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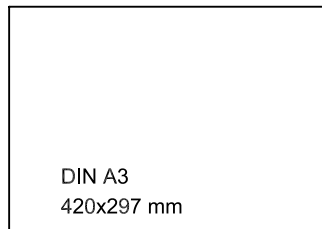
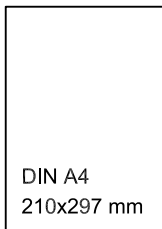
TECHNICAL DRAWING - TOOLS AND BASIC GEOMETRY CONSTRUCTIONS

1- DRAWING TOOLS

- A Pencil
- B Rubber / Eraser
- C Compass
- D Set square
 - 45 degree style
 - 30/60 degree style
- E Ruler / straightedge
- F Triangular scale ruler
- G Circle Template
- H Technical pen
- I Technical Marker (marking pen)
- J French curves
- K (Ruling) pen adapter
- L Shapener / Pencil sharpener

2 - PAPER

SIZE: The international paper size standard, ISO 216, is based on the German DIN 476 standard for paper sizes

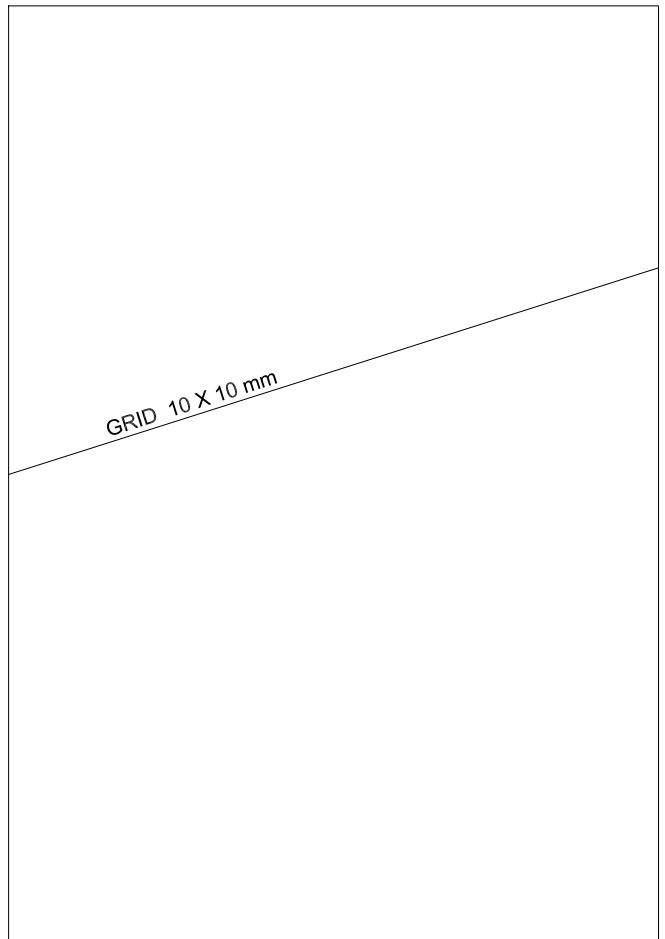
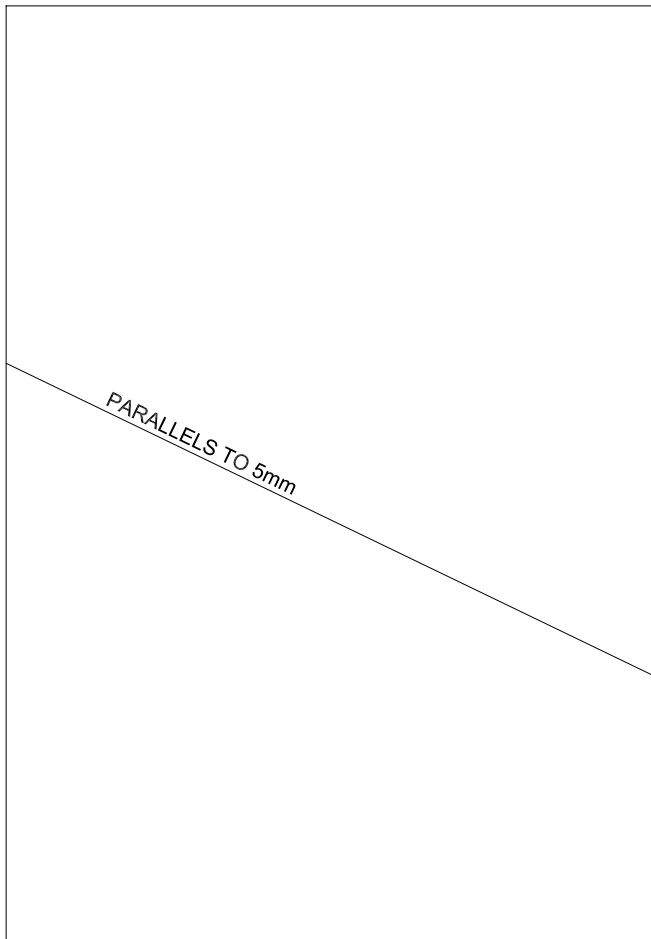
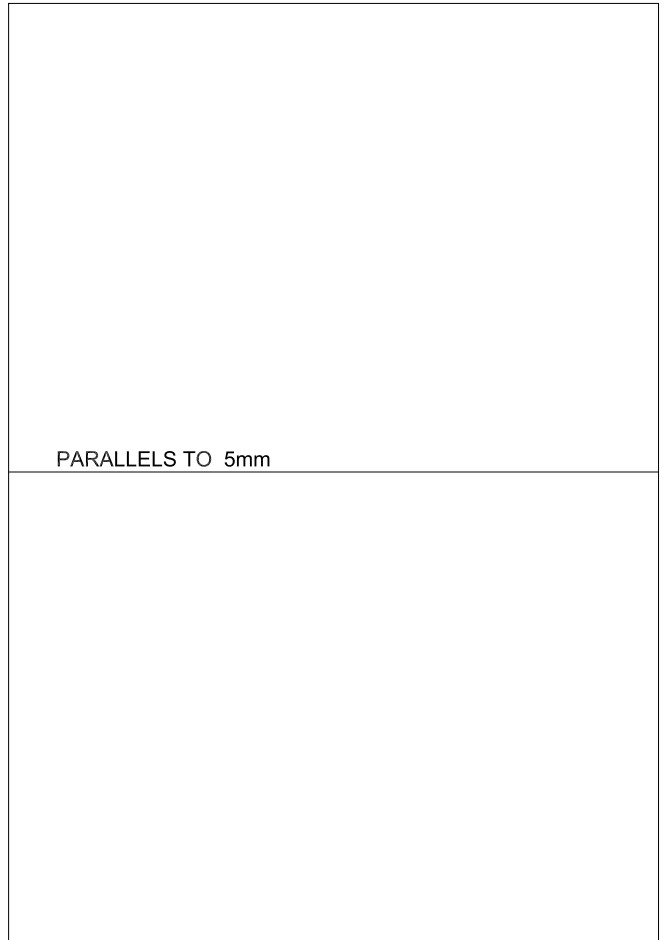
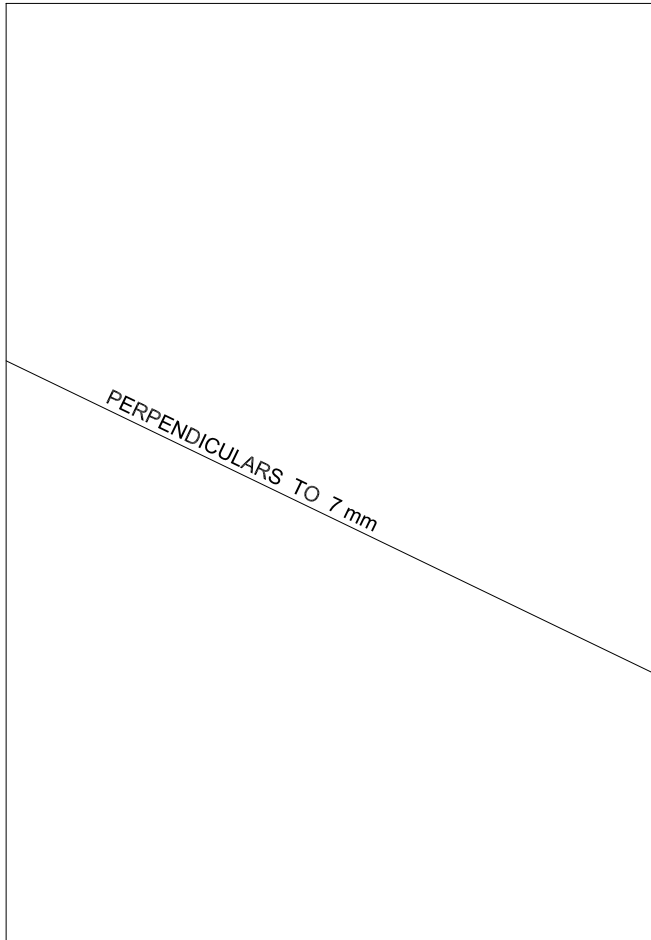


