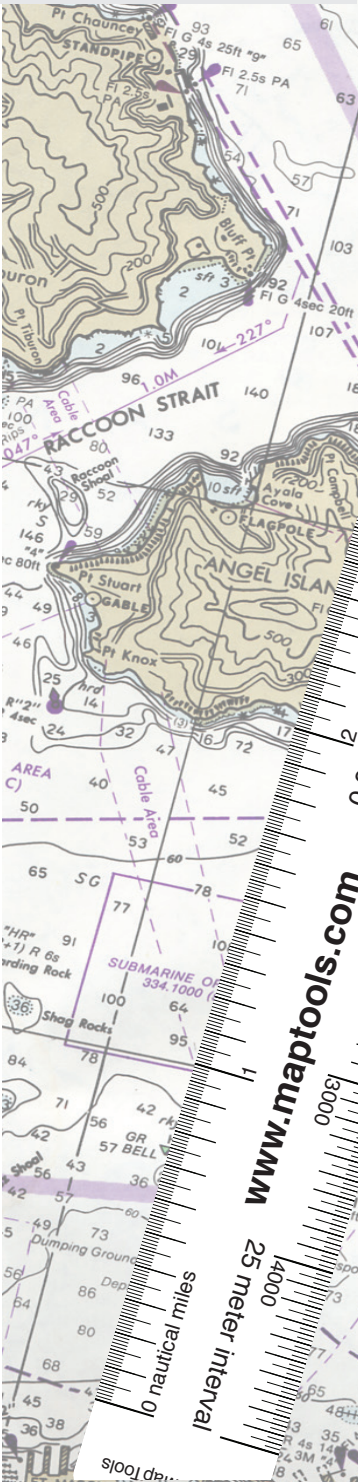
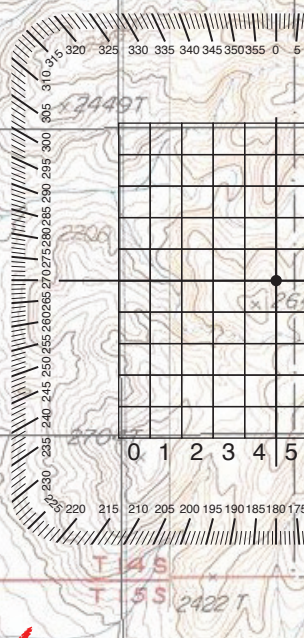


July 2010

MapTools



Tools for plotting GPS coordinates.



Hello,

MapTools was founded in 1996 as an outgrowth of teaching map, compass and GPS navigation skills to search & rescue team members. I was looking for a way to make my instructional materials and simple grid tools more widely available. Today, MapTools is still a one man operation, run from my home. MapTools has grown to be the world's leading supplier of coordinate plotting tools. MapTools' products are in daily use by many federal, state and local land management agencies, along with military, law enforcement, and search and rescue teams around the world.

It has always been a MapTools strength that we carry a wide variety of tools for many different map scales. Even so, we can't carry a tool for every possible map scale, since the possibilities are endless.

We are continuing to expand the number of retail stores that carry our products. Wholesale pricing is available to qualified retailers and other organizations that purchase our tools in quantity. Please email for details.

For questions about using the tools, please refer to the Reference Information in the back of this catalog and to our tutorials at www.MapTools.com.

If I can be of assistance or answer your questions, please do not hesitate to email or call.

John Carnes

john@maptools.com

Catalog Layout

The tool descriptions in this catalog make it easier to find what you're looking for, by highlighting the Item Id., Price, and scales included for each tool. Icons provide additional information in an easy to scan format.

Scales:

1:24,000 x 1km

1:50,000 x 1km

1:500,000 x 10km†

UTMSlots

\$8.00/ea



Indicates one of our most popular, top selling tools.



Indicates tool includes the 1:24,000 scale for USGS 7.5 minute topographic maps.



Indicates a new item.



Indicates tool is sized to easily fit in a shirt pocket. (2.75" x 2.75")



Indicates tool is sized to fit into CD sized storage pockets. (4.75" x 4.75")

About the Tools

Each of our tools has been designed to be used with specific map scales. You must select tools that match the scales of the maps you use! MapTools provides tools in the most commonly used map scales, and we also provide tools for more specialized scales. By far the most common scale encountered in the Continental United States is 1:24,000 which is the scale used on most of the USGS 7.5 minute topographic maps. This catalog includes a special icon to indicate the tools that have a 1:24,000 scale on them.



We sell six different styles of tools for plotting coordinates. The grid style tools are the easiest tools for a beginner to learn to use, but they measure with less precision than some of the other styles. For common scales, the choice of style is mostly based on personal preference. For more information on using the various styles of our tools, see the Reference Information in the back of the catalog.

Our clear UTM/MGRS tools are all printed on 30mil clear plastic stock, similar to a credit card in both thickness and flexibility. Our Map Rulers are printed on 20mil white plastic stock. All of our tools are printed on precision printing equipment to provide sharp and accurate markings. Every tool has a clear protective coating applied during the printing process to protect the markings from wear.

The tool images in this catalog have been scaled to fit the catalog layout. Do not attempt to use them for navigation. Overall tool size is indicated with the "Pocket Size" and "CD Size" icons, or is listed in the tool description. Internal cutouts and holes in the tools are shown by a thin red line.



Two Tools in One

It easy to use the same UTM tool when the scales are multiples of 10

It's easy to use a single UTM tool on several map scales that are multiples of 10 of each other. For example, a 1:100,000 x 10km tool can be used as a 1:10,000 x 1km tool, and as a 1:1,000,000 x 100km tool. Just multiply or divide both the scale and the grid distance by 10.

Some of our tools are marked for both scales, others are not marked, so you'll have to remember this little trick.

The catalog lists these "scale multiples" when the multiples fall on commonly used scales. A 1:240,000 scale map isn't common so it's not listed as a scale for a tool that has a 1:24,000 scale on it. But 1:250,000 is a common scale, so it gets listed if the tools has a 1:25,000 scale on it. These "extra bonus" scales are marked with a "†" when they are listed in the catalog.

Using your GPS with the UTM Coordinate System, 3rd Ed.

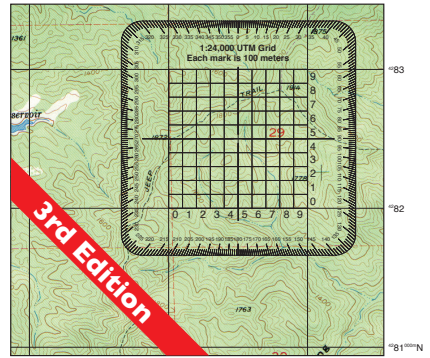
A 45 page instruction book packed full of information on the Universal Transverse Mercator (UTM) Map Coordinate System and a "pocket sized" UTM Grid Overlay suitable for use with 1:24,000 scale, 7.5 minute USGS topographic maps.

This booklet is a great starting point for beginning GPS users and folks that want to learn about UTM/MGRS coordinates. With lots of illustrations and step by step instructions, readers will be converting between map locations and UTM coordinates in no time!

Includes a 1:24,000 scale "Pocket Sized" Grid Tool for use with 7.5 minute USGS topographic maps.

UTM

Using your GPS with the Universal Transverse Mercator Map Coordinate System



John Carnes

UTMGuide3

\$7.95/ea

USGS
1:24,000
7.5 min

Top Seller

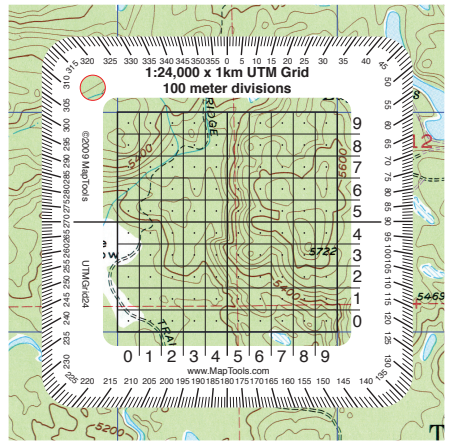
Scales:
1:24,000 x 1km



"Pocket Sized" UTM Grid Tools

Fast and easy UTM plotting

These easy to use grid tools divide a 1 kilometer grid square into 100 meter squares. (2km for the 1:50,000 tool.) Align the tool on the map grid and read off the easting and northing values. The tools also have a compass rose along their outside edge. This makes plotting or measuring a bearing a snap. A band of white ink around the edge of the tool makes reading the compass rose easier and also keeps the tool from "disappearing" when you place it on the map.



UTMGrid24	\$3.00/ea	 1:24,000 7.5 min	
UTMGrid25	\$3.00/ea		
UTMGrid50	\$3.00/ea		

Scales: (One per tool)
 1:24,000 x 1km
 1:25,000 x 1km
 1:50,000 x 1km

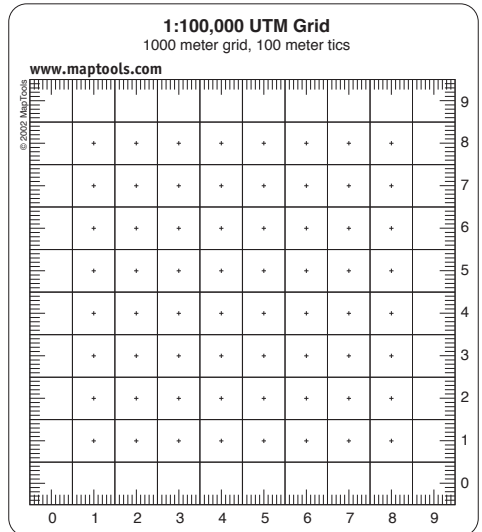
1:100,000 Scale UTM Grid Tool

For 1° X 2° USGS & BLM Maps

This grid tool divides a 10 kilometer grid square into 1000 meter squares. The perimeter of the grid is marked with 100 meter tics, providing additional precision. Align the tool on the map grid and read off the easting and northing values.

(Size 5" x 4.5")

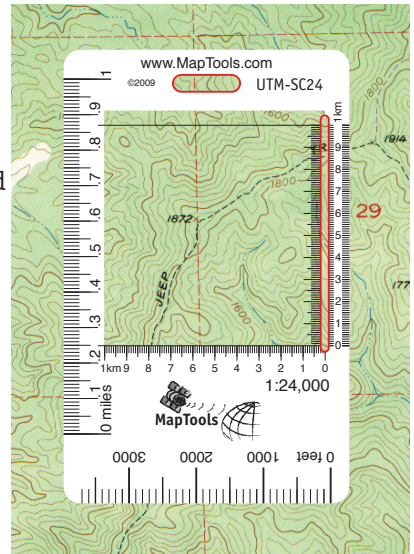
UTMGrid100	\$5.00/ea
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Scales:
 1:100,000 x 1km

“Credit Card Sized” UTM Slot Tool 1:24,000

This tool enables you to plot UTM coordinates to a 10 meter accuracy within a 1 kilometer grid square. The tool includes 2 distance rulers; one mile divided into 0.01 mile increments, and 3700 feet divided into 100 foot increments. The small size of this tool will allow you to keep it handy in your pocket or wallet. A band of white ink around the edge of the tool makes reading the distance scales easier and also keeps the tool from “disappearing” when you place it on the map. There is also a badge slot to allow use with any standard sized badge clip. Internal cutouts are shown with a red outline. Printed on 30 mil plastic stock, the tools are about the thickness of a credit card. The ink is coated to protect it from abrasion. Size 2.125 " x 3.325 " (54mm X 85mm).

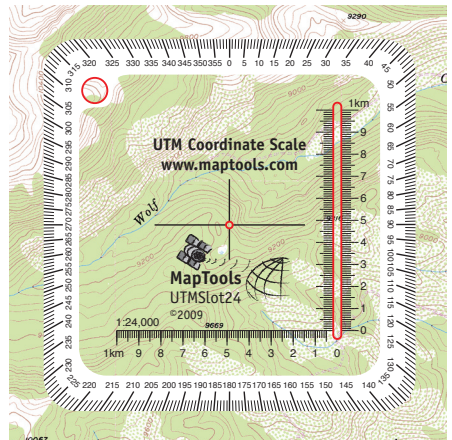


UTM-SC24

\$3.00/ea

“Pocket Sized” UTM Slot Tool 1:24,000 Fast and easy UTM plotting

This tool enables you to plot UTM coordinates to a 10 meter accuracy within a 1 kilometer grid square. The tool also has a compass rose along its outside edge. This makes plotting or measuring a bearing a snap. The small size of this tool will allow you to keep it handy in your pocket. A band of white ink around the edge of the tool makes reading the compass rose easier and also keeps the tool from “disappearing” when you place it on the map. There is also a lanyard hole in the upper left corner. Internal cutouts are shown with a red outline. Printed on 30 mil plastic stock the tools are about the thickness of a credit card. The ink is coated to protect it from abrasion.



