Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_

Constructions Note Sheet

* Constructing a parallel through a point

| **After doing this** | **Your work should look like this** |
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| Start with a line PQ and a point R off the line. | Geometry construction with compass and straightedge or ruler or ruler |
| **1.**Draw a   \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  through R and across the line PQ at an angle, forming the point J where it intersects the line PQ. The exact angle is not important. | Geometry construction with compass and straightedge or ruler or ruler |
| **2.**With the compasses' width set to about half the distance between R and J, place the point on J, and draw an arc across both lines. | Geometry construction with compass and straightedge or ruler or ruler |
| **3.**\_\_\_\_\_\_\_\_\_\_\_ adjusting the compasses' width, move the compasses to \_\_\_\_\_ and draw a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to the one in step 2. | Geometry construction with compass and straightedge or ruler or ruler |
| **4.**Set compasses' width to the distance where the  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ crosses the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. | Geometry construction with compass and straightedge or ruler or ruler |
| **5.**Move the compasses to where the upper arc \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  and draw an arc across the upper arc, forming point S. | Geometry construction with compass and straightedge or ruler or ruler |
| **6.**Draw a straight line through points \_\_\_\_\_\_ and \_\_\_\_\_\_\_. | Geometry construction with compass and straightedge or ruler or ruler |
| Done. The line RS is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to the line PQ | Geometry construction with compass and straightedge or ruler or ruler |

* Bisecting an angle

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|  |  | | **After doing this** | **Your work should look like this** | | --- | --- | | Start with angle PQR that we will bisect. | Geometry construction with compass and straightedge or ruler or ruler | | **1.**Place the compasses' point on the angle's [\_\_\_\_\_\_\_\_\_\_\_\_\_](https://www.mathopenref.com/vertex.html) Q. | Geometry construction with compass and straightedge or ruler or ruler | | **2.**Adjust the compasses to a medium wide setting. The exact width is not important. | Geometry construction with compass and straightedge or ruler or ruler | | **3.**Without changing the compasses' width, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ across each leg of the angle. | Geometry construction with compass and straightedge or ruler or ruler | | **4.**The compasses' width can be changed here if desired. Recommended: leave it the same. | Geometry construction with compass and straightedge or ruler or ruler | | **5.**Place the compasses on the point where \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and draw an arc in the [interior of the angle](https://www.mathopenref.com/angleinterior.html). | Geometry construction with compass and straightedge or ruler or ruler | | **6.**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the compasses setting repeat for the other leg so that the two arcs cross. | Geometry construction with compass and straightedge or ruler or ruler | | **7.**Using a straightedge or ruler, draw a line from the vertex to the point where the arcs cross | Geometry construction with compass and straightedge or ruler or ruler | | Done. This is the \_\_\_\_\_\_\_\_\_\_\_\_\_ of the angle ∠PQR. | Geometry construction with compass and straightedge or ruler or ruler | |  |

* Constructing the perpendicular bisector of a line segment

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| **After doing this** | **Your work should look like this** |
| Start with a line segment PQ. | Geometry construction with compass and straightedge or ruler or ruler |
| 1. Place the compasses on one end of the line segment. | Geometry construction with compass and straightedge or ruler or ruler |
| 2. Set the compasses' width to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  The actual width does not matter. | Geometry construction with compass and straightedge or ruler or ruler |
| 3. Without changing the compasses' width, draw an arc \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the line. | Geometry construction with compass and straightedge or ruler or ruler |
| 4. Again without changing the compasses' width, place the compasses' point \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the line. Draw an arc above and below the line so that the arcs cross the first two. | Geometry construction with compass and straightedge or ruler or ruler |
| 5. Using a straightedge, draw a line between the points where the arcs \_\_\_\_\_\_\_\_\_\_\_\_\_\_. | Geometry construction with compass and straightedge or ruler or ruler |
| 6. Done. This line is \_\_\_\_\_\_\_\_\_\_\_\_\_ to the first line and bisects it (cuts it at the exact \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_of the line). | Geometry construction with compass and straightedge or ruler or ruler |

* Constructing the altitude of an acute triangle

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| | **After doing this** | **Your work should look like this** | | --- | --- | | We start with an acute triangle PQR.  See also the [version for obtuse triangles](https://www.mathopenref.com/constaltitudeobtuse.html). | https://www.mathopenref.com/images/constructions/constaltitude/step0.gif | | **1.**Choose one side of the triangle and extend it in both directions.  This is done because the side may not be long enough to perform the steps that follow. | https://www.mathopenref.com/images/constructions/constaltitude/step1.gif | | **2.**Set the compass on the opposite vertex (here R) and set the width to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  PQ. | https://www.mathopenref.com/images/constructions/constaltitude/step2.gif | | **3.**Make two arcs across PQ, creating the points A and B. | https://www.mathopenref.com/images/constructions/constaltitude/step3.gif | | **4.**From A and B, make two arcs that \_\_\_\_\_\_\_\_, creating point C. Make sure both arcs are drawn with the \_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. | https://www.mathopenref.com/images/constructions/constaltitude/step4.gif | | **5.**Draw a line through \_\_\_\_\_\_ and \_\_\_\_\_\_. Label the point S where it crosses PQ. | https://www.mathopenref.com/images/constructions/constaltitude/step5.gif | | **Done** The segment RS is an \_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the triangle PQR. | https://www.mathopenref.com/images/constructions/constaltitude/step6.gif | |