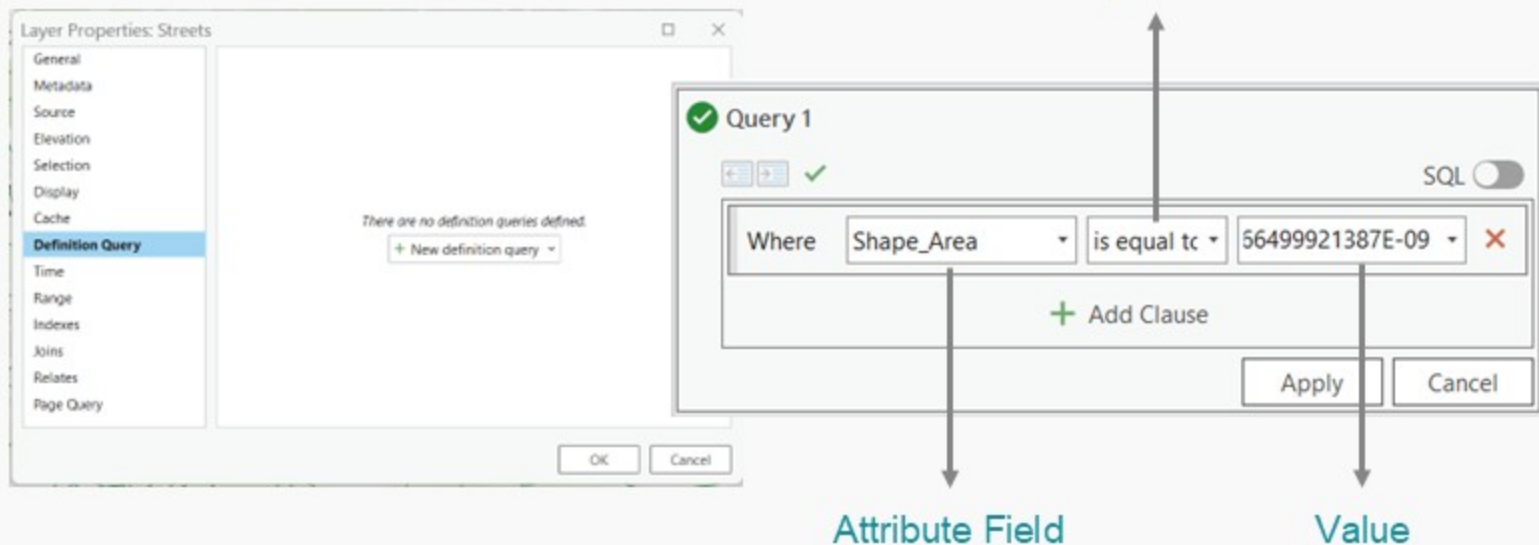
- New Bookmark
 - Export Bookmark
 - Import Bookmark
-

Grouping



Definition Query

Attribute queries have three basic components:
an **attribute field**, an **attribute value**, and an **operator**.



Definition Query

Query data using multiple attribute queries joined by an **AND** or an **OR** operator

OBJECT ID	Rent	Type	Year built
1	900	Apartment	2011
2	1300	House	1956
3	600	Apartment	1989
4	2000	House	2000
5	2500	House	1998
6	700	House	1964

Type Is Equal To Apartment
AND Rent Is Less Than 800

OBJECT ID	Rent	Type	Year built
1	900	Apartment	2011
2	1300	House	1956
3	600	Apartment	1989
4	2000	House	2000
5	2500	House	1998
6	700	House	1964

Type Is Equal To Apartment
OR Rent Is Less Than 800

The **AND** operator only selects features that **meet the criteria in both attribute queries** (in this case, apartments that cost less than \$800 to rent). The **OR** operator selects features that **meet the criteria in either attribute query** (in this case, apartments or houses that cost less than \$800 to rent).

Imagine that you are a GIS analyst at a local land trust, and you have been assigned to a project where you must **prioritize land parcels for conservation**. Review each table and choose the **correct attribute query** to select the features that you will use for the parcel prioritization.

OBJECTID	Name	Status
1	Yellow-billed Cuckoo	Threatened
2	Southwestern Willow flycatcher	Endangered
3	Dudley Bluffs twinpod	Threatened
4	North Park phacelia	Endangered
5	Greenback Cutthroat trout	Threatened

Which two attribute queries would select all the endangered species? (Choose **two**.)

- ☐ Status Does Not Equal Endangered
- ☒ Status Is Equal To Endangered
- ☒ Status Does Not Equal Threatened
- ☐ Status Is Equal To Threatened

OBJECTID	Acres	Cost
1	43	3,500,00
2	40	695,000
3	64	982,000
4	116	5,900,000
5	56	776,000

Which attribute query would select all parcels that have more than 50 acres of land and cost less than \$1,000,000?

