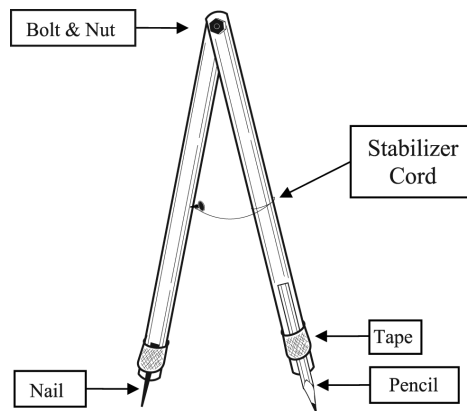


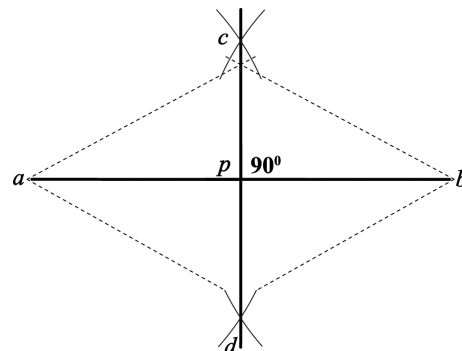
Sanctuary Floor Plan: Some Geometry Reminders

You can do virtually all the layout with a 100-foot tape measure, a yardstick for a straight edge, and a compass that will be used for creating angles. The tape measure pulled taut will give you straight lines. A string or cord (make sure it does not stretch when pulled tight) tied around a pencil will give you arcs and curves. A handy stick compass for creating angles (like 90-degree perpendicular corners) can be made by taking two long dowels (I suggest 36 inches), one-half to one inch in diameter, drilling a hole through both at about 2 inches from the end, and fixing them together with a threaded one-eighth inch bolt and wing nut that you can tighten and loosen for adjustments. Use masking tape to attach a short pencil securely to the end of one dowel and a nail to the other. A stabilizer cord can be added if you wish. You should be in business.



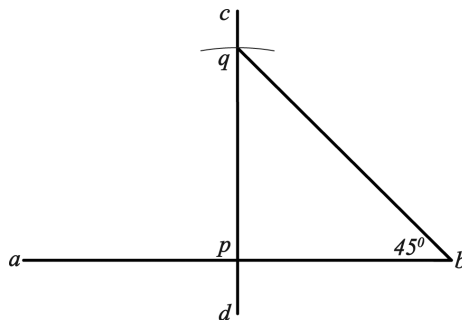
A 90-degree Angle or Perpendicular:

1. Draw line $a-b$ with point p being in about the center of $a-b$ where you want the 90-degree angle.
2. Place the stick compass on point a and set it to about two-thirds of the length of line $a-b$.
3. Draw arcs above and below line $a-b$.
4. Keeping the same setting on the stick compass, set it on point b .
5. Draw arcs above and below line $a-b$ that intersect with the arcs done from point a .
6. Connect the points where these arcs crossed (points c and d) with a straight line.
7. The resulting line $c-p-d$ is at 90 degrees to line $a-b$. It is square or perpendicular.



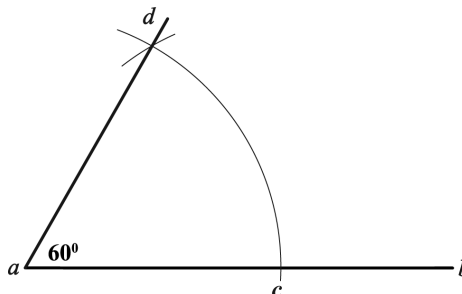
A 45-degree Angle:

1. Repeat the above construction of a 90-degree angle, steps 1–7.
2. Now place the stick compass point at p , and set width to $p-b$.
3. Draw an arc through the line $c-d$.
4. Connect points b and q (the intersection of the new arc and line $c-d$).
5. The resulting angle $q-b-p$ is a 45-degree angle.



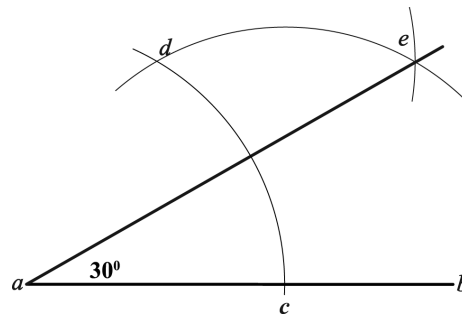
A 60-degree Angle:

1. Draw the line $a-b$.
2. Set compass to about two-thirds the length of $a-b$.
3. With compass placed on point a , draw an arc across line $a-b$ and upward about 90 degrees.
4. Now place the compass on the intersection point (c) of line $a-b$.
5. With the same compass setting, place the compass at point c and draw an arc intersecting the first arc (point d).
6. Draw a line through points a and d .
7. The resulting angle $d-a-c$ is a 60-degree angle.



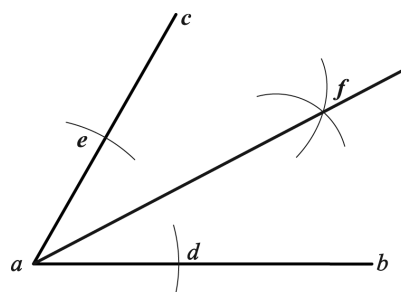
A 30-degree Angle:

1. Draw the line $a-b$.
2. Set compass to about two-thirds the length of $a-b$.
3. With compass placed on point a , draw an arc across line $a-b$ and upward about 45 degrees.
4. Now place the compass on the intersection point (c) of line $a-b$.
5. With the same compass setting, place the compass at point c and draw a long arc intersecting the first arc (point d).
6. Still with the same compass setting, place the compass point at d and draw another arc intersecting the second arc (point e).
7. Draw a line through points a and e .
8. The resulting angle $e-a-c$ is a 30-degree angle.



Bisecting an Angle: (Can be used to create 15- and 22.5-degree angles from 30- and 45-degree angles above).

1. Angle $c-a-b$ is the angle to be bisected.
2. Set the compass to about half the length of $a-b$.
3. With the compass point at a , draw an arc intersecting both lines $a-b$ at d and $a-c$ at e .
4. With about the same setting, place the compass at d , and draw an arc between points c and b .
5. Without changing this second setting, place the compass point at e , and draw another arc intersecting this third arc at point f .
6. Draw a line through points a and f .
7. The line $a-f$ has divided the angle $c-a-b$ in two equal parts.



Finding the Center Point of a Curve or Arc:

1. Draw two chords, $a-b$ and $c-d$ (a chord is a straight line between any two points on the perimeter of the circle) anywhere on the arc, curve, or circle.
2. Construct a perpendicular (90-degree) line bisecting (dividing in two equal parts) each chord.
3. With the compass set to about two-thirds the length of chord $a-b$, and on point a , draw arcs above and below the line.
4. Then with the same compass setting, and on point b , draw arcs above and below the line intersecting the previous arcs at points e and f .
5. Draw a line through points e and f .
6. Repeat steps 3–5 on chord $c-d$, establishing line $g-h$.
7. The intersection of lines $e-f$ and $g-h$ is the center of the curve, arc, or circle at point k .