2 - Use of the set square (review)

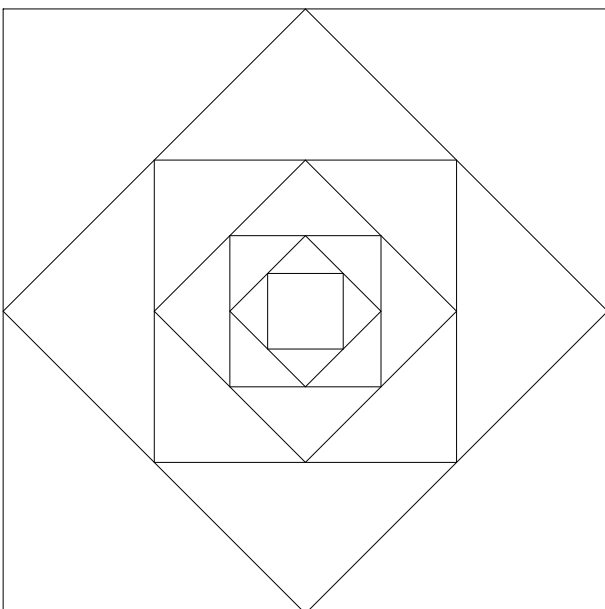
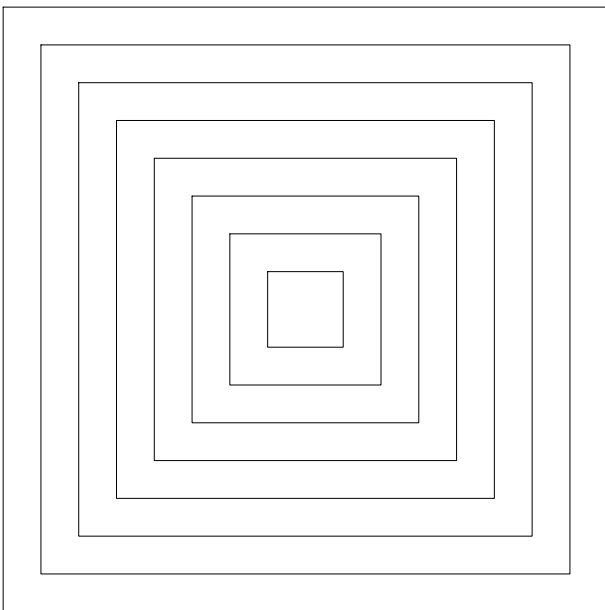
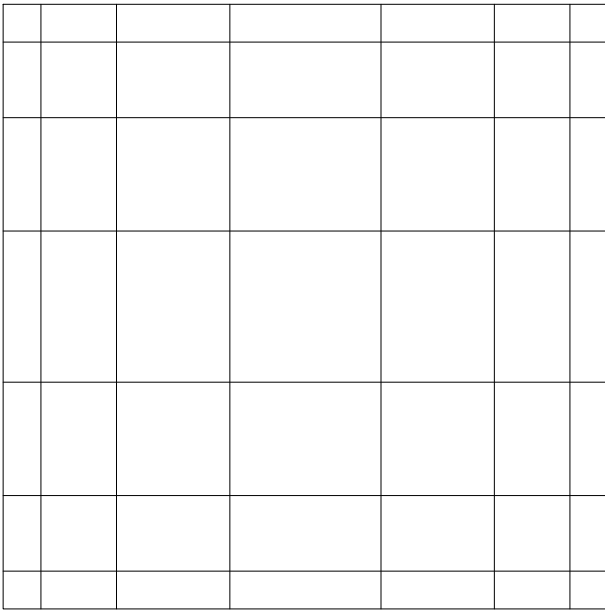
How to draw parallel and perpendicular lines (VIT)