Size 2.75" x 2.75" (7cm X 7cm).



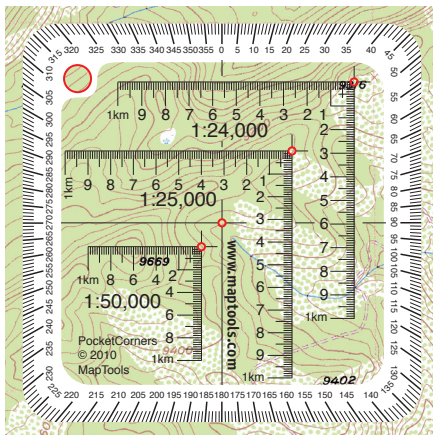
UTMSlot24

\$3.00/ea






“Pocket Sized” UTM Corners

A pocket sized set of 3 UTM corner rulers or “roamers” for 1:24,000, 1:25,000, and 1:50,000 scale maps. The 1:24k and 1:25k corners allow you to divide a 1km map grid with 10m precision. The 1:50k corner allows you to divide a 1km map grid with 20m precision. Each corner has a small hole to allow for placing a mark on the map. A band of white ink around the edge of the tool makes reading the compass rose easier and also keeps the tool from “disappearing” when you place it on the map. There is also a lanyard hole in the upper left corner. Internal cutouts are shown with a red outline. Printed on 30 mil plastic stock the tools are about the thickness of a credit card. The ink is coated to protect it from abrasion.

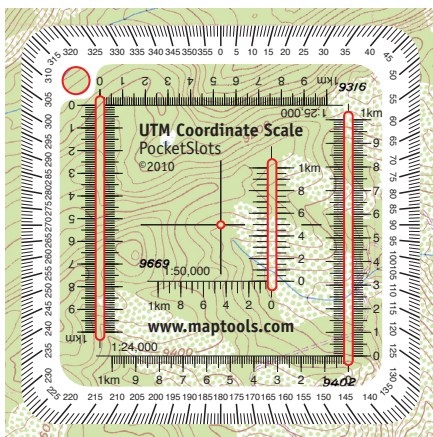


Scales:
 1:24,000 x 1km
 1:25,000 x 1km
 1:50,000 x 1km

PocketCorners	\$4.00/ea			
		1:24,000 7.5 min		




“Pocket Sized” UTM Slots

A pocket sized tool with slot scales for 1:24,000, 1:25,000, and 1:50,000 scale maps. The 1:24k and 1:25k scales allow you to divide a 1km map grid with 10m precision. The 1:50k scale allows you to divide a 1km map grid with 20m precision. The tool also has a compass rose along its outside edge. This makes plotting or measuring a bearing a snap. The small size of this tool will allow you to keep it handy in your pocket. A band of white ink around the edge of the tool makes reading the compass rose easier and also keeps the tool from “disappearing” when you place it on the map. There is also a lanyard hole in the upper left corner. Internal cutouts are shown with a red outline. Printed on 30 mil plastic stock the tools are about the thickness of a credit card. The ink is coated to protect it from abrasion.



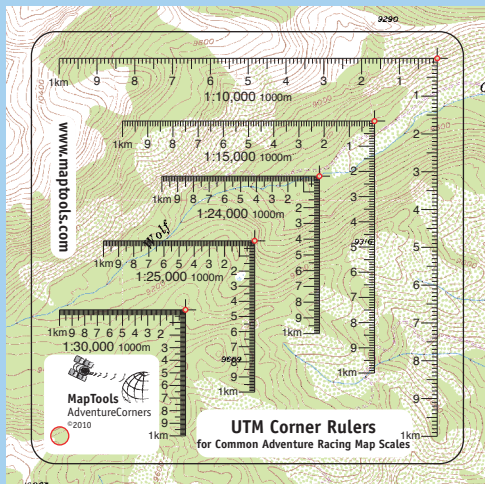
Scales:
 1:24,000 x 1km
 1:25,000 x 1km
 1:50,000 x 1km

Size 2.75" x 2.75"(7cm X 7cm).

PocketSlots	\$4.00/ea			
		1:24,000 7.5 min		

Adventure Racing Corner Rulers

One Tool, 5 Common Scales



Five corner rulers on a single card covering the most common map scales used in adventure races. Each corner ruler allows you to plot a UTM coordinate within a 1km map grid with 10m precision. Each corner has a small hole to allow for placing a mark on the map.

Scales:

- 1:10,000 x 1km
- 1:15,000 x 1km
- 1:24,000 x 1km
- 1:25,000 x 1km
- 1:30,000 x 1km
- 1:100,000 x 10km†
- 1:150,000 x 10km†
- 1:250,000 x 1km†
- 1:300,000 x 10km†
- 1:1,000,000 x 100km†



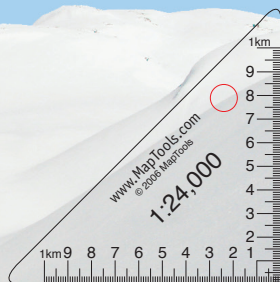
AdvCorner \$5.00/ea

UTM Mini Corners

These are our smallest UTM tools! Each Mini Corner has just one scale printed on it. The bottom edge is placed on the bottom of the map grid, making it easy to align the tool parallel to the grid lines.

Each tool has a hole to thread it onto a lanyard.

(Size 1.9" x 1.9")



Scales: (One scale per tool)

- 1:24,000 x 1km
- 1:25,000 x 1km
- 1:30,000 x 1km
- 1:35,000 x 1km
- 1:40,000 x 1km
- 1:47,520 x 2km
- 1:48,000 x 2km
- 1:50,000 x 1km
- 1:62,500 x 2.5km
- 1:63,360 x 2.5km



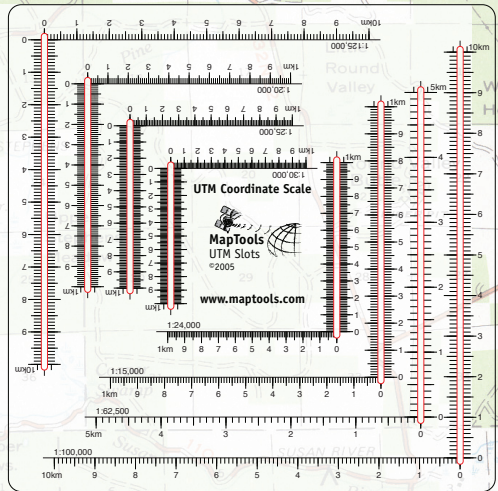
Mini24 \$3.00/ea
Mini25 \$3.00/ea
Mini30 \$3.00/ea
Mini35 \$3.00/ea
Mini40 \$3.00/ea
Mini47 \$3.00/ea
Mini48 \$3.00/ea
Mini50 \$3.00/ea
Mini62 \$3.00/ea
Mini63 \$3.00/ea

Slot Style UTM Tool

14 Scales in a compact tool

This tool combines 14 of the most common topographic map scales into a single tool the size of a music CD. The slot style tool gives easy access to the map for marking, while maintaining superior accuracy.

- Scales:**
- 1:10,000† x 1km†
 - 1:15,000 x 1km
 - 1:20,000 x 1km
 - 1:24,000 x 1km
 - 1:25,000 x 1km
 - 1:30,000 x 1km
 - 1:62,500 x 5km
 - 1:100,000 x 10km
 - 1:125,000 x 10km
 - 1:150,000 x 10km†
 - 1:200,000 x 10km†
 - 1:250,000 x 1km†
 - 1:300,000 x 10km†
 - 1:1,000,000 x 100km†

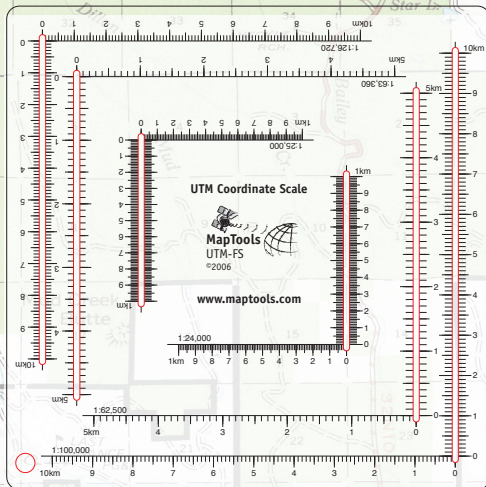


UTMSlots \$8.00/ea



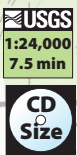
Slot Style UTM Tool for US Forest Service Maps 1:126,720

Recently revised Forest Service Maps now frequently include UTM coordinate references. Hoorah! Be sure to check your map, as there are still lots of forest maps that only have lat/lon coordinate info on them. As more and more forest maps support UTM, I expect this to become a top seller for anyone traveling on National Forest lands.



UTM-FS \$6.00/ea

- Scales:**
- 1:10,000 x 1km†
 - 1:24,000 x 1km
 - 1:25,000 x 1km
 - 1:62,500 x 5km
 - 1:63,360 x 5km
 - 1:100,000 x 10km
 - 1:126,720 x 10km
 - 1:250,000 x 10km†

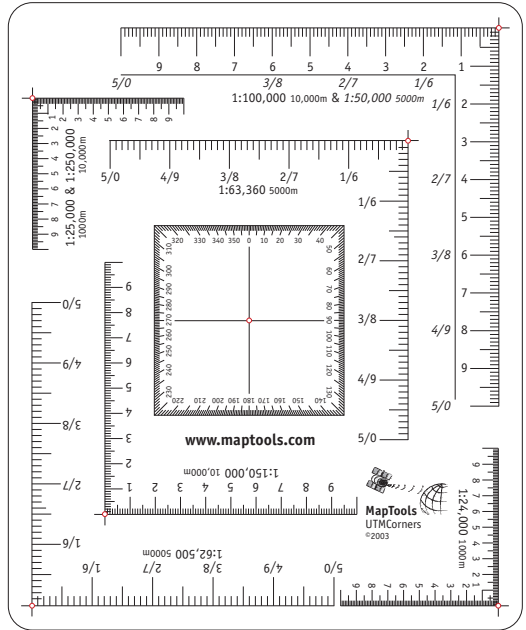


UTM Corner Rulers or "Roamers"

Lot's of Scales, More Precision

This tool includes the scales commonly found on USGS topographic maps. The corner ruler style allows very precise measurements to be made within the map grid square. Each corner has a small hole to allow for placing a mark on the map when plotting coordinates.

