



Sky at Night MAGAZINE

How To... Build an equatorial platform with circular segments for a Dobsonian mounted telescope

Geometry and calculations
supporting the design



Click to play

Start with a horizontal line representing the bottom of your telescope on its mount

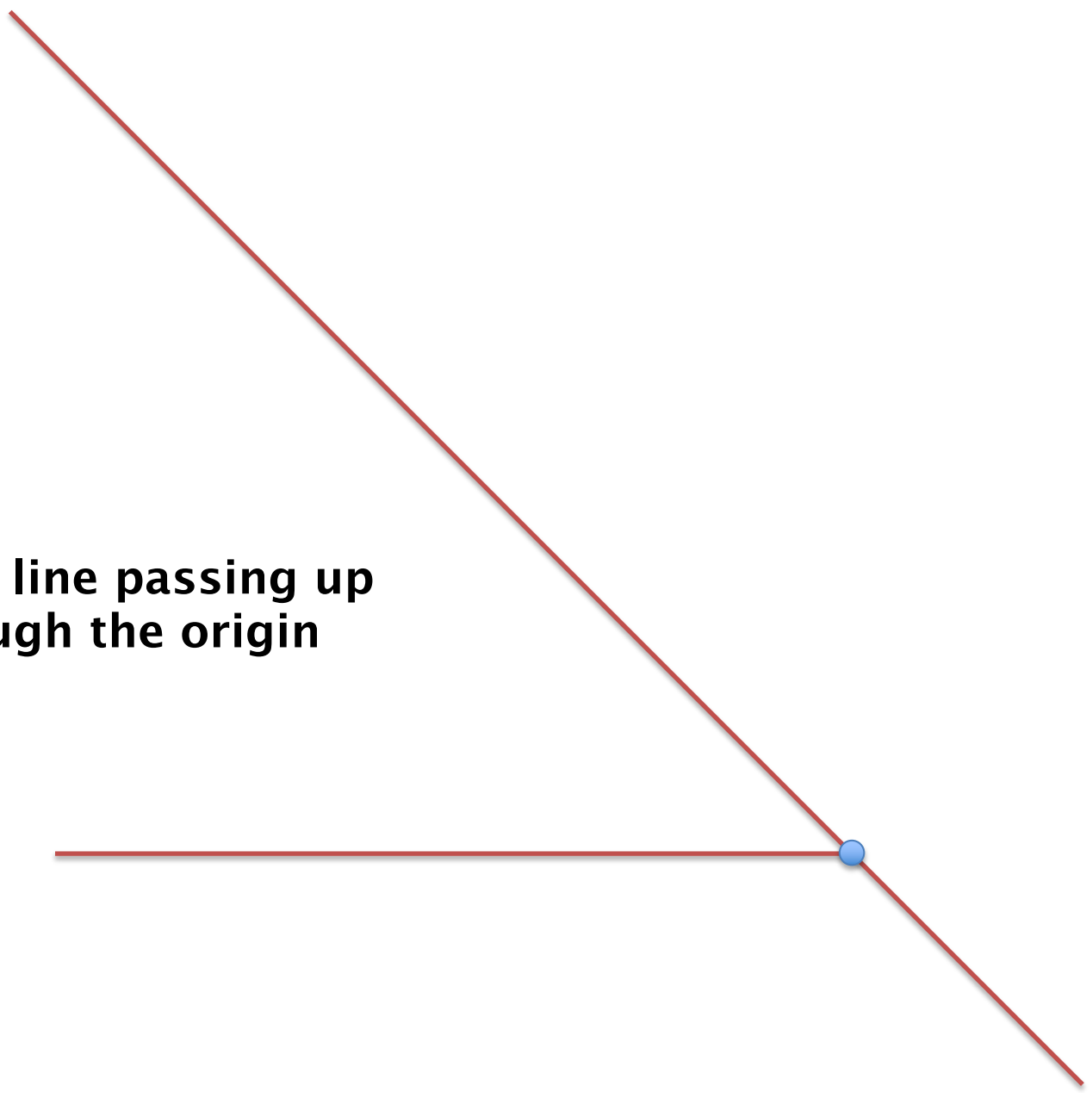


**Start with a horizontal line representing the
bottom of your telescope on its mount**

