Simple Compass Game for Scout Units

Setup Instructions: 5 to 10 minutes

1 Take 3 equal lengths of rope (paracord)
   (Recommend 100 ft) or 3 long tape measures
2. Have 3 scouts (or ASM's) hold
   the ends of 2 ropes to make
   a triangle (see diagram)
3. Have the scouts mark the
   position of their corner.
   (use a stake or a vertical PVC pipe
   stuck vertical in the ground.
4. Remove the rope.
5. Measure the bearing of Leg 1
   and record.
6. Add 120 degrees to bearing of 1st leg
   to calculate turn 1 going clockwise
   and record.
7. Add 120 degrees to bearing of 2nd leg
   to calculate turn 2 going clockwise
   and record.

You now have both distance and direction
for all 3 legs of the triangle. This is your master key.

Example:

If the triangle has 100 foot sides
     (or any length of equal sides)
Then each turn (outside angle) will be 120 degrees (calculated by 180 degrees- 60 degrees (inside angle))
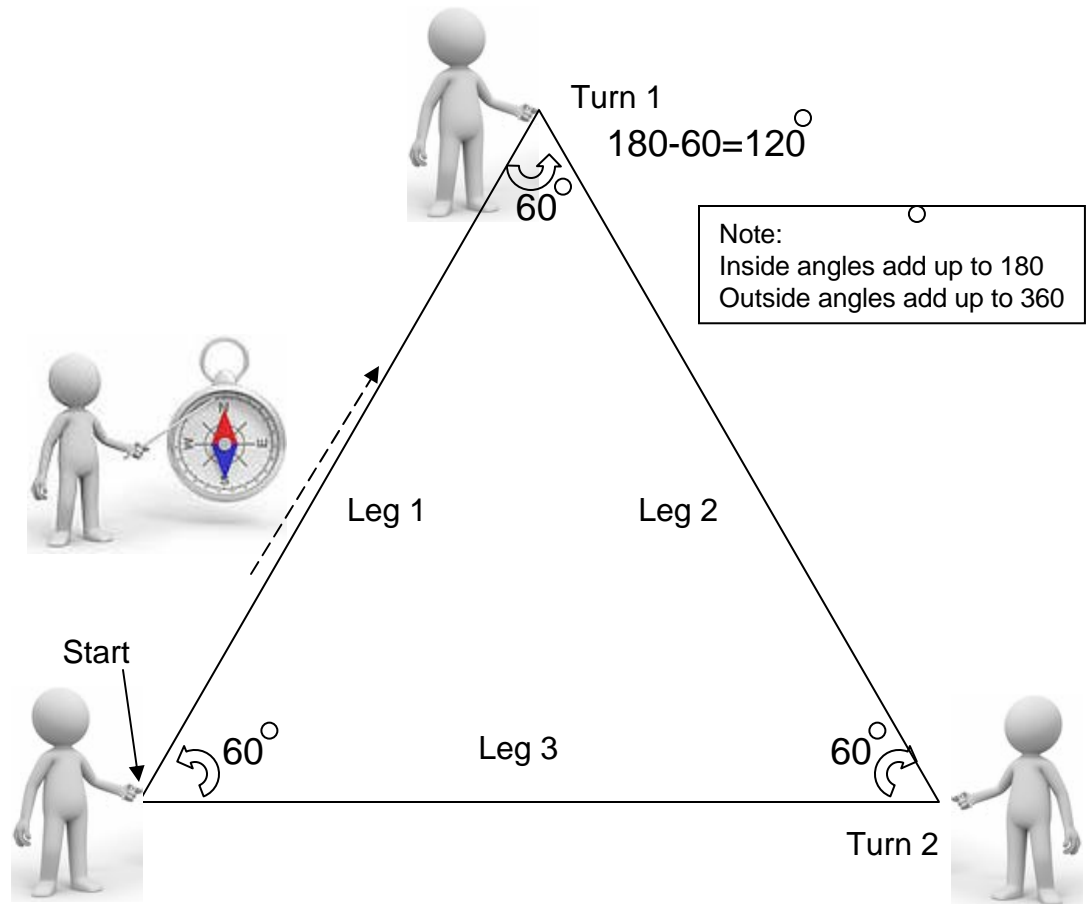
So, if the first leg is north (360 on the compass)
Then if leg 1= 360 degrees, leg 2 = 120 degrees, & leg 3 = 240 degrees.
Upon setup, you can make the 1st bearing any you want and then adjust your answer sheet for the other 2 sides.

Complete the exercise (< 5 minutes for each scout)

1. Each scout should walk the compass course starting at the same point and
   traveling in the same direction (ex: clockwise or counterclockwise)
2. Have each scout record what he thinks is the bearing and distance for each leg
3. Record his name and answers on a 3x5 card and give to scoutmaster.
4. The scoutmaster will compare each scout's answer to his master key.

Turn 1
$180-60=120°$

Note:
Inside angles add up to 180
Outside angles add up to 360

$60°$

Leg 1   Leg 2

Start

$60°$ Leg 3 $60°$

Turn 2

Materials List
Rope or tape measure x 3
Stakes or PVC pipe as marker x 3
Compass x 1

Changing Things Up

Triangle Calculator

Result

Turn 2
104.478°

Leg 2
75   50   Leg 3

Turn 1   Leg 1   Start
28.955°   100   46.567°
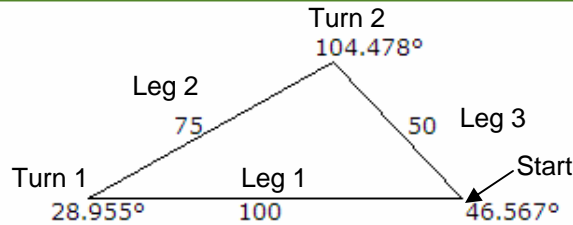
Side 1: 100   opposite angle: 104.478°
Side 2: 75   opposite angle: 46.567°
Side 3: 50   opposite angle: 28.955°
Total Area: 1815.4609435347

C

75 side b   side c 50

A   side a   B

100

Angle Unit: degree ° ▼

Calculate ▶

There are infinite combinations so scouts can see a different problem every time you do this exercise.

If you want to change things up a little once the scouts catch on to the equilateral triangle, go to the below web site and plug in different numbers to get new measurements.

http://www.calculator.net/triangle-calculator.html

- Setup will still be the same using pre-cut rope of differing lengths according to what you program into the web site.
- Get 3 bodies to hold the corners and place your corner markers in the ground.
- Remove the rope.
- Then measure 1st leg's bearing and subtract the first turn angle from 180, then add to 1st bearing to get your 2nd bearing.

Enter the side lengths here and click Calculate

Answers are generated upper left

- Subtract each "inside angle" from 180, then add to the bearing of your 1st leg to get your 2nd bearing.
- Bearing 3 will be the inside angle subtracted from 180, then added to bearing 2.

In this case, if leg 1 of 100 ft is 360 degrees (same as 000),
leg 2 of 75 ft will =151 (180-**28.995**=151+000),
leg 3 of 50 ft will = 226.5 (180-**104.478**=75.5+151) (rounded)

The first leg can be any bearing, just add the correct Degrees to get the 2nd bearing and 3rd bearing.