- ☒ Acres Is Greater Than 50 AND Cost Is Less Than 1000000
- ☐ Acres Is Greater Than 50 OR Cost Is Less Than 1000000
- ☐ Acres Is Greater Than Or Equal To 50 AND Cost Is Less Than 1000000
- ☐ Acres Is Greater Than Or Equal To 50 OR Cost Is Less Than 1000000

OBJECTID	Street_Type	Toll
1	Highway	Yes
2	Local	No
3	Freeway	No
4	Highway	No
5	Local	No

Which attribute query would select all highway or freeway streets?

- ☒ Street_Type Is Equal To Highway OR Street_Type Is Equal To Freeway
- ☐ Street_Type Does Not Equal Highway OR Street_Type Is Equal To Freeway
- ☐ Street_Type Does Not Equal To Highway AND Street_Type Is Equal To Freeway
- ☐ Street_Type Is Equal To Highway AND Street_Type Is Equal To Freeway

1- Definition Query

Query Exercise

Build your Query on HealthCare.aprx

- 1. Which Nursing Homes that exist in vancouver which have flu cases more than 100?**
- 2. How many Hospitals and Medical clinics that have Flu cases less than 100?**

Visibility Range

- Controlling **when** to display features
- Setting a **visible scale range**—referred to as scale-dependent drawing—helps organize how your layers function in the map at different scales.
- Layers turn on/ off when scale threshold is crossed
- You can adjust the Scale Range for a specific **Group**

2- Exercise

1. Visualize the Campgrounds that don't have showers

2. Visualize the peaks at scale of 1:500 000 and 1:50 000

03

Selection

Interactive Selection - Select by Location - Select by Attribute

Interactive Selection

- Select (Rectangular – Circle -etc)
 - Add to selection → shift + select
 - Remove from Selection → Ctrl + Select
 - Adjust the Selection Combination Mode (The default mode)
-

Select by Location
Vs
Select by Attribute

Select by Location

Which Peaks are **near** Trails?



Which highways **intersect** Highlands County?



Which Counties are **adjacent** to Highlands County?

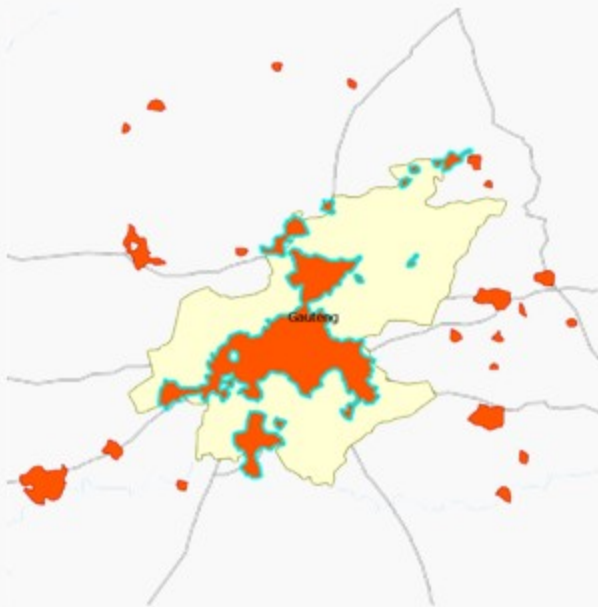


Which trees are **inside** the park?



RELATIONSHIPS

Select by Location



Which urban areas **Intersect** with Gauteng?

UrbanAreas_SouthAfrica X

Field: Add Calculate Selection: Select By Attributes Zoom To Switch Clear Delete Copy

	OBJECTID	Shape	scalerrank	featurecla	area_sqkm	min_zoom	Shape_Length	Shape_Area
30	30	Polygon	5	Urban area	434.341	5	0.506626	0.021086
31	31	Polygon	7	Urban area	49.776	7	0.269506	0.004468
32	32	Polygon	5	Urban area	220.074	5	1.022823	0.019778
33	33	Polygon	9	Urban area	13.238	7.7	0.134309	0.001189
34	34	Polygon	7	Urban area	23.825	7	0.182302	0.002141
35	35	Polygon	9	Urban area	18.15	7.7	0.213703	0.001632
36	36	Polygon	7	Urban area	76.509	7	0.332048	0.006884
37	37	Polygon	9	Urban area	14.071	7.7	0.14478	0.001266