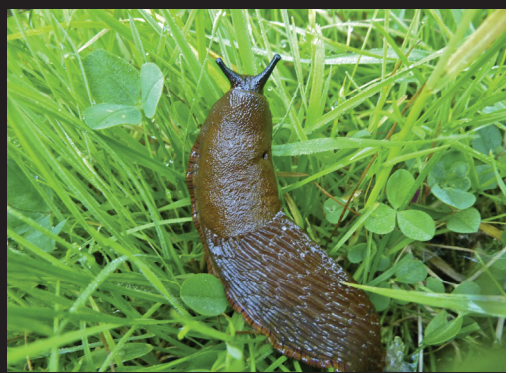
(Size 6.5" x 5.5")



- Scales:**
- 1:24,000 x 1km
 - 1:25,000 x 1km
 - 1:50,000 x 5km
 - 1:62,500 x 5km
 - 1:63,360 x 5km
 - 1:100,000 x 10km
 - 1:150,000 x 10km
 - 1:250,000 x 10km

UTMCorners **\$7.00/ea**

USGS
1:24,000
7.5 min



Traditional Military Style UTM/MGRS Coordinate Scale and Protractor - GTA 5-2-12

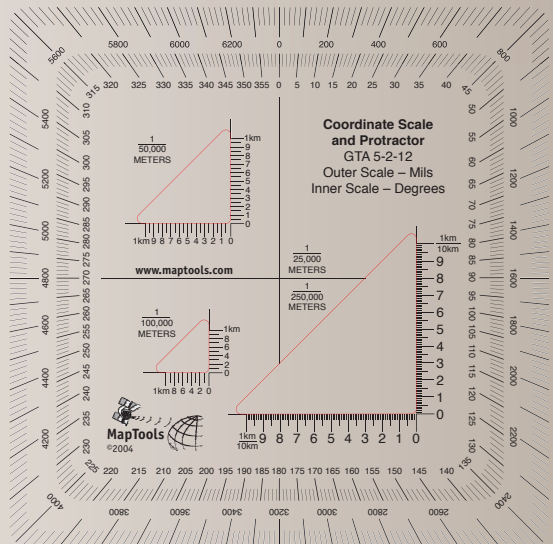
This tool is equivalent to the Graphic Training Aid 5-2-12 Coordinate Scale and Protractor used by United States and NATO military forces around the world. The scale has three die cut triangles for access to mark the map being measured. The inner protractor is marked in degrees and the outer protractor is in mils. (Size 5" x 5")



Scales:
 1:25,000 x 1km
 1:50,000 x 1km
 1:100,000 x 1km
 1:250,000 x 10km†

GTA	\$6.00/ea
GTA 25 Pack	\$99.95
GTA 250 Box	\$775.00

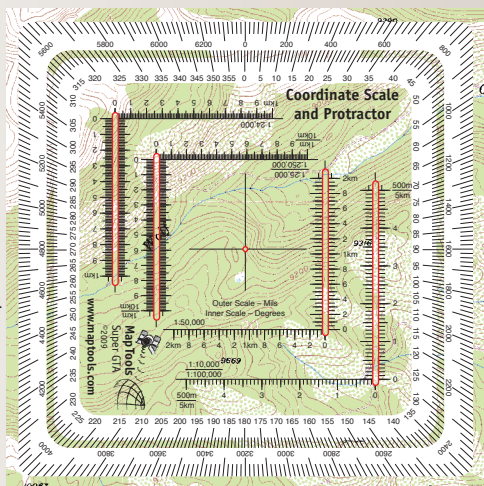
Our coordinate scales offer significant benefits over the standard issue GTA 5-2-12



- The tool is printed on 30 mil plastic stock with a protective coating. This makes it about the thickness and stiffness of a credit card. It's 33% thicker than the standard military issue version, so it's less likely to be bent or broken when you need to use it.
- Rounded corners keep them from wearing holes in your pockets.
- The new SuperGTA (see next page) also includes these benefits...
 - Includes 1:24,000 scale for USGS 7.5 minute topographic maps.
 - Larger 1:50,000 and 1:100,000 scale rulers for maps with wider grid spacing.
 - It's the size of a music CD, so it tucks away in more storage spaces.
 - Center hole for using thread to extend protractor measurements.

Improved Military Style UTM/MGRS Coordinate Scale and Protractor - "SuperGTA"

This tool is an improved version of the Graphic Training Aid 5-2-12 Coordinate Scale and Protractor used by United States and NATO military forces around the world. By using a slot on one side of the tool for access to the map, the tool can be more compact than the traditional GTA tool. The tool features several additional map scales, including 1:24,000, which is the most common topographic map scale found within the United States. The 1:100,000 scale now spans 5km grid lines, making it much more usable. Plus, the overall dimensions of the tool have been reduced so that it is the size of a music CD, easily fitting into a pocket or any slot where you could store a CD.



The inner protractor is marked in degrees and the outer protractor is in miles.

Bands of white ink are printed under the compass rose. This makes reading the compass rose easier and also keeps the tool from "disappearing" when you place it on the map.

Internal cutouts are shown with a red outline. The map image in the background is present so that the white ink is visible. The map image is not printed on the tool.

- Scales:
- 1:10,000 x 500m
 - 1:24,000 x 1km
 - 1:25,000 x 1km
 - 1:50,000 x 2km
 - 1:100,000 x 5km†
 - 1:250,000 x 10km†
 - 1:500,000 x 20km†

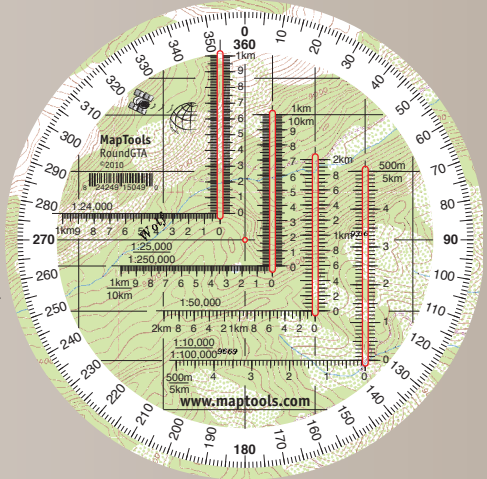


SuperGTA	\$8.00/ea
SuperGTA 25 Pack	\$159.95



Round Military Style UTM/MGRS Coordinate Scale and Protractor – Large Print Version

This tool is an improved version of the Graphic Training Aid 5-2-12 Coordinate Scale and Protractor used by United States and NATO military forces around the world. By using a slot on one side of the tool for access to the map, the tool can be more compact than the traditional GTA tool. The tool features several additional map scales, including 1:24,000, which is the most common topographic map scale found within the United States. The 1:100,000 scale now spans 5km grid lines, making it much more usable. Plus, the overall dimensions of the tool have been reduced so that it is the size of a music CD, easily fitting into a pocket or any slot where you could store a CD.



This tool has larger print numbers on both the compass rose and the coordinate scales.

The protractor is marked in degrees.

Bands of white ink are printed under the compass rose. This makes reading the compass rose easier and also keeps the tool from “disappearing” when you place it on the map.

Internal cutouts are shown with a red outline. The map image in the background is present so that the white ink is visible. The map image is not printed on the tool.



Scales:	
1:10,000	x 500m
1:24,000	x 1km
1:25,000	x 1km
1:50,000	x 2km
1:100,000	x 5km†
1:250,000	x 10km†
1:500,000	x 20km†

RoundGTA	\$8.00/ea
RoundGTA 25 Pack	\$159.95

Jumbo Sized Tools for Classroom Instruction

Both the Standard GTA 5-2-12 Coordinate Scale and Protractor and our improved version, have been “super sized” for classroom use by an instructor. The jumbo tool measures 22” on a side. The Standard GTA 5-2-12 has the usual three triangular cutouts along with a center hole. The improved version has the expected 4 slots and a center hole.

GTA-LargeTA	\$69.95/ea
SuperGTA-LargeTA	\$69.95/ea

Map Rulers

Individual scales, or useful sets

These rulers can be used to measure or plot latitude/longitude coordinates, UTM/MGRS coordinates, and to measure distances in either meters or miles. You will find them useful when you are working with a GPS receiver and paper maps. Each ruler is designed for a specific scale map. **You must use a ruler that matches the scale of your map.**

On the front side, the rulers have minutes and seconds on one edge and decimal minutes on the other edge, allowing you to use either notation. On the back side, the rulers have distance in meters on one edge, and distance in either miles or nautical miles on the other edge. Latitude is measured directly with the ruler. But, since a degree of longitude covers a shorter distance as you move towards the poles, the ruler is used on a diagonal to measure longitude. See page 41 for more information.

The rulers are packaged in a handy clear vinyl storage pouch, and include instructions for use.

Refer to the table on the next page for scales, part ids. and ruler set contents. The following pages contain more details about the ruler sets.

The rulers are printed on a sturdy 20 mil white plastic stock for durability.

Sizes: Storage Pouch is 3" x 9"
Rulers are 1" x 8.5", 7", or 5.75"

MapTools

Map Rulers
for plotting GPS coordinates

"Adventure Set"

1:24,000
1:62,500
1:100,000
1:126,720

MapRuler ____ †	\$4.95/ea	 1:24,000 7.5 min	
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† See table on the next page for individual ruler Part Id.

Part Id.	Scale	Span	Miles	Adventure Set	USGS Set	Delorme Set	Explorer Set	Nautical Set
MapRuler5N	1:5,000	0.5 min	Nautical					•
MapRuler10N	1:10,000	0.5 min	Nautical					•
MapRuler15N	1:15,000	1 min	Nautical					•
MapRuler20N	1:20,000	1 min	Nautical					•
MapRuler24	1:24,000	2.5 mins	Statute	•	•		•	
MapRuler25	1:25,000	2.5 mins	Statute		•		•	
MapRuler30N	1:30,000	2 mins	Nautical					•
MapRuler30750	1:30,750	2.5 mins	Statute					
MapRuler40N	1:40,000	2 mins	Nautical					•
MapRuler40680	1:40,680	4 mins	Statute					
MapRuler50	1:50,000	5 mins	Statute		•		•	
MapRuler62	1:62,500	5 mins	Statute	•	•		•	
MapRuler63	1:63,360	5 mins	Statute		•		•	
MapRuler65	1:65,000	5 mins	Statute			•	•	
MapRuler69	1:69,500	5 mins	Statute				•	
MapRuler77N	1:77,000	5 mins	Nautical			•	•	
MapRuler80N	1:80,000	5 mins	Nautical					•
MapRuler80NL	1:80,000	7.5 mins	Nautical			•	•	
MapRuler84N	1:84,000	7.5 mins	Nautical			•	•	
MapRuler100	1:100,000	10 mins	Statute	•	•		•	
MapRuler100N	1:100,000	10 mins	Nautical					•
MapRuler125	1:125,000	7.5 mins	Statute		•	•	•	
MapRuler126	1:126,720	7.5 mins	Statute	•	•		•	
MapRuler150	1:150,000	15 mins	Statute			•	•	
MapRuler156	1:156,000	15 mins	Statute			•	•	
MapRuler160	1:160,000	15 mins	Statute			•	•	
MapRuler182	1:182,000	15 mins	Statute			•	•	
MapRuler190	1:190,000	15 mins	Statute			•	•	
MapRuler200	1:200,000	15 mins	Statute			•	•	
MapRuler250	1:250,000	15 mins	Statute		•	•	•	
MapRuler280	1:280,000	20 mins	Statute					
MapRuler300	1:300,000	30 mins	Statute			•	•	
MapRuler320	1:320,000	30 mins	Statute			•	•	
MapRuler400	1:400,000	30 mins	Statute			•	•	
MapRuler500	1:500,000	30 mins	Statute		•		•	

Map Ruler Sets

The economical way to buy multiple rulers

Adventure Set

The four most common map scales an outdoor adventurer will encounter in the Continental United States.

- 1:24,000 USGS 7.5 minute topographic maps
- 1:62,500 USGS 15 minute topographic maps
- 1:100,000 USGS & BLM 30 X 60 minute topographic maps
- 1:126,720 US Forest Service 1/2"=1 mile forest maps

AdventureSet	\$10.95/ea
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USGS Set

Ten rulers covering the common map scales used by the USGS, Forest Service, and BLM.

- | | | | |
|-----------|-----------|---------------|-----------------|
| 1:24,000 | 1:25,000 | 1:50,000 | 1:62,500 |
| 1:63,360 | 1:100,000 | 1:125,000 | 1:126,720 |
| 1:250,000 | 1:500,000 | Inch & Metric | Unit Conversion |

USGSSet	\$19.95/ea
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DeLorme Set

Fifteen rulers covering the scales used in DeLorme's Atlas and Gazetteers.

- | | | | |
|-----------|-----------|-----------|-----------|
| 1:65,000 | 1:77,000 | 1:80,000 | 1:84,000 |
| 1:125,000 | 1:150,000 | 1:156,000 | 1:160,000 |
| 1:182,000 | 1:190,000 | 1:200,000 | 1:250,000 |
| 1:300,000 | 1:320,000 | 1:400,000 | |
- Inch & Metric Unit Conversion

DeLormeSet	\$29.95/ea
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Explorer Set

Twenty-four rulers that should cover most of the maps you're likely to encounter in land navigation.