**Create a point at one end –
we'll call this our origin**



**Draw a line passing up
through the origin**

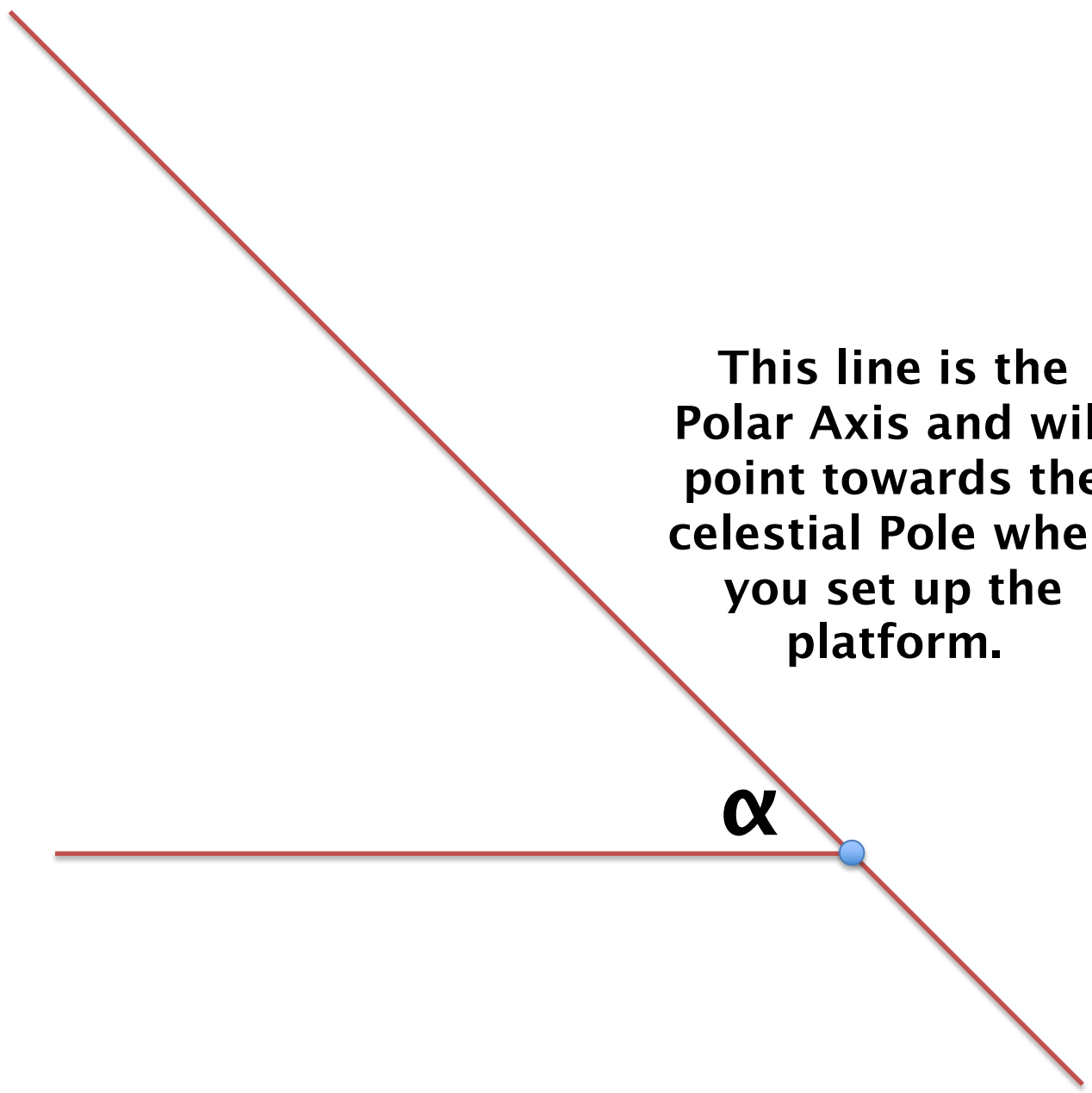


**This angle is
important – it must
be the same as your
latitude**



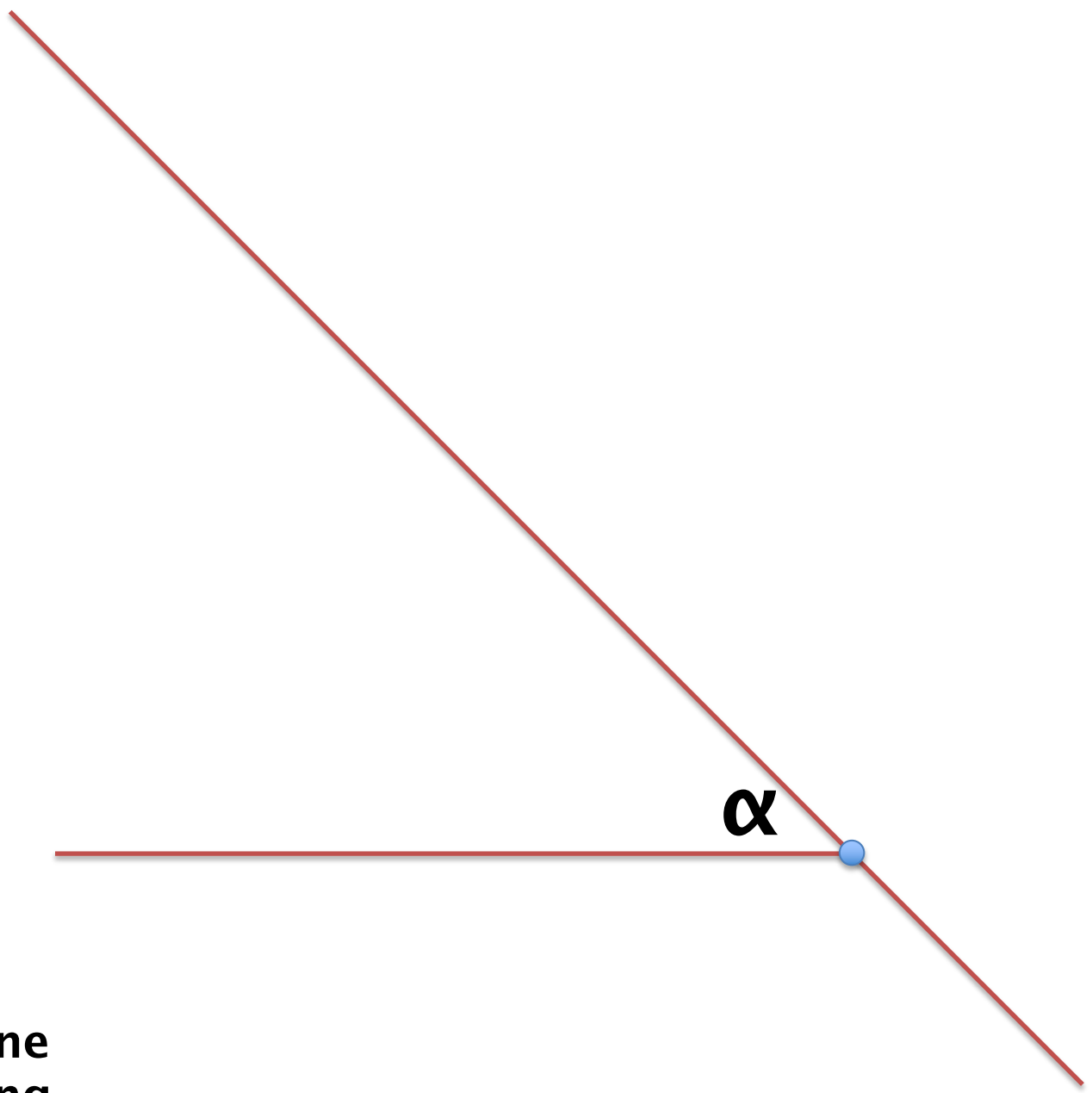
A diagram consisting of two red lines. One line is horizontal and extends from the left towards the right. The other line is diagonal, sloping downwards from the top-left towards the bottom-right. The two lines intersect at a point marked with a small blue circle. The angle between the horizontal line and the diagonal line, measured from the horizontal line to the diagonal line, is labeled with the Greek letter alpha (α).

