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CC GEOMETRY TROICI

**MINI-LESSON #1: CONSTRUCTIONS**

What is a construction?

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Main constructions you should know:

1. Copy a segment

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| **STEPS** | **EXAMPLE** |
| 1. Draw a point and extend a new line separate from the original line segment. This will be the end point of the new line segment.
2. Place the compass on one point of the original line segment and extend the compass the full width of the line segment.
3. Keeping that width, place your compass on your new point and create an arc. Where the arc intercepts the line is where the line segments will be congruent.
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1. Bisect a segment (Perpendicular Bisector)

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| **STEPS** | **EXAMPLE** |
| 1. Place your compass on one end of the line segment and extend the width a little more than half way.
2. Create an arc above and below the line
3. Without changing the width, move your compass to the other point and create another arc above and below.
4. Draw a dot where both arcs intercept above and below the line
5. Connect a line through the two dots
 | \*THINK: TROUT!\* |

1. Copy an angle

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| **STEPS** | **EXAMPLE** |
| 1. Make a point P that will be the vertex of the new angle. From P, draw a [ray](http://www.mathopenref.com/ray.html) PQ. This will become one side of the new angle.
2. Place the compasses on point A, set to any convenient width.
3. Draw an arc across both sides of the angle, creating the points J and K as shown.
4. Without changing the compasses' width, place the compasses' point on P and draw a similar arc there, creating point M as shown.
5. Set the compasses on K and adjust its width to point J.
6. Without changing the compasses' width, move the compasses to M and draw an arc across the first one, creating point L where they cross.
7. Draw a [ray](http://www.mathopenref.com/ray.html) PR from P through L and onwards a little further. The exact length is not important.
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1. Bisect an angle

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| **STEPS** | **EXAMPLE** |
| 1. Place the compasses' point on the angle's [vertex](http://www.mathopenref.com/vertex.html) Q.
2. Adjust the compasses to a medium wide setting. The exact width is not important.
3. Without changing the compasses' width, draw an [arc](http://www.mathopenref.com/arc.html) across each leg of the angle.
4. Place the compasses on the point where one arc crosses a leg and draw an arc in the [interior of the angle](http://www.mathopenref.com/angleinterior.html).
5. Without changing the compasses setting repeat for the other leg so that the two arcs cross.
6. Using a straightedge or ruler, draw a line from the vertex to the point where the arcs cross
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1. Copy a triangle

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| **STEPS** | **EXAMPLE** |
| 1. Mark a point P that will be one vertex of the new triangle
2. Set the compasses' width to the length of one side of the original triangle ABC. In this example we use AC.
3. With the compasses' point on P, make an arc near where the next vertex of the triangle will be. Mark a point R on the arc. This will become the next vertex of the new triangle. PR is equal in length to AC
4. Use the compasses to measure the length of the side AB in the original triangle.
5. Place the compasses' point on P and make an arc in the vicinity of where the third vertex of the triangle will be.
6. Use the compasses to measure the length of the side BC in the original triangle
7. From point R, draw an arc crossing the first. where these intersect is the vertex Q of the triangle
8. Finally, draw the three sides of the new triangle PQ ,PR, and QR.
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**“WHEN IN DOUBT, DRAW THE TROUT!”**