- | | | | |
|-----------|-----------|-----------|-----------|
| 1:24,000 | 1:25,000 | 1:50,000 | 1:62,500 |
| 1:63,360 | 1:65,000 | 1:69,500 | 1:77,000 |
| 1:80,000 | 1:84,000 | 1:100,000 | 1:125,000 |
| 1:126,720 | 1:150,000 | 1:156,000 | 1:160,000 |
| 1:182,000 | 1:190,000 | 1:200,000 | 1:250,000 |
| 1:300,000 | 1:320,000 | 1:400,000 | 1:500,000 |
- Inch & Metric Unit Conversion

ExplorerSet	\$35.95/ea
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Nautical Set

Eight of the most frequently encountered scales used on NOAA's marine navigation charts.

- | | | | |
|----------|----------|----------|-----------|
| 1:5,000 | 1:10,000 | 1:15,000 | 1:20,000 |
| 1:30,000 | 1:40,000 | 1:80,000 | 1:100,000 |

NauticalSet	\$17.95/ea
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1:24,000 Slope Ruler

This ruler is designed to measure slope on a 1:24,000 scale topographic map. Slope is determined by comparing the distance between contour lines with the samples on the edge of the ruler.

The front side of the ruler is designed to measure percent slope for maps with a 10, 20 or 40 foot contour interval.

The back side of the ruler measures slope in degrees for maps with a 20 or 40 foot contour interval. The back side also indicates slab avalanche frequency for the various slopes on the 40 foot contour interval map.

If you need to physically measure a slope angle, check out our Reference Card -- Inclinator for Slope Angle in Degrees and Percent.

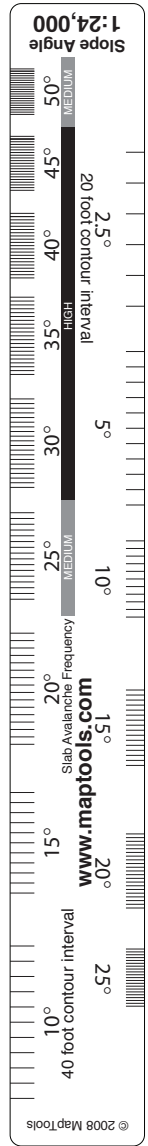
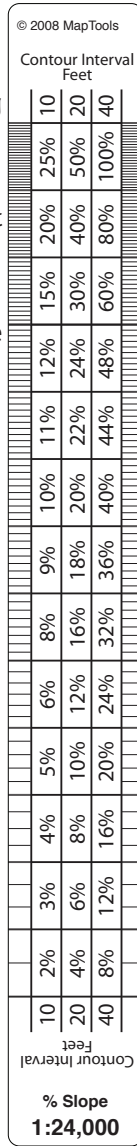
The ruler is printed on a sturdy 20 mil white plastic stock for durability.

RulerSlope24	\$4.95/ea	 
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Unit Conversion Ruler

This ruler has two graphical scales to enable you to convert between miles and kilometers or feet and meters, without the need of any calculations. Numeric conversion factors are also listed for reference. Since this ruler doesn't measure anything on the map, it is not tied to any particular map scale.

RulerConv	\$2.95/ea	
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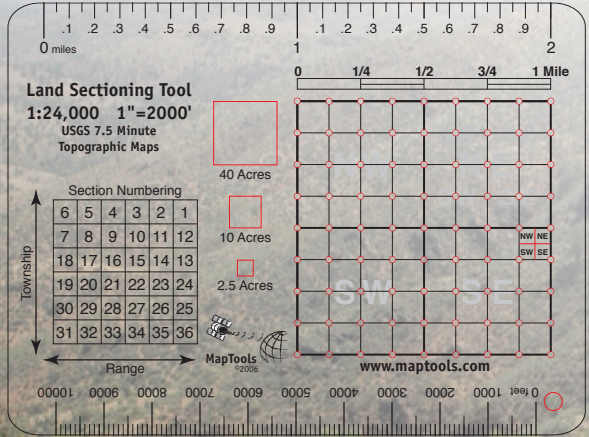
Inch & Metric Ruler

The front side has two 8 inch scales, one marked in 1/16ths of an inch and the other in 1/10ths of an inch. The flip side has a 200 millimeter ruler, and 10 numeric unit conversion factors listed. This is an excellent tool for working with odd scale maps where you need to use a ratio calculation to determine distances and coordinate readings.

RulerInch	\$1.95/ea	
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Land Sectioning Tool for 1:24,000 Scale Maps

Our Land Sectioning Tool for 1:24,000 scale maps features a square mile section divided into 10 acre squares. Each 10 acre square has holes at the corners to allow you to mark out smaller divisions of land within the section lines printed on the map. The tool also includes cutouts for drawing squares that are 40, 10, or 2.5 acres in size. There is a handy section number reference diagram. Along the edges of the tool are rulers marked in tenths of miles and feet.



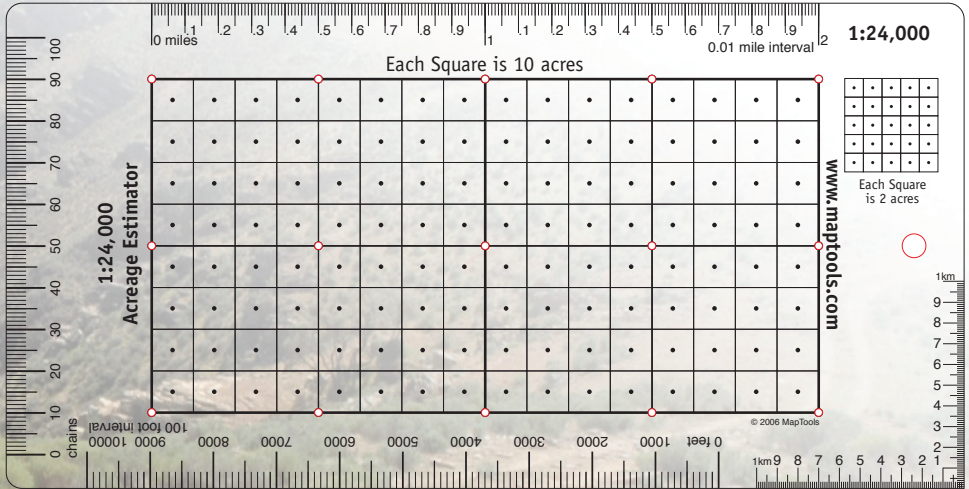
Scales:
1:24,000 x 1km

LandSection24 \$8.00/ea

USGS
1:24,000
7.5 min

Acreage Estimator for 1:24,000 Scale Maps

Our acreage estimator covers two square miles in 10 acre squares. Each 10 acre square has a dot in the center. You can use the dot as the include/exclude point, or you can use the dot to define 2.5 acre squares. Off to the side, the tool also has a small section divided into 2 acre squares with center dots. Around the edges of the tool there are distance rulers marked in: chains, tenths of miles, and feet. The lower right corner has a 1km corner ruler for plotting UTM coordinates.



Scales:
1:24,000 x 1km

AcreageEst24 \$8.00/ea


1:24,000
7.5 min



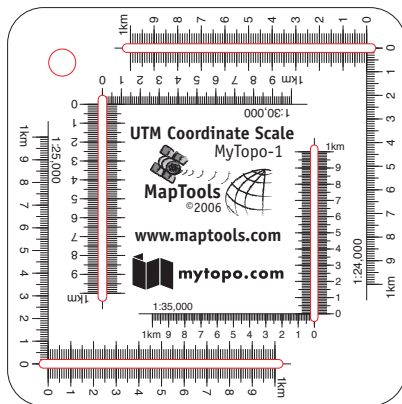
UTM Tool for Topographic Maps from



This pocket sized UTM tool is designed to be used with topographic maps printed by mytopo.com's online map printing service.

The tool includes the 4 scales offered for topographic maps.

Don't forget to turn on the UTM Grid option when you order your maps.



Scales:
1:24,000 x 1km
1:25,000 x 1km
1:30,000 x 1km
1:35,000 x 1km

MyTopo-1 \$4.00/ea

USGS
1:24,000
7.5 min
Pocket Sized

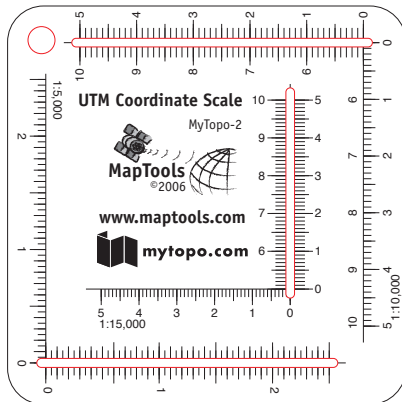
UTM Tool for Aerial Photos from



This pocket sized UTM tool is designed to be used with aerial photography printed by mytopo.com's online map printing service.

The tool includes the 3 additional scales used for aerial photography. When combined with the tool above, all of the regular mytopo.com scales are available.

Don't forget to turn on the UTM Grid option when you order your maps.



Scales:
1:5,000 x 1km
1:10,000 x 1km
1:15,000 x 1km

MyTopo-2 \$4.00/ea

Pocket Sized



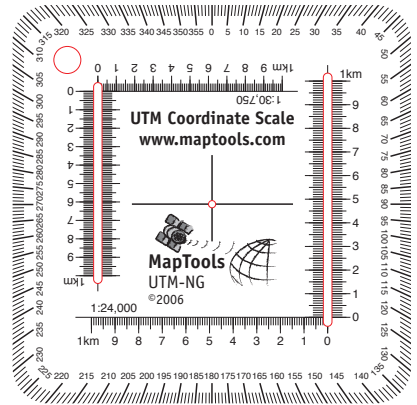
UTM Tool for National Geographic MapMachine Kiosk Maps



This pocket sized UTM tool is designed to be used with maps printed on National Geographic's TOPO! software, their MapMachine Kiosks or their online map printing service.

The tool includes both 1:24,000 scale and 1:30,750 scale rulers.

Don't forget to turn on the UTM Grid option when you print your maps.



Scales:
1:24,000 x 1km
1:30,750x 1km

UTM-NG \$4.00/ea

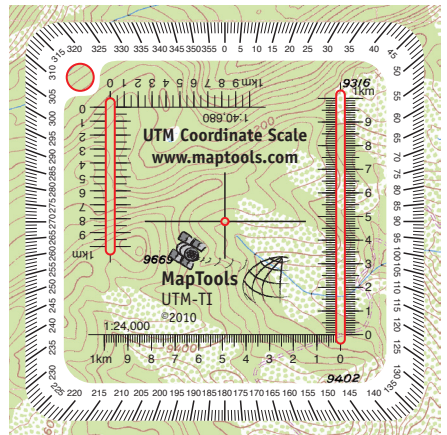


UTM Tool for National Geographic Trails Illustrated Maps 1:24,000 and 1:40,680

The National Geographic Trails Illustrated Series of maps are know for their excellent trail detail. The individual maps focus on National Parks, National Forests, BLM and other public lands.

The series uses many different map scales. Double check the scale of your map, to be sure you are ordering a suitable tool. At this time MapTools does not have tools for every scale in the series.

To learn more about the Trails Illustrated series maps, visit the online store at maps.nationalgeographic.com/trails or give them a call at 800-962-1643



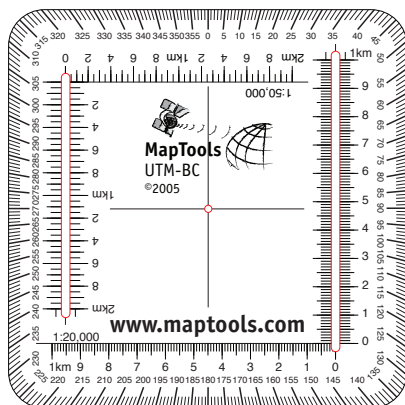
Scales:
1:24,000 x 1km
1:40,680 x 1km

UTM-TI \$4.00/ea



British Columbia UTM Tool 1:20,000 and 1:50,000

A pocket sized, slot style, tool that covers the 1:20,000 scale used on the British Columbia TRIM maps (Terrain Resources Inventory Mapping), and many other Canadian maps as well. The tool also includes the 1:50,000 scale used on the Canadian NTS maps (National Topographic System).