http://www.isftic.mepsyd.es/w3/eos/MaterialesEducativos/mem2001/dibujotecnico/Construcciones%20de%20dibujo%20tecnico/msp_cb.htm

EXERCISE 301-A



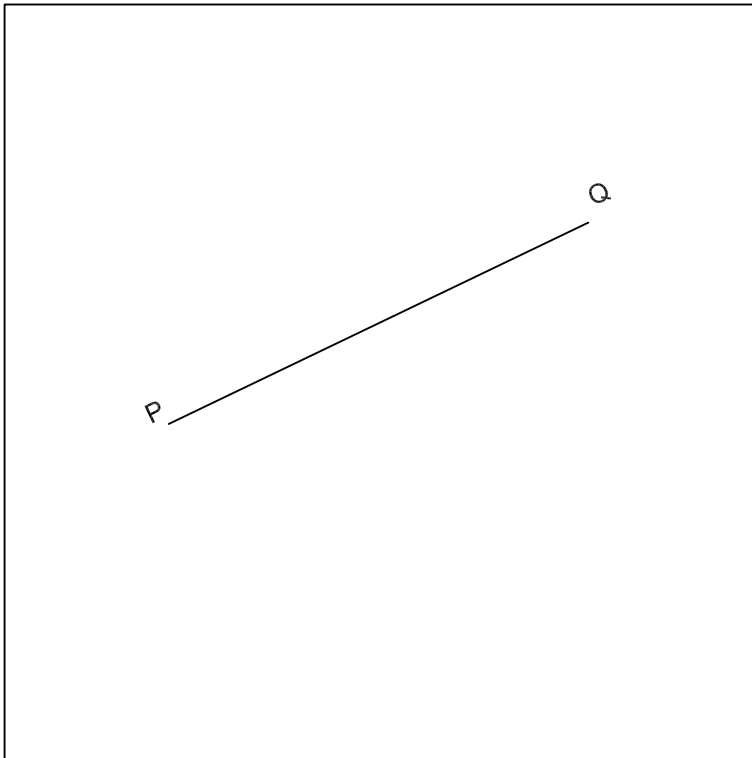
EXERCISE 301-B. Repeat the patterns on the right



3 - Geometry constructions using a compass and straightedge (or ruler)(VIT)

3.1. how to get the "PERPENDICULAR BISECTOR" of a line segment \overline{PQ} .

<http://www.mathopenref.com/constbisectline.html>



In geometry, bisection is the division of something into two equal or congruent parts, usually by a line, which is then called a bisector.

The most often considered types of bisectors are the "segment perpendicular bisector" (a perpendicular line that passes through the midpoint of a given segment) and the "angle bisector" (a line that passes through the apex of an angle, that divides it into two equal angles).