α

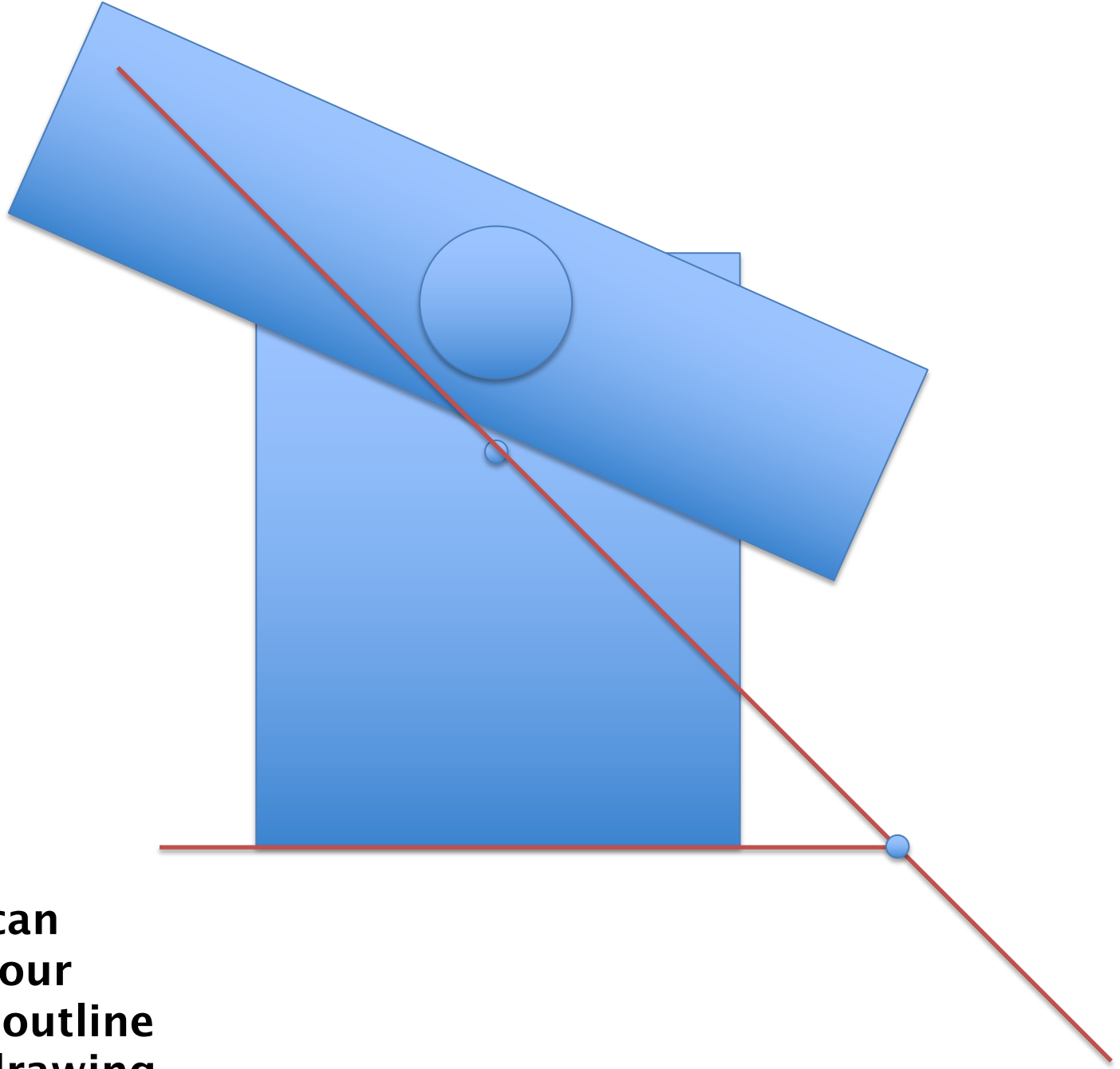


**This line is the
Polar Axis and will
point towards the