UTM-BC

\$4.00/ea



Scales:

1:20,000 x 1km

1:50,000 x 1km



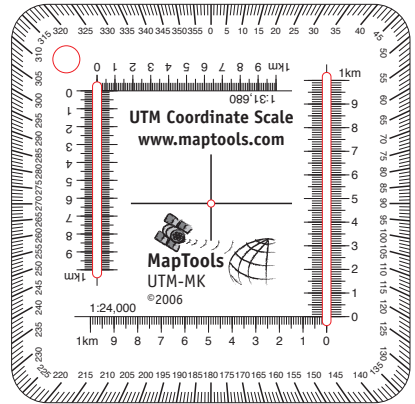
Pocket Sized UTM Tool for McKenzie Maps at a scale of 1:31,680

McKenzie Maps of the Boundary Water Canoe Area Wilderness of Minnesota, USA, the Quetico Provincial Park of Ontario-Canada, Isle Royale National Park, Voyageurs National Park, Superior Hiking Trail, Superior National Forest, the North Shore of Lake Superior, the Apostle Islands on the South Shore and the Duluth/Superior Harbor.

To learn more about McKenzie Maps visit them online at www.bwcamaps.com or give them a call at 800-749-2113



UTM-MK	\$4.00/ea		
		1:24,000 7.5 min	



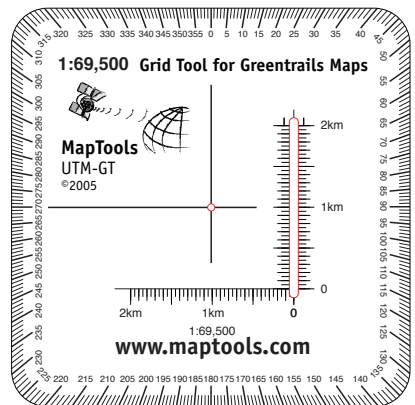
Scales:
1:24,000 x 1km
1:31,680 x 1km

Green Trails UTM Tool

Green Trails produces an excellent series of maps covering popular recreation areas in Washington and Oregon. Most of their maps cover a 15 minute area, using the 1:69,500 scale. A few of their special series maps use other scales, so be sure to check which scale you need. To learn more about the Green Trails maps visit them online at www.greentrails.com or give them a call at 206-546-6277



UTM-GT	\$4.00/ea		
		1:69,500 7.5 min	



Scales:
1:69,500 x 1km

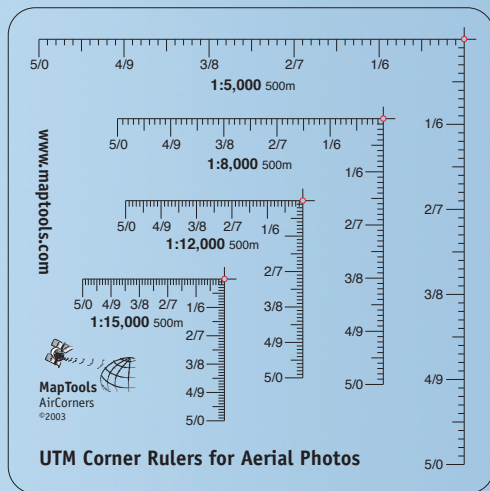
Aerial Photo Corner Rulers *Lot's of Scales, More Precision*

Four corner rulers on a single card covering the most common scales used for aerial photography. Each corner ruler allows you to plot a UTM coordinate within a 500m map grid with 10m precision. Each corner has a small hole to allow for placing a mark on the photo or map.

Scales:
 1:5,000 x 500m
 1:8,000 x 500m
 1:12,000 x 500m
 1:15,000 x 500m

AirCorners

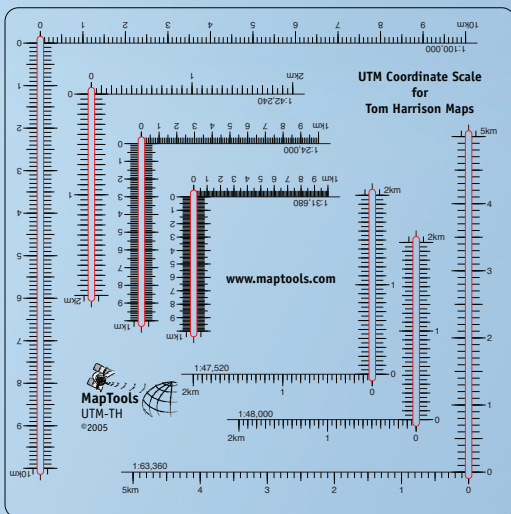
\$5.00/ea



UTM Tool for the Tom Harrison Map Series *Unusual scales you won't find anywhere else!*

Tom Harrison's maps are the best full-color, shaded-relief topographic maps for hiking, backpacking, and mountain biking in Parks, Forests, and Wilderness Areas in California. All of his maps are gridded for UTM coordinates. The scales are unusual, and MapTools is pleased to offer a tool specifically designed for these maps.

To learn more about the map series, visit www.tomharrisonmaps.com, or call them at 800-265-9090.



Scales:
 1:10,000 x 1km†
 1:24,000 x 1km
 1:42,240 x 2km
 1:47,520 x 2km
 1:48,000 x 2km
 1:63,360 x 5km
 1:100,000 x 10km
 1:1,000,000 x 100km†

UTM-TH

\$8.00/ea



Brunton Sighting Compass

Get bearings accurate to 1° every time!

This is the compass that I use. It looks like a plain old base plate compass, but...

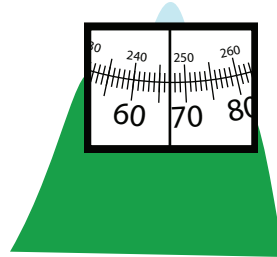
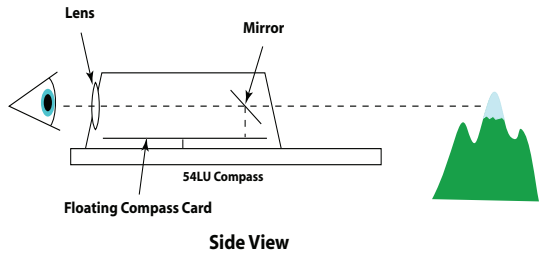
The key feature that makes this a great compass to take sightings with is its direct sighting system. Look through the lens on the side of the bezel, line up the black line with the object you are sighting on, and read off the bearing. Getting a bearing with one degree accuracy is easy.

Unlike most sighting compasses, this one works great as a base plate compass too. So it's easy to plot a bearing on the map.

Alas, there is one potential downside: You can't adjust this compass for declination. So, all your bearings will be referenced to magnetic north. I always take my bearings relative to magnetic north and do not adjust my compass declination, so this is not a problem for me. I set my GPS to display magnetic bearings and convert to true or grid north only when plotting on a map.

Specifications:

- 4.9" x 2.4" x 0.6" / 1.4 oz.
- 1 degree graduations through sighting lens, 2 degrees graduations on outer bezel
- 1:25,000, 1:50,000, and 1:63,360 UTM Corner Rulers
- 2 inch ruler, 100mm ruler (Can be used to measure UTM on 1:100,000 scale maps)
- Luminous points, for sighting and course alignment after dark
- Map magnifier and lanyard
- Rubber "no slip" pads. Made in Sweden. Lifetime warranty from Brunton.



What you see when sighting

The bearing to the peak is 67° magnetic.

The back-bearing, from the peak to you, is 247° magnetic.

Brunton has stopped importing this compass. We currently have them in stock. Future availability is unknown.

BR54LU

\$84.50/ea

Mapping and Navigation Accessories

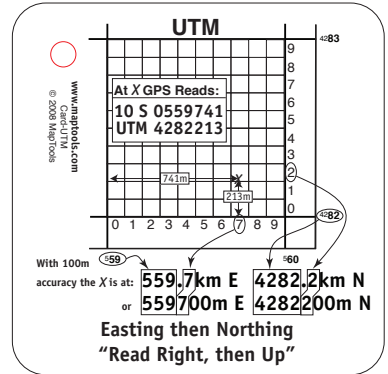
Reference Cards

A handy set of reminders to help kick start the brain when you're cold, wet, tired and your navigation skills seem lost in the fog. Information is printed on both sides of the cards. (There wasn't room to picture all of the cards here in the catalog. Cards pictured here are shown at 70% of actual size.) The cards can be purchased individually. A set of all six cards plus a Pocket Sized Magnifier (p. 29) is available at a savings of \$4. Cards measure 2.75" x 2.75", the same as our other "Pocket Sized" tools. Printed on 0.020" thick plastic stock. Each card includes a lanyard hole.

Reference Card -- UTM, MGRS, USNG

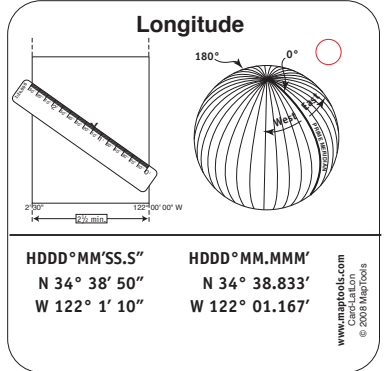
Universal Transverse Mercator Coordinates

- Sample GPS display
- 1km grid diagram
- Example of dividing a 1km grid into 100m squares and determining UTM in either meters or kilometers
- Reminder that the Easting comes before the Northing



Military Grid Reference System & US National Grid

- Example GPS display in UTM showing components of MGRS/USNG coordinates
- Example 100,000m square diagram
- Example using the "large" digits from UTM coordinates on the map.
- Example MGRS/USNG coordinates. Both full and abbreviated coordinates shown with 100m and 10m precision



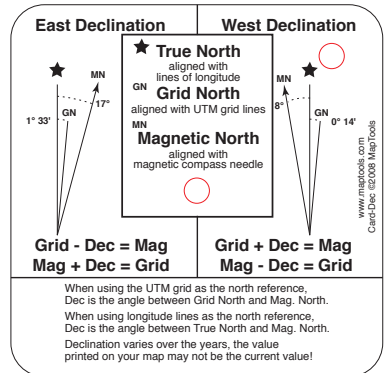
Reference Card -- Latitude Longitude

Latitude

- Earth diagram showing parallels of latitude, the equator, and the poles
- Measuring latitude with a map ruler
- One minute to one nautical mile relationship

Longitude

- Earth diagram showing meridians of longitude west and east of the prime meridian
- Measuring longitude with a map ruler
- Example lat/lon coordinates in two popular formats and their GPS "units" settings.



Reference Card --

Declination & Compass Rose

- 360° Protractor / Compass Rose
- Cardinal Compass Points
- 24 Hour Clock Face
- Sample declination diagrams for both east and west declination
- North definitions
- Formulas for converting between Grid or True North and Magnetic North
- Using Grid and True North on a map
- Declination changes over time

Time, Speed & Distance

Time – minutes
Speed – miles per hour
 kilometers per hour
Distance – miles
 kilometers

$T = (60 / S) \times D$
 $S = (60 / T) \times D$
 $D = (S / 60) \times T$

www.maptools.com

Reference Card --

Time, Speed, and Distance

- Time / Speed / Distance formulas
- Time / Speed / Distance variables and units
- 1:24,000 scale ruler to measure kilometers, marked at 10m interval
- 1:24,000 scale ruler to measure miles, marked at 0.01 mile interval
- Miles to Kilometers conversion scale
- Useful distance unit conversion factors
- Inches ruler, marked at 1/10th inch interval
- Millimeter ruler

www.maptools.com

Inclinometer
 % Slope

$H = \%slope \times \frac{d}{100} + h$

$\%slope = \frac{y}{x} \times 100$

www.maptools.com

Reference Card -- Millimeter Grid

Millimeter grid card. White background on one side, black on the other. Useful for examining snow crystals, sand grains, soil characteristics, or small artifacts.



Reference Card -- Inclinometer for Slope Angle in Degrees and Percent

- Measures slope angle in both degrees and percent
- Mark to cut slit for weighted thread
- Usage diagram
- Relative slab avalanche frequency reference
- Height of an object measurement diagram and formula
- x - y reference diagram
- % slope formula

Card_Dec	\$1.50/ea
Card_Dist	\$1.50/ea
Card_LatLon	\$1.50/ea
Card_mm	\$1.50/ea
Card_Slope	\$1.50/ea
Card_UTM	\$1.50/ea
PktMag (see p. 29)	\$1.50/ea
RefCardSet	\$6.50/ea
includes the above 7 items,	
a \$4 savings!	

