DETERMINING DISTANCE TRAVELED
(WITHOUT GPS)

	PACES	METERS
EASY, FLAT TERRAIN	66	100
ROUGHER TERRAIN WITH SOME SLOPE	75	100
STEEP / ROUGH TERRAIN	95	100

Based on average human stride. Verify your pace count before going to the field. One pace is every time the left foot touches the ground (2 steps).

DECLINATION

EAST   WEST
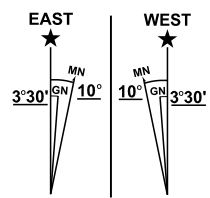
True North is aligned with the longitude lines on the map. Grid North (GN) aligns with the UTM lines on the map. Magnetic North (MN) is aligned with a compass needle. For WEST add the Dec. value to the compass bearing. For EAST subtract the Dec. from the compass bearing. **EAST IS LEAST, WEST IS BEST.**
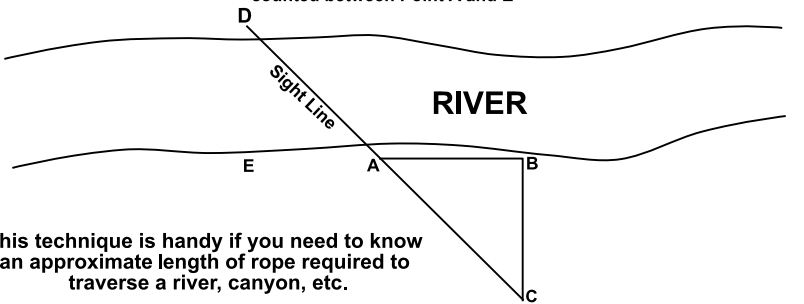
TO TRAVEL AN AZIMUTH

Use a protractor or compass to determine an azimuth you wish to travel. Rotate the compass bezel until that degree lines up with the index mark on the compass base. Adjust for declination (if required). Place the compass flat in your hand with the index mark pointing in front of you. Rotate your body until the red compass needle aligns with the red outline. Travel this azimuth by sighting an object along your desired path of travel (tree, rock, bushes, lake, etc.) and walk to it. Once you reach the object, find another on the same azimuth and repeat the process.

MAGNETIC DECLINATION CORRECTION

	EAST	WEST
MAP TO COMPASS:	Subtract	Add
COMPASS TO MAP:	Add	Subtract

NEVER TRUST A GPS OR OTHER ELECTRONIC DEVICE AS YOUR SOLE METHOD FOR NAVIGATION. ALWAYS CARRY A MAGNETIC COMPASS AND KNOW HOW TO USE IT! ALWAYS VERIFY THE MAP DATUM SET IN THE GPS MATCHES THE DATUM PRINTED ON THE MAP. COMMON DATUMS INCLUDE *NAD 27 CONUS, NAD83* AND *WGS84.* WHEN USING UTM SET THE POSITION FORMAT IN THE GPS UNIT TO *UTM UPS.* ALWAYS VERIFY YOUR MAP LOCATION BY USING TERRAIN ASSOCIATION AND COMPASS SKILLS.

USING UTM WITH GPS & TOPO MAP

GPS READING

16 S 0572700 E
3764200 N
MAP ZONE

Number of meters past grid line

To find GPS location X on a map:
GRID MARKS ALREADY PRINTED ON MAP

(1) On the map, find the 1000 meter square grid from the grid marks on the map. (2) Using the proper map scale card, measure the number of meters Easting (last 3 digits on the "E" GPS reading) from the left grid line (example above shows 700 meters). (3) Measure the number of meters Northing along the North grid line (example above shows 200 meters). The intersection is your location on the map.

CONTOUR LINES

The closer the contour lines, the steeper the terrain. Check the map for the contour intervals. Contour lines will also have elevation markings.

STEEP TERRAIN
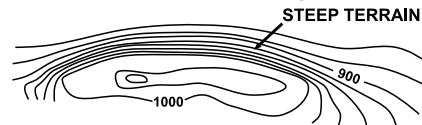
Example above shows a map with contour intervals of 20 feet.

BASIC TRAPS & SNARES
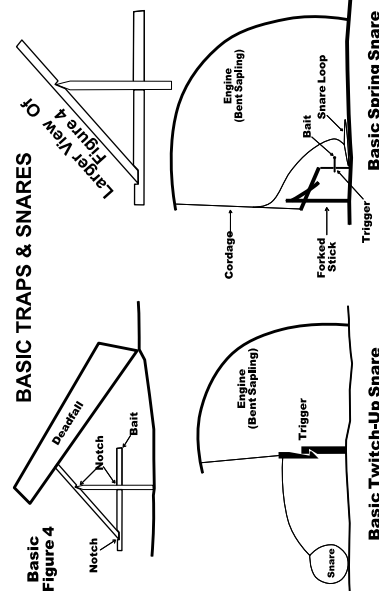
FIRE BUILDING

Fire building is a step-by-step process with preparation being the key to success. Sources for reliable tinder that will catch readily from the spark of a Ferro rod are magnesium scraped from the Ferro rod holder, bird and mouse nests, various tree barks, dead grasses, pocket lint, and dry leaves. Once you have a good tinder bundle, gather progressively larger wood and have this ready before you light the tinder. It may be necessary to build a makeshift fire shelter to protect your startup fire from heavy rains. When gathering firewood, always search out standing dead wood since it sheds more water than wood laying on the ground. As soon as your tinder begins to blaze place very small pieces of dry wood on the tinder bundle. Slowly and progressively build your fire bigger.