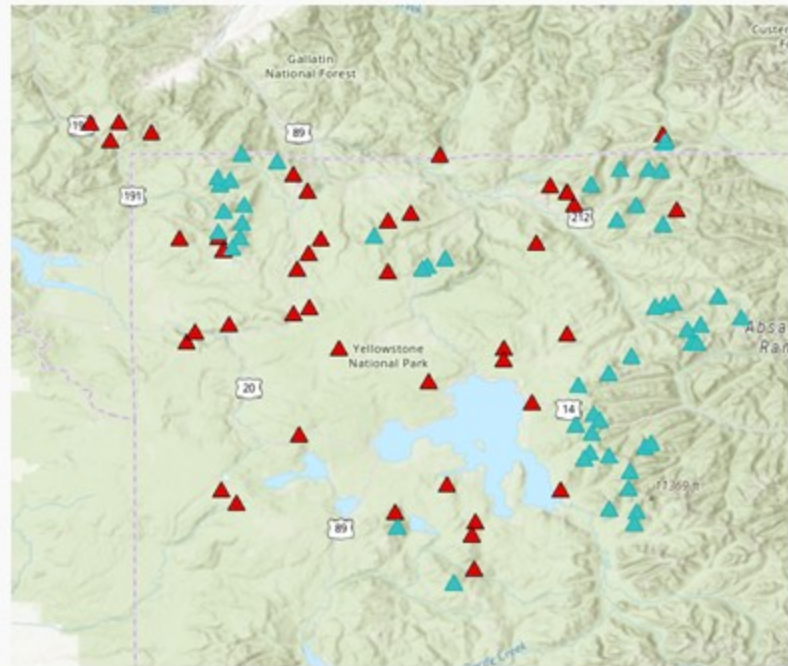
10 of 117 selected

Filters: 100%

RELATIONSHIPS

What is the source of the layer?

- Make Layer from Selected Feature
- Export Feature




Location Query


Target Layer



Source Layer

Spatial
Relationship


Select By Location

Input Features 



UrbanAreas_SouthAfrica 



Relationship

Intersect 


Selecting Features

Gauteng  

Search Distance

 Decimal Degrees 

Selection Type

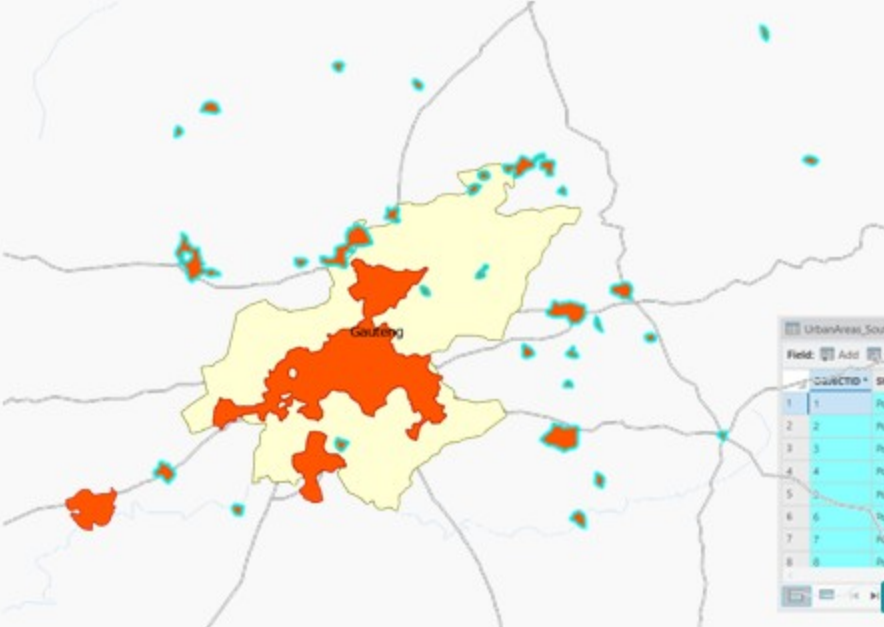
New selection 

☐ Invert Spatial Relationship

Apply OK

Select by Attribute

Which urban areas have
area_sqKm **less than 300**?



UrbanAreas_SouthAfrica

Field: Add Calculate Selection: Select By Attributes Zoom To Switch Clear Delete Copy

OBJECTID	Shape	scalarrank	featurecla	area_sqkm	min_zoom	Shape_Length	Shape_Area
1	Polygon	6	Urban area	21.618	6	0.220528	0.001895
2	Polygon	8	Urban area	32.4	7.6	0.281662	0.004614
3	Polygon	9	Urban area	21.359	7.7	0.161124	0.001682
4	Polygon	9	Urban area	14.322	7.7	0.138201	0.001263
5	Polygon	8	Urban area	14.417	7.7	0.14317	0.001273
6	Polygon	7	Urban area	98.969	7	0.572995	0.006376
7	Polygon	7	Urban area	28.343	7	0.190102	0.002512
8	Polygon	5	Urban area	131.169	5	0.481016	0.011628

111 of 117 selected

Filters 100%

Attribute Query

Name of
Attribute Field

Name of Value

Relationship between
attribute field and value
(operator)

Select By Attributes

Input Rows
UrbanAreas_SouthAfrica

The input has a selection. Records to be processed: 111

Selection Type
New selection

Expression
Load Save Remove

SQL ☐

Where area_sqkm is less th 300

+ Add Clause

☐ Invert Where Clause

Apply OK

Attribute Query

Name of
Attribute Field

OR

Name of Value

Relationship between
attribute field and value
(operator)

Select By Attributes

Input Rows
UrbanAreas_SouthAfrica

The input has a selection. Records to be processed: 66

Selection Type
New selection

Expression
Load Save Remove

SQL ☐

Where area_sqkm is less th 300

And calerank is greate 7

+ Add Clause

☐ Invert Where Clause

Apply OK

2 Scenarios

- Select the Campsites that mapped with GPS and its type is Stock
 - Select the Campsites that mapped with GPS and the Campsites that type is Stock
-

3- Selection

SouthAfrica

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