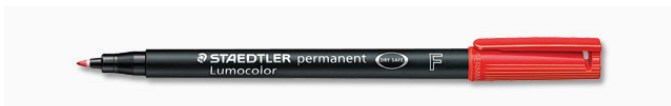
Map Overlay Marking Tools

These are the pens of choice for marking on transparent map overlays and laminated maps.

I've used these pens for many years while in planning and operational roles on search and rescue missions.

Choose between permanent or non-permanent ink. The non-permanent ink can be wiped off using a damp cloth, but beware, your markings may not survive a rain storm. The permanent ink will easily survive getting wet, but minor erasures can be made with a plastic eraser, and the sheet can be wiped clean with a cloth dampened with alcohol.

- Superb color brilliancy
- With clip
- Polypropylene barrel and cap guarantee long service life
- Set of 4 colors in stand-up box (Red, Blue, Green, Black)
- Set of 8 colors in stand up box (Red, Blue, Green, Black, Yellow, Orange, Purple, Brown)
- Line width F - fine (approx. 0.6 mm)



STAEDTLER® Lumocolor® Universal Pen Permanent

- Design awarded universal pen for use on overhead film and almost all surfaces
- DRY SAFE - can be left uncapped for days without drying up (test ISO 554)
- Excellent smudge-proof and waterproof qualities on almost all surfaces
- Dries in seconds, therefore ideal for left-handed users
- Permanent, low-odor ink

STAEDTLER® Lumocolor® Non-Permanent Universal Pen

- Design awarded universal pen for use on overhead film and almost all surfaces
- Can be wiped off film using a damp cloth
- Water-soluble ink
- Fast-drying



OHPenWater 4 Colors \$7.40/ea

OHPenPerm 4 Colors \$7.40/ea

OHPenPerm 8 Colors \$11.95/ea



Fresnel Lens Magnifiers

A tool for those of us for whom the contour lines have begun to blur together.

These small plastic fresnel magnifiers offer a light weight, non-breakable alternative to your reading glasses or a glass lens magnifier. They provide a 2X magnification when held about 2" away from the map. These magnifiers have a hole in the corner for a lanyard and come packaged in a protective sleeve. They are available in two sizes. Made in Taiwan.

A fresnel lens replaces the curved surface of a conventional lens with a series of concentric grooves molded into the surface of a thin, lightweight plastic sheet. The grooves act as individual refracting surfaces, like tiny prisms when viewed in cross sections, bending parallel rays in a very close approximation to a common focal length which, designed properly, is more efficient at gathering light than a standard lens.

Pocket Size

The same size as our other "pocket sized" tools (2.75" x 2.75"). Weighs a mere 9/100th of an ounce.

Large Size

This size matches the size of most of our larger "CD sized" tools (4.75" x 4.75"). Weighs a mere 26/100th of an ounce.



PktMag	\$1.50/ea
LrgMag	\$2.50/ea

Mars Plastic Eraser

You can make small corrections to Lumocolor Permanent Pen marks on clear film using a this Mars Plastic Eraser.

- Premium quality
- For graphite on paper and matt drafting film
- For OHP pen on overhead film
- Practically residue-free erasing
- Easy to remove eraser waste thanks to minimal crumbling
- In practical cellophane wrap
- Tear strip for easy removal of cellophane
- Slide sleeve for convenient handling
- 65 x 23 x 13 mm



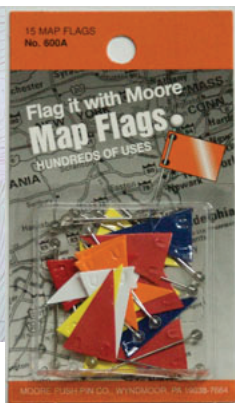
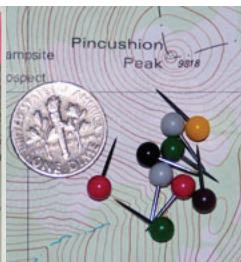
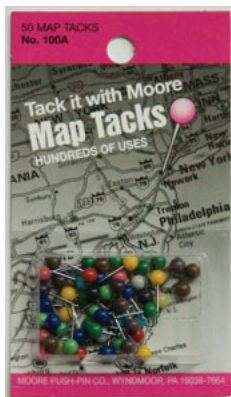
MarsEraser	\$1.00/ea
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Map Tacks & Map Flags

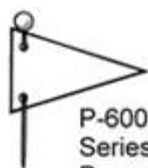
The traditional method of marking locations on a display map. Moore Push-Pin brand map flags and map tacks are the highest quality available. Moore has been making push pins and map tacks in the USA since 1900.

Medium Round Head Map Tacks, 1/8" Head, 5/16" Point, Package of 50 in assorted colors.

Pennant Series Map Flags, 1" x 5/8" Flag, 1 - 1/8" Point, Package of 15 in assorted colors.



100 Series



P-600 Series Pennant

MapTacks

\$2.39/ea

MapFlags

\$2.39/ea



Tally Counter

Back in the days when I was helping with NASAR SAR Tech-II testing, we found that the navigation portion of the test gave folks the most trouble. We discovered that equipping the subject with two items dramatically increased their likelihood of passing. The first item was a Brunton 54LU sighting compass, which makes taking an accurate bearing a "no brainer". The second item was to provide them with a Tally Counter to count their paces with. Wallah, no more forgotten or miscounted pacing distances.

This Tally Counter offers a four-figure register and a finger ring to hold it comfortably. Nickel-plated and precision engineered. Displays white numbers on black background. Made in China



TCounter

\$4.95/ea



Scalex MapWheel™

Electronic distance measurement for any scale map

Measure maps the fast, accurate way with the Scalex MapWheel™. Here is the perfect tool specifically for taking scaled measurements from maps. Just select the built-in scale factor to match the map and roll the MapWheel. The measurement is displayed instantly.

SPECIFICATIONS

- Accuracy: 0.25%
- Batteries: 2 x AAA (included)
- Rugged roller wheel for accurate measurement
- Audible beeper indicates wheel motion
- Easy-to-read display shows length, count and scale factor simultaneously
- COUNT and ADD button (far side)
- 19 built-in user scale factors including all common map scales
- Measures in miles, kilometers and nautical miles
- Counter and adder buttons on probe tip let you count stops made or add fixed destination lengths as you measure
- Calculate auto-scale factor from reduced, enlarged or odd-scale maps
- Create, store and retrieve user scale factors
- Clear, audible tone indicates wheel movement
- Easy-to-read liquid crystal display shows length, count and scale factor simultaneously
- Automatic shut-off assures long battery life
- Low battery indicator
- One year limited warranty



MapWheel	\$27.95
MapWheelCase	\$7.95

43 45

Map Gridding Tools

Tools for getting your grid lines right the first time.

While many maps include UTM and Lat/Lon coordinate ticks along the edges of the map, many do not have preprinted grid lines connecting these edge markings. To accurately plot coordinates on the map, you need these grid lines. The tools on these pages have been selected specifically for this purpose.

43 44

Gridding your maps is a task best done at home, with a good set of tools, in a warm dry environment. That's not to say I have never had to grid a map on the hood of the truck in the rain!

Stainless Steel Corked Backed Rulers

The cork back, on the underside of the ruler keeps the edge of the ruler away from the ink. This prevents ink smears and bleeds as you are working.

43 43

The 24" rulers are long enough for USGS 7.5 minute 1:24,000 scale topos. Forest Service and BLM maps come on bigger sheets. The 36" ruler is the right choice for these bigger sheets.

12'30"

SSRuler24

\$10.95/ea

SSRuler36

\$16.95/ea

43 42



43 41

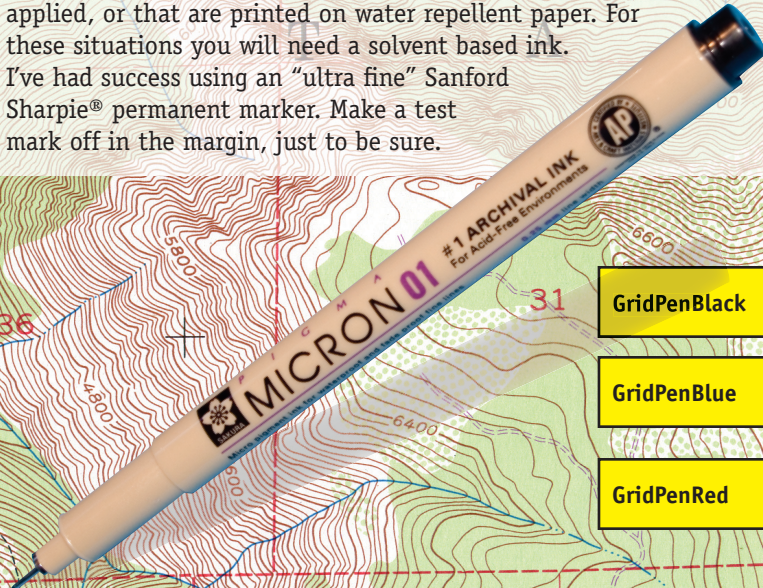
32

Technical Pens

These marking pens are high quality technical drafting pens that draw 0.25mm lines. The pigment ink is waterproof, fade proof, chemical resistant and perfect for archival applications. The water base ink formula is quick drying, odorless, and nontoxic. The ink conforms to ASTM D 4236, which indicates there is no chronic health hazard associated with the ink contained in these pens.

Note: Although the ink is permanent once dry, it is water based and will not work well on maps that have a water repellent coating applied, or that are printed on water repellent paper. For these situations you will need a solvent based ink.

I've had success using an "ultra fine" Sanford Sharpie® permanent marker. Make a test mark off in the margin, just to be sure.



GridPenBlack

\$3.00/ea

GridPenBlue

\$3.00/ea

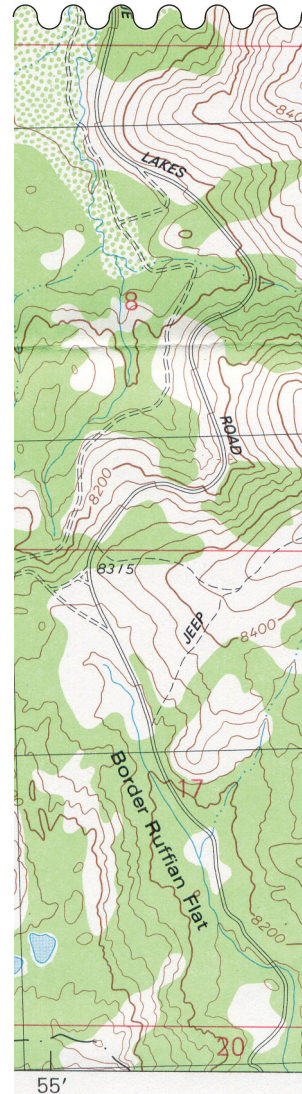
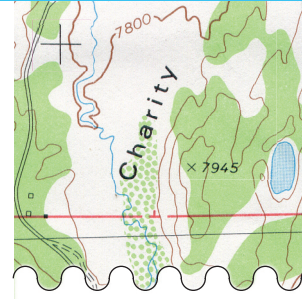
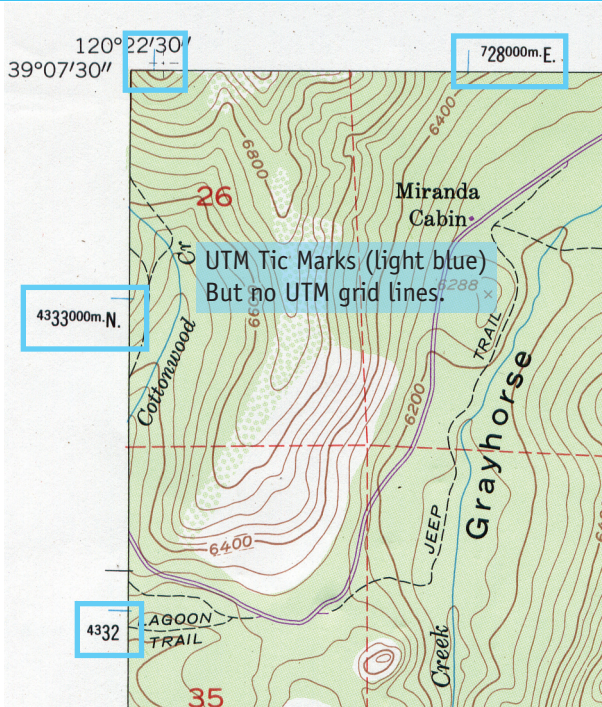
GridPenRed

\$3.00/ea

Technical pen has a straight barrel to ride on the ruler.