Table of tan(angle)

Angle	tan(a)	Angle	tan(a)
0.0	0.00	46.0	1.0355
1.0	.0175	47.0	1.0724
2.0	.0349	48.0	1.1106
3.0	.0524	49.0	1.1504
4.0	.0699	50.0	1.1918
5.0	.0875	51.0	1.2349
6.0	.1051	52.0	1.2799
7.0	.1228	53.0	1.3270
8.0	.1405	54.0	1.3764
9.0	.1584	55.0	1.4281
10.0	.1763	56.0	1.4826
11.0	.1944	57.0	1.5399
12.0	.2126	58.0	1.6003
13.0	.2309	59.0	1.6643
14.0	.2493	60.0	1.7321
15.0	.2679	61.0	1.8040
16.0	.2867	62.0	1.8907
17.0	.3057	63.0	1.9626
18.0	.3249	64.0	2.0503
19.0	.3443	65.0	2.1445
20.0	.3640	66.0	2.2460
21.0	.3839	67.0	2.3559
22.0	.4040	68.0	2.4751
23.0	.4245	69.0	2.6051
24.0	.4452	70.0	2.7475
25.0	.4663	71.0	2.9042
26.0	.4877	72.0	3.0777
27.0	.5095	73.0	3.2709
28.0	.5317	74.0	3.4874
29.0	.5543	75.0	3.7321
30.0	.5773	76.0	4.0108
31.0	.6009	77.0	4.3315
32.0	.6249	78.0	4.7046
33.0	.6494	79.0	5.1446
34.0	.6745	80.0	5.6713
35.0	.7002	81.0	6.3138
36.0	.7265	82.0	7.1154
37.0	.7535	83.0	8.1443
38.0	.7813	84.0	9.5144
39.0	.8098	85.0	11.430
40.0	.8391	86.0	14.301
41.0	.8693	87.0	19.081
42.0	.9004	88.0	28.636
43.0	.9325	89.0	57.290
44.0	.9657	90.0	Infinite
45.0	1.000		

Object Of Unknown Distance

EQUATION: $d = (\text{Tan } (90 - (A - B))) \times \text{Ref}$

d = Distance (to be calculated)
Tan = Tangent value of the resultant angle
A = Greater value of the two measured bearing angles
B = Lower value of the two measured bearing angles
Ref = Measured reference distance between Point 1 & Point 2

Determining Approximate Distance Across A River:

1) Mark a starting point along a straight stretch of the river as Point A.
2) Start at Point A and walk 10 paces (can be another number) along the side of the river to point B.
3) Turn 90 degrees and walk the same amount of paces to Point C.
4) Sight from Point C to Point A and find a distant point (D) on the other side of the river.
5) Return to Point A and count your paces until you are directly across from the point you sighted as D (this will be Point E).
6) The river is approximately the same distance in width as the distance you counted between Point A and E

This technique is handy if you need to know an approximate length of rope required to traverse a river, canyon, etc.
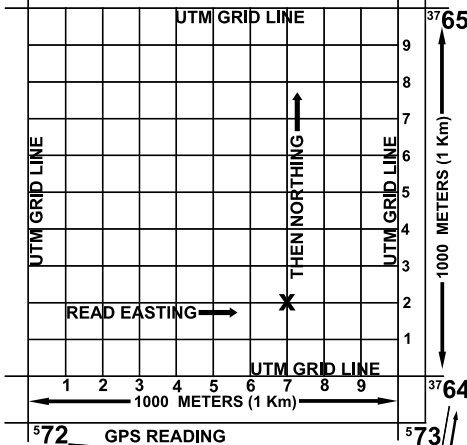
SHORT-TERM SURVIVAL TIPS

Lost: Only move if necessary. Stay put if injured / confused. Make shelter and signals. If you move, leave signs to indicate your direction of travel.

Shelter: Build shelter only big enough for the number of people needing it. Choose a location that protects from the environment. Try to face shelter Southeast towards the sun to provide the longest heat and direct light.

Signaling: Three fires in a triangle or row is an international distress signal. Placing green vegetation on top of fires will make thick white smoke for signaling in the daytime.

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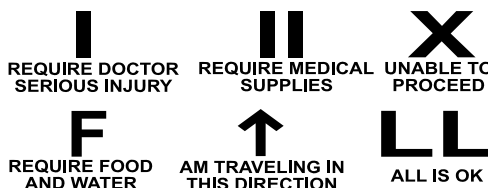randallsadventure.com
eseeknives.com

GROUND TO AIR DISTRESS SIGNALS

I REQUIRE DOCTOR SERIOUS INJURY

II REQUIRE MEDICAL SUPPLIES

X UNABLE TO PROCEED

F REQUIRE FOOD AND WATER

↑ AM TRAVELING IN THIS DIRECTION

LL ALL IS OK

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CONVERSIONS

100 METERS = 109.3 YARDS
100 YARDS = 91.4 METERS
1 METER = 3.28 FEET
1 FOOT = .305 METERS
1 KILOMETER = .621 MILE
1 MILE = 1.61 KILOMETER
1000 METERS = 1 KILOMETER
1 INCH = 2.54 CM

ESCAPE & EVASION TIPS

Maintain A Positive Attitude
Be Aware Of Escape Opportunities During Transit
Best Escape Chance May Exist During Initial Capture
Plan Your Evasion Before Attempted Escape
Get Outside The Attacking Force Perimeter
Gather As Many Tools As Possible
Stay Out Of Sight Once You Begin To Move
Camouflage To Fit The Environment
Keep Shelters Small, Irregular & Secluded
Build No Fire Unless Absolutely Necessary
Travel During Rain, Wind Or Other Noises
Disable Non-Essential Electronic Devices
Move Sporadic - Not On An Azimuth
Practice Noise And Light Discipline
Defeat The Tracking Dog Handler, Not The Dog