celestial Pole when
you set up the
platform.**

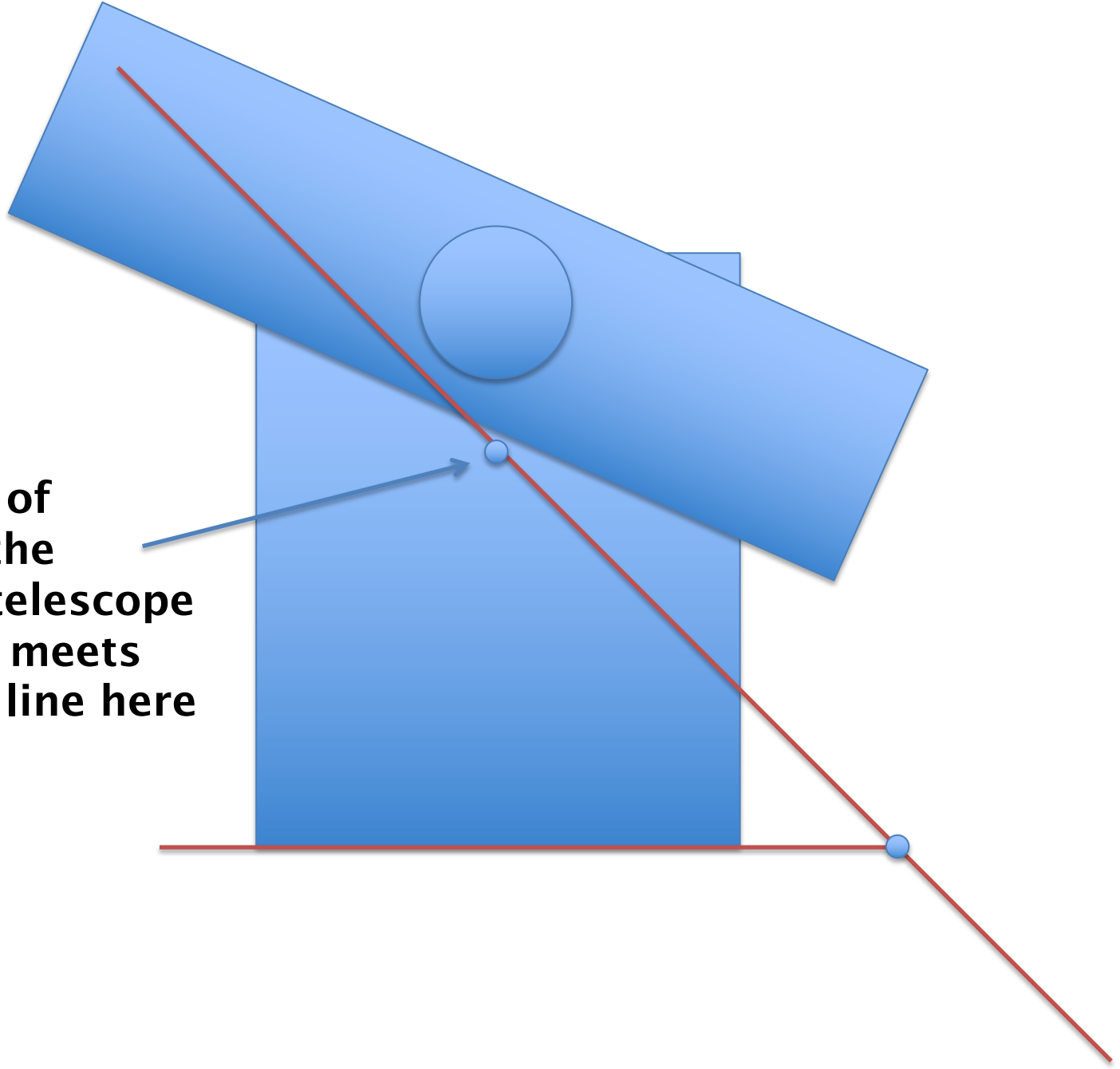
α