Cork backing keeps the steel rule above the ink.

Reference Information



Locating Coordinate Grid Information on USGS Maps

One of the first steps you will need to accomplish, is to locate the coordinate grid you intend to use. The examples shown here are USGS 1:24,000 scale maps, but the notations will be similar on most maps.

UTM 1km Grid Square

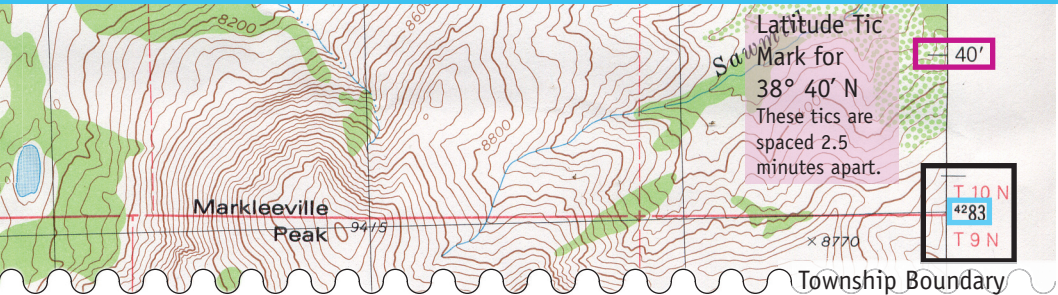
Some USGS maps have the 1km UTM grid printed on them using thin black lines spaced 1km apart. See the blue highlighted example to the right. Other USGS maps only have light blue tic marks along the edges of the map, indicating the position of the UTM grid line, but you will need to draw in the grid lines yourself. See the example map above.

Lat/Lon 2.5 Minute Grid Rectangle

If you chose to use lat/lon coordinates you will need to draw in the lat/lon grid lines. You will need to connect the ticks on the edge of the map with the crosses in the interior of the map.

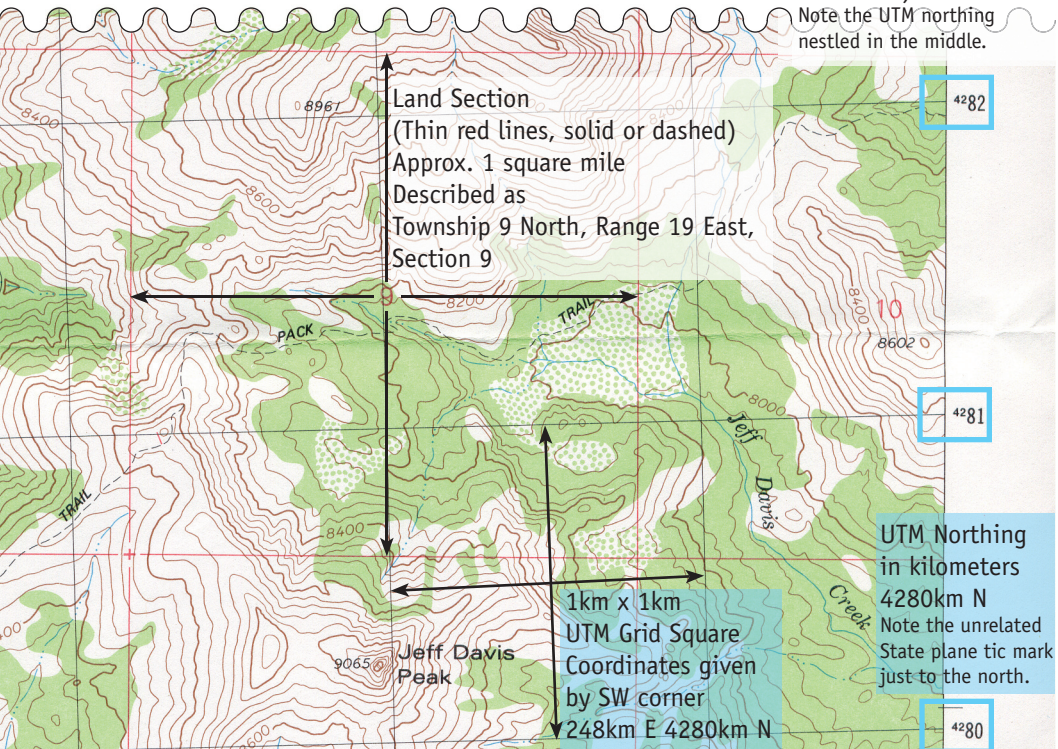
Tools for drawing grid lines are on pages 32-33.





Township Boundary
(Strong red line, solid or dashed)

Note the UTM northing nestled in the middle.



UTM Northing in kilometers
4280km N
Note the unrelated State plane tic mark just to the north.

Lat/Lon of the map corner
38° 37' 30" N Latitude
119° 53' 30" W Longitude

UTM Northing in meters
4279000m N

UTM Easting in kilometers
247km E.

State Plane Coordinate Tic
These tics are spaced 10,000 feet apart.

UTM Easting in meters
249000m E

247

2 590 000 FEET

248

INTERIOR—GEOLOGICAL SURVEY, RESTON, VIRGINIA—1979

249000m E

38°37'30"
119°52'30"

What is the UTM Coordinate System and How Do I Use It?

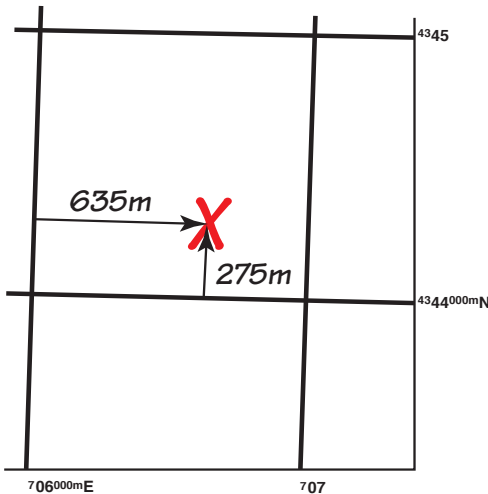
Many new GPS users are surprised to learn that there are other coordinate systems besides the Latitude/Longitude system.

The UTM or Universal Transverse Mercator coordinate system is one that can make plotting GPS coordinates on a map much easier. There are two other systems which are based on UTM, and are compatible with the UTM tools in this catalog. They are the Military Grid Reference System (MGRS) and the United States National Grid (USNG).

All USGS topographic maps printed in the last 40 years or so, are marked with UTM coordinate markings. Many other maps also have UTM markings.

A UTM coordinate consists of an east-west distance in meters called an "easting" and a north-south distance in meters called a "northing." All of the coordinates are decimal numbers. There is no need to worry about minutes and seconds. The grid is square and coordinates represent the same distance east-west as north-south. There are no negative numbers or east-west and north-south references required.

The map below shows UTM coordinate markings that might be found on a USGS topographic map. The grid lines are 1000 meters or 1 kilometer apart.



UTM Coordinates displayed on a typical GPS receiver

East-West coordinate in meters.
The "Easting"

The UTM Zone → 10 S 0708635

North-South coordinate in meters.
The "Northing"

4344275

Our Tools Allow You To Measure Within a Coordinate Grid

The tools we sell are all used for measuring within a larger grid on your map. When you are selecting a tool, you will want to know the scale of your map, the distance between the grid lines, and the type of coordinate system used. UTM grids are square, their size is measured in meters or kilometers, and is typically a multiple of 1000 meters. Lat/Lon grids are usually rectangular and their size is measured in minutes and seconds or decimal minutes.

Q- Which map datum should I use?

What is a map datum and does it matter?

A- A datum is essentially a set of assumptions about the size and shape of the earth. These assumptions are used by the surveyors and map makers when they are locating control points for the map. Back when surveying was done with transits and tape measures, each country would have its datum based on the best surveying that could be done at the time. In the United States, topographic maps produced by the USGS are usually based on the North American Datum of 1927 (NAD27). This datum is based on an original “control point” at Meeds Ranch, Kansas. (Some GPS units subdivide this datum into several datums spread over the continent. In the Continental United States use NAD27 CONUS.)

Surveying and navigation technology has changed a lot since 1927. Satellites have solved the problem of stretching the tape measure across the oceans to measure the distance between the continents. The datums we use now use the center of the earth as the “control point.” This makes these datums usable over the entire earth. The default datum for most GPS receivers is called the World Geodetic System 1984 or WGS 84. (WGS 84 is the same datum as NAD 83 for all common usages.) In the Continental United States the difference between WGS 84 and NAD 27 can be as much as 300 meters.

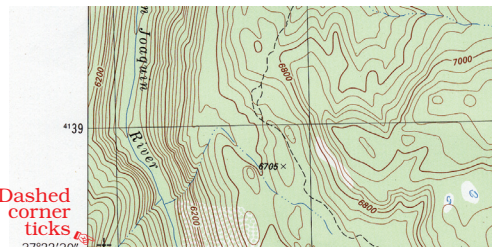
Every professional grade map that shows a geographic coordinate system such as UTM or Latitude and Longitude with any precision will also list the datum used on the map.

You should always set your GPS unit’s datum to match the datum of the map you are using.

On a USGS topographic map the datum information is in the fine print at the bottom left of the map. The datum will almost always be NAD 27. There may be information on how many meters to shift a position to convert it to NAD 83. Think of this as the error that will be introduced if you leave your GPS unit set to WGS 84. A dashed cross in the SW and NE corners of the map gives a visual indication of the difference between the two datums.

Note:

Some of the newer USGS maps are using NAD 83 as their datum. Now it’s more important than ever to check that the map and GPS datums match!



Mapped, edited, and published by the Geological Survey

Control by USGS and NOS/NOAA

Topography from aerial photographs by multiplex methods
Aerial photographs taken 1953. Field check 1955

Polyconic projection. 1927 North American datum
10,000-foot grid based on California coordinate system, zone 2
1000-meter Universal Transverse Mercator grid ticks,
zone 11, shown in blue

To place on the predicted North American Datum 1983
move the projection lines 10 meters north and
85 meters east as shown by the dashed corner ticks

UTM
zone
Datum
offset

Map datum

Different Styles of UTM Tools

Which one is right for you?

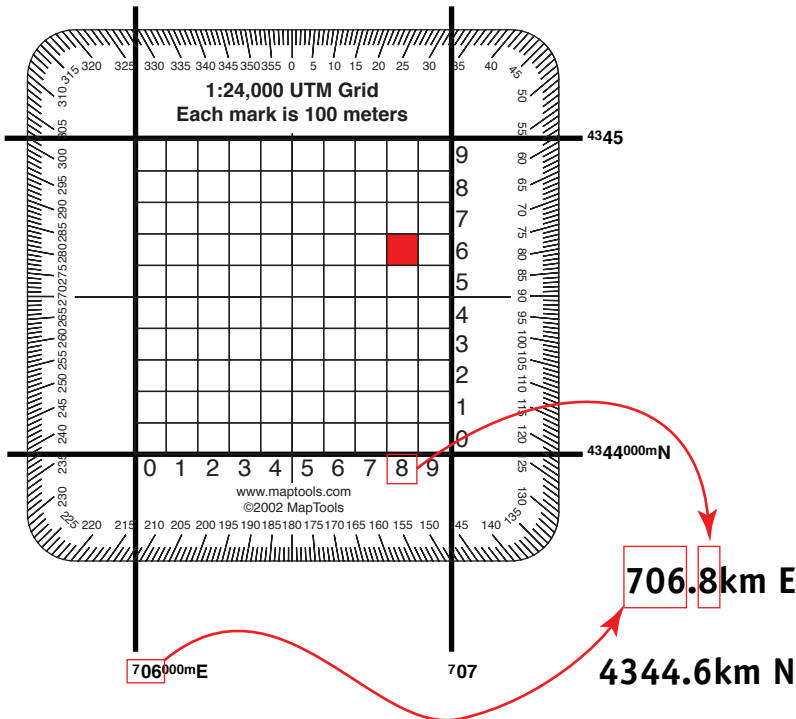
Each type of tool has its pros and cons. Understanding how the tools are used and what your needs are with regards to ease of use and precision will help you decide which tool is right for you.