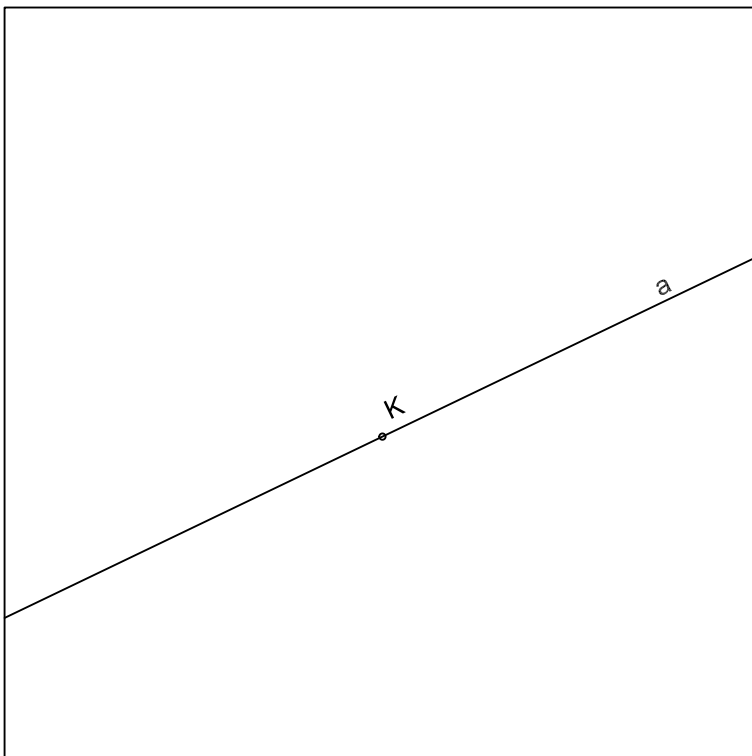
nomenclature of geometry's basic elements

POINTS----- CAPITAL LETTER----e.g. P
 LINES ----- small letter-----e.g. r
 SEGMENT-----e.g. \overline{PQ}
 ANGLE-----e.g. \widehat{a}
 PLANES ----- e.g. " α "

1. Place the compass on one end of the line segment.
2. Set the compass width to a approximately two thirds the line length. The actual width does not matter.
3. Without changing the compass width, draw an arc on each side of the line.
4. Again without changing the compass width, place the compass point on the the other end of the line. Draw an arc on each side of the line so that the arcs cross the first two.
5. Using a straightedge, draw a line between the points where the arcs intersect.
6. Done. This line is perpendicular to the first line and bisects it (cuts it at the exact midpoint of the line).