The UTM Grid Tools are the quickest and easiest tools to use. The trade off is one of precision. They typically provide a result with one less significant digit than the other tools. It's the easiest tool to use on a partial grid at the edge of the map. I recommend the grid tool for beginners and folks that are working in a rushed or stressful situation.

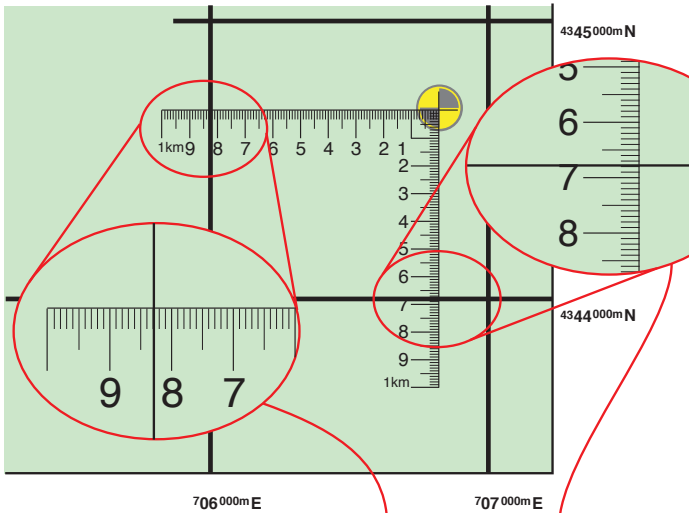
The Corner Ruler Tools or "Roamers" provide good precision, but care must be taken to keep the rulers parallel with the grid lines. Reading the rulers is harder than reading a single number off of the grid tool. This style also works well for making an improvised tool on the corner of a sheet of paper.

Our newest tool, the UTM Slot Tool, solves the problem of keeping the rulers parallel to the grid, but a bit of care must be taken to position the target in the center of the slot.

UTM Grid Tool



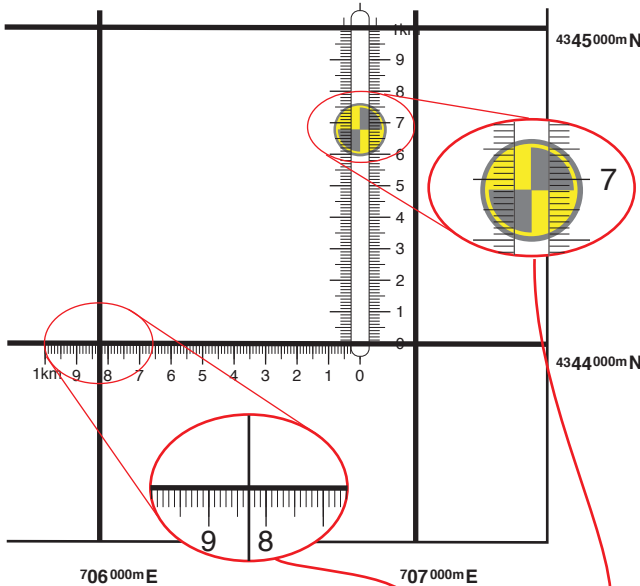
UTM Corner Tool or "Roamer"



- Position the corner of the tool over the target. Keep the rulers south and west of the target, and parallel to the grid.
- Read the Easting value for the grid from the edge of the map.
- Read the additional Easting digits from the E-W ruler where it crosses the western grid line.
- Read the Northing value for the grid from the edge of the map.
- Read the additional Northing digits from the N-S ruler where it crosses the southern grid line.

The  is located at: 706.83 km E 4344.68 km N

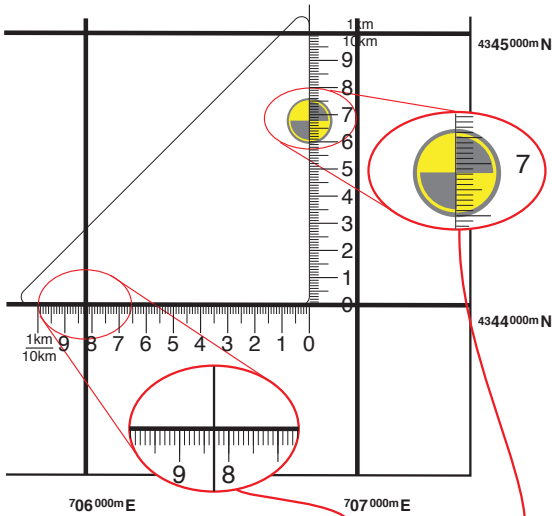
UTM Slot Tool



- Position the base of the tool on the southern grid line. Slide the tool E-W until the target is centered in the slot.
- Read the Easting value for the grid from the edge of the map.
- Read the additional Easting digits from the E-W ruler where it crosses the western grid line.
- Read the Northing value for the grid from the edge of the map.
- Read the additional Northing digits from the N-S ruler where it crosses the target.

The  is located at: 706.83 km E 4344.68 km N

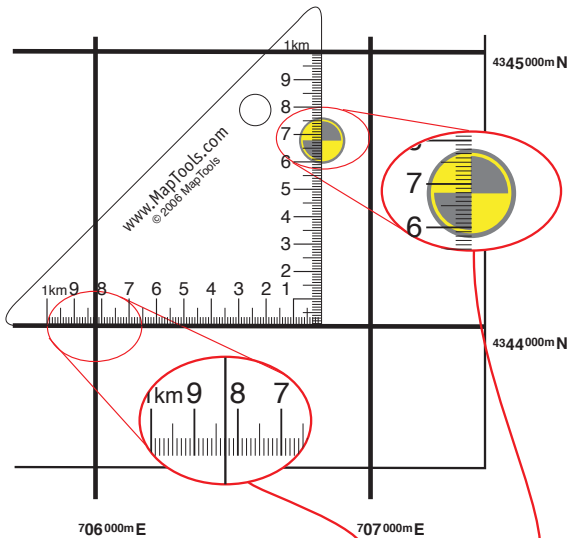
GTA or Military Style



The  is located at: **706.83 km E 4344.68 km N**
or **0683 4468** in MGRS Notation

- Position the base of the tool on the southern grid line. Slide the tool E-W until the target is centered under the N-S scale.
- Read the Easting value for the grid from the edge of the map.
- Read the additional Easting digits from the E-W ruler where it crosses the western grid line.
- Read the Northing value for the grid from the edge of the map.
- Read the additional Northing digits from the N-S ruler where it crosses the target.

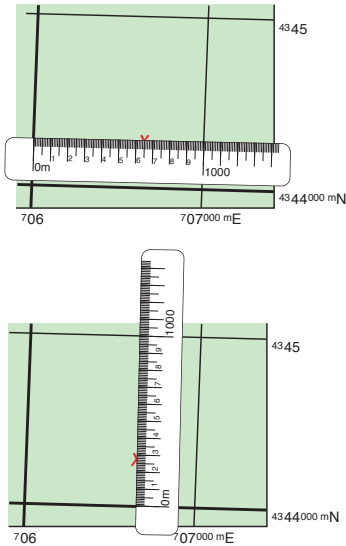
Mini Corner Tool



The  is located at: **706.83 km E 4344.68 km N**

- Position the base of the tool on the southern grid line. Slide the tool E-W until the target is centered under the N-S scale.
- Read the Easting value for the grid from the edge of the map.
- Read the additional Easting digits from the E-W ruler where it crosses the western grid line.
- Read the Northing value for the grid from the edge of the map.
- Read the additional Northing digits from the N-S ruler where it crosses the target.

Using a Map Ruler for UTM

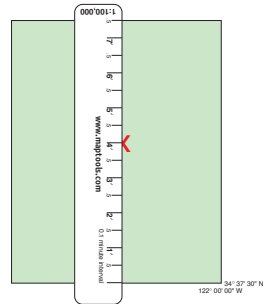


- Use a map ruler with a scale that matches the scale of your map.
- Read the Easting to the nearest kilometer using the value printed on the edge of the map for the west edge of the grid square.
- Use the metric distance edge of the map ruler (meters or kilometers) to measure the distance of the point from the west edge of the grid square.
- Read the Northing to the nearest kilometer using the value printed on the edge of the map for the south edge of the grid square.
- Use the map ruler to measure the distance of the point from the south edge of the grid square.

Using a Map Ruler for Lat/Lon

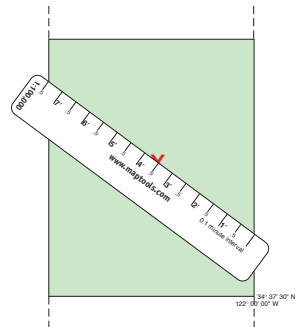
Measuring Latitude

Measuring latitude is straight forward. The ruler will fit in a N-S orientation between the grid lines. Measure north from the southern grid line to the target, and add the result to the latitude of the southern grid line. (In the southern hemisphere you measure south from the northern grid line.)




Measuring Longitude

Measuring longitude is trickier. The ruler is too long to fit between the grid lines because as you move away from the equator, lines of longitude get closer together. To solve the problem, we “scale” the ruler by placing it on a diagonal. Place the ruler so that the ends of the scale are aligned with the grid lines; then slide the ruler in a N-S direction until the edge of the ruler crosses the target. Measure west from the eastern grid line, and add the result to the longitude of the eastern grid line. (In the eastern hemisphere you measure east from the western grid line.)



Map Scale

Map Scale is the relationship of distances shown on the map to distances on the ground. There are several different ways to describe map scale:

As a ratio	1:24,000
As a fraction	$1/24,000$
As a divisor	24,000
As an equivalence	1 inch \leftrightarrow 2000 feet
As a graphic scale bar	

In a scale ratio the first number represents a distance on the map. The value of one is always used for the map distance. The second number is the distance over the ground in the same units as measured on the map. The ratio holds true no matter what units of measure are selected. However, both map and ground distances must be measured in the same units.

Thus on a 1:24,000 scale map...

one inch on the map is 24,000 inches on the ground.

one foot on the map is 24,000 feet on the ground.

Occasionally a map will not list its scale ratio, but will instead provide either a scale equivalence or a graphic scale bar. With a scale equivalence you can determine the scale ratio by changing both sides of the equivalence to the same units. For example a map with a scale equivalence of 1 inch \leftrightarrow 2000 feet, would have a scale equivalence of 1 inch \leftrightarrow 24000 inches, multiplying feet by 12 to get inches. This would be a scale ratio of 1:24,000.

By measuring the length of a known distance on a graphic scale bar on the map you can calculate the map's scale ratio divisor. The following formulas assume you measured in millimeters.

Scale Divisor = $1,000,000 \div$ (1 kilometer on the map, measured in mm)

Scale Divisor = $1,609,344 \div$ (1 mile on the map, measured in mm)

1 mile = 5280 feet

1 meter = 3.28 feet

1 mile = 1.603 kilometers

1 kilometer = 1000 meters

1 kilometer = 0.62 miles

1 meter = 1000 millimeters

MapTools

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Woodside, CA 94062

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That's why we offer so much educational material in our catalog, on our web site, and by phone and email. Many of our customers are new to geographic coordinates and GPS equipment. Our goal is to get you the right tools for your maps, and to have you confident that you can use them to get the results you need.

Here is what a few of our customers have to say...

Thanks to my buying your ruler kit last year I have learned to plot on my topo maps with the Lat/Lon grids. However, this past hunting season we moved to a new area and my map was not for that area. We purchased a regular topo and due to the training you provided I was able to plot some points and set my gps up to a "go to", they were on the money.

Thanks, Alan M _____

I was amazed at the rapid turnaround on my order (Shipped Friday - the day after Thanksgiving - same day as I ordered). And the tools showed up in my mailbox on Monday. By Monday evening, I was playing with the topo of my home quadrangle, my GPS and the overlay grid and slot tool. Thanks for your quick response.

Cordially, Scott B _____

I just wanted say thanks for your quick response to my order. The items are awesome! I've ordered a few more things today. I'm introducing my 2 sons to map and compass navigation in addition to getting better at GPS myself. I was in Special Forces in the early 80's and was fairly competent at map and compass navigation. Since then I haven't needed it much and let the GPS revolution pass me by. Now with some folks here getting into trouble with GPS by not having a land navigation background I felt it was important to pass along some knowledge to my sons. A coworker told me about your website and I was very impressed by the products and the information I found there. Thanks again for your efforts, products and reasonable prices.

Jim M _____



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7/3/2010