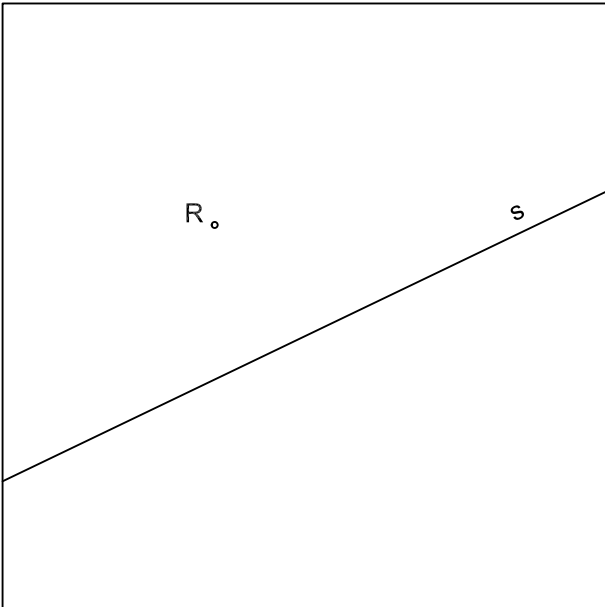
3.2. Perpendicular at a point on a line

<http://www.mathopenref.com/constperlinepoint.html>

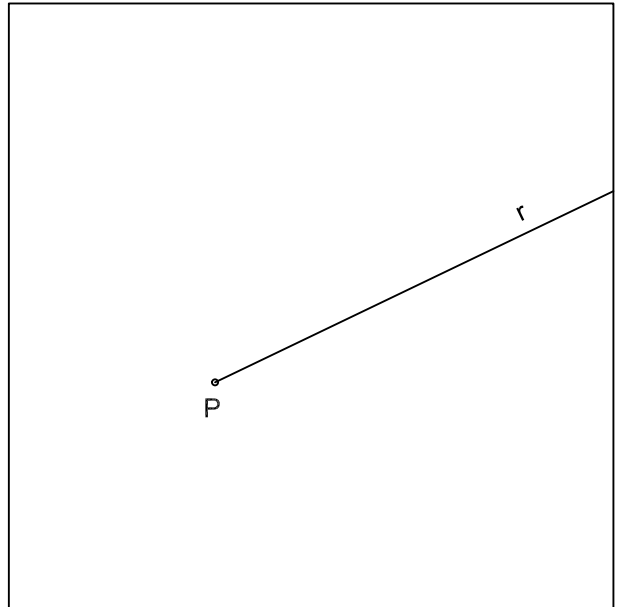


1. Set the compass width to a medium setting. The actual width does not matter.
2. Without changing the compass width, mark a short arc on the line at each side of the point K, forming the points P,Q. These two points are thus the same distance from K.
3. With the compass on P, set its width to any setting beyond K.
4. Mark off an arc on one side of the line.
5. Without changing the compass width, repeat from the point Q so that the two arcs cross each other, creating the point R
6. Using the straightedge, draw a line from K to where the arcs cross.
7. Done. The line KR just drawn is a perpendicular to the line PQ at K

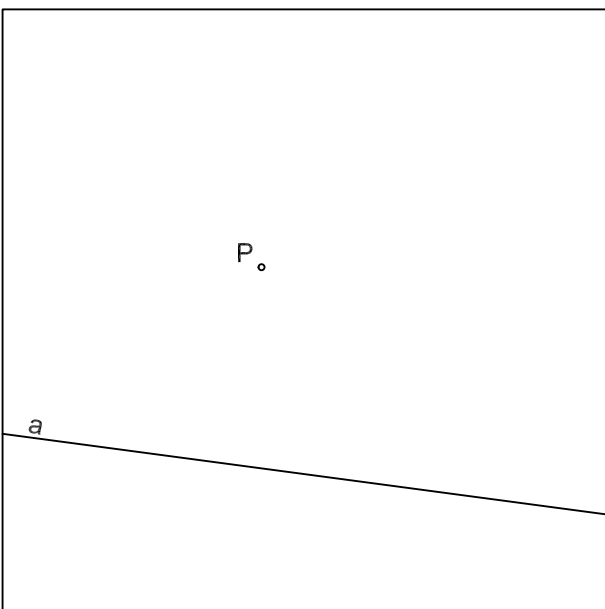
3.3. Perpendicular to a line from a external point "E"
<http://www.mathopenref.com/constperpextpoint.html>



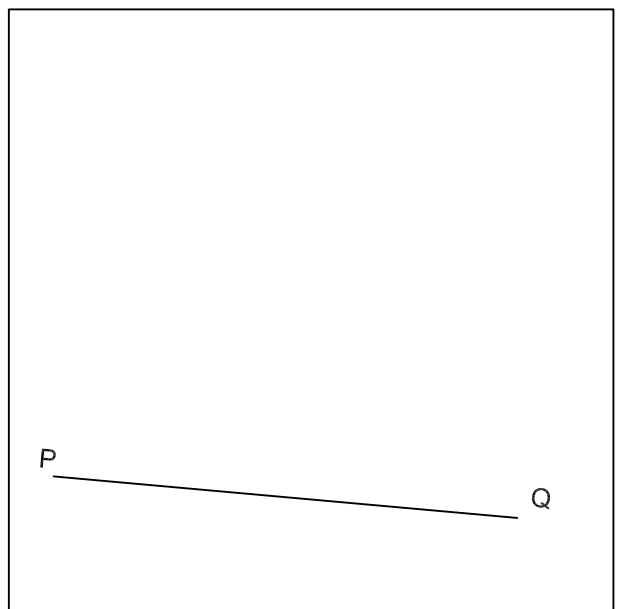
3.4. Perpendicular at the endpoint of a ray
<http://www.mathopenref.com/constperpendray.html>



3.5. constructing a parallel trough a point
<http://www.mathopenref.com/constparallel.html>

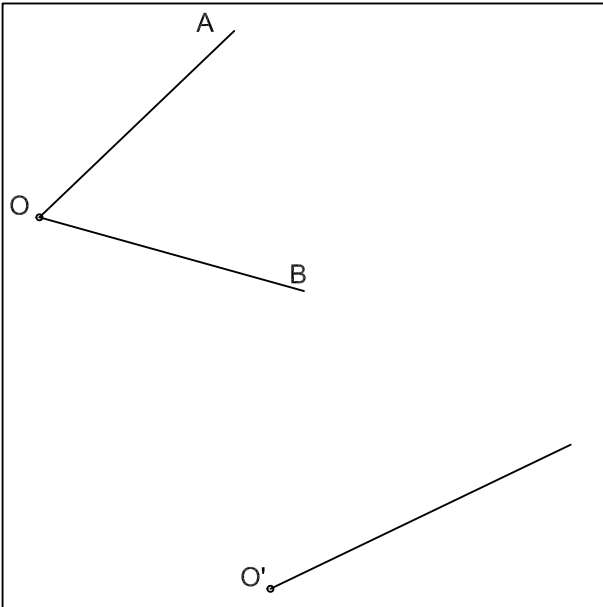


3.6. Dividing a segment into several equal parts
<http://www.mathopenref.com/constdividesegment.html>



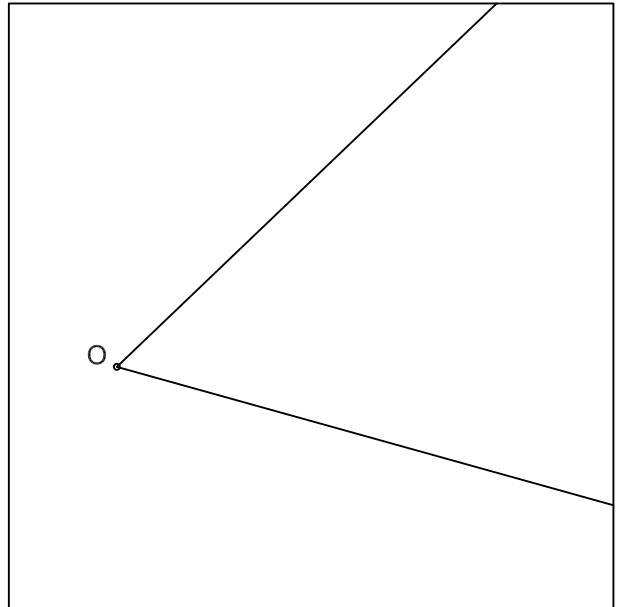
3.7. Copying an angle

<http://www.mathopenref.com/constcopyangle.html>



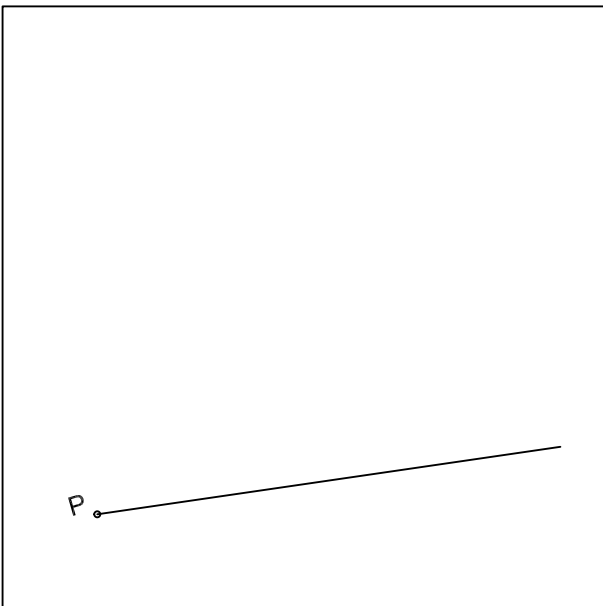
3.8. Bisecting an angle

<http://www.mathopenref.com/constbisectangle.html>



3.9. constructing a 60°, 30° and 15° angle

<http://www.mathopenref.com/constangle60.html>
<http://www.mathopenref.com/constangle30.html>



3.9. constructing a 90° angle (right angle) and 45° angle

<http://www.mathopenref.com/constangle90.html>
<http://www.mathopenref.com/constangle45.html>