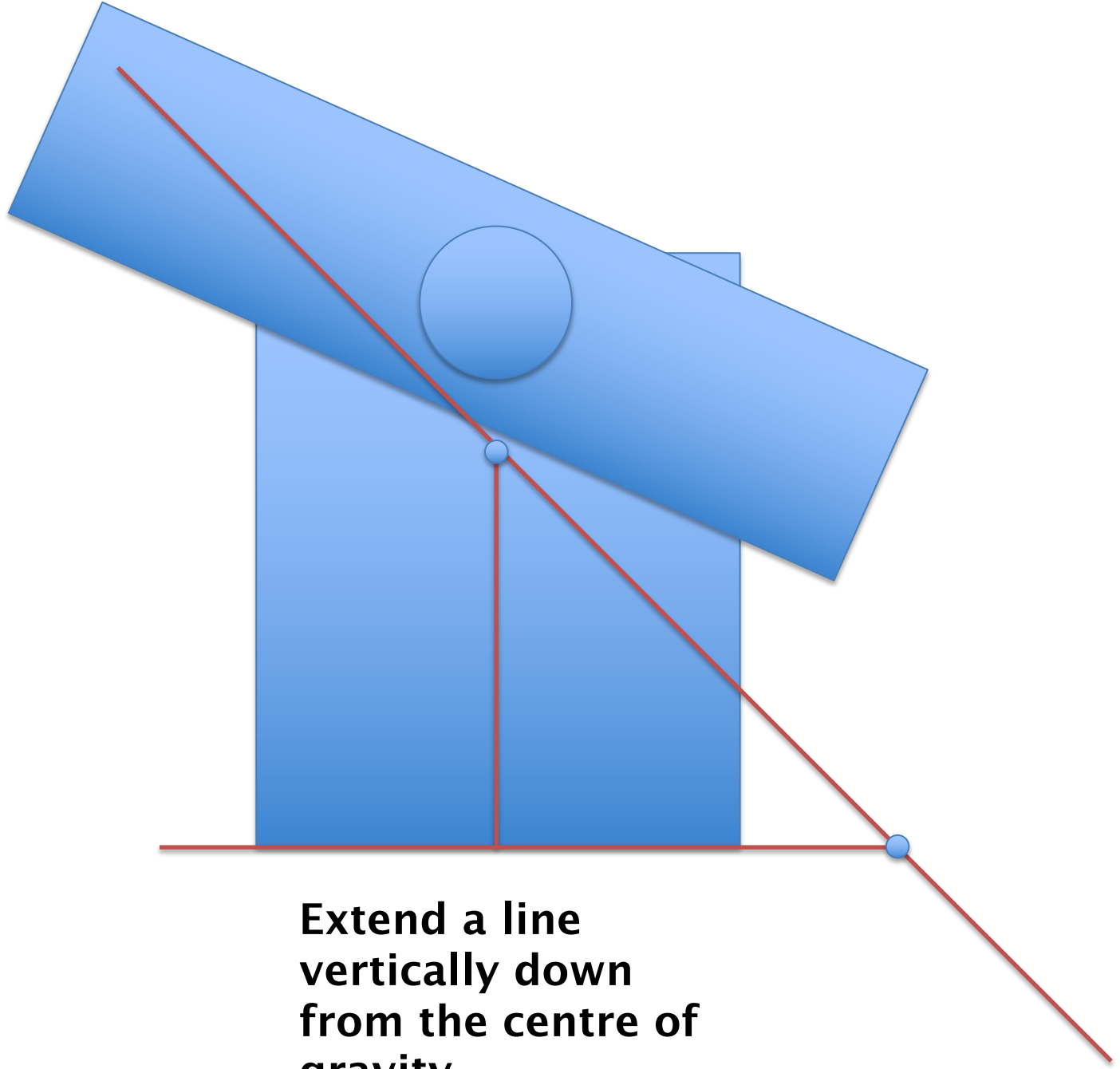
Now you can
position your
telescope outline
onto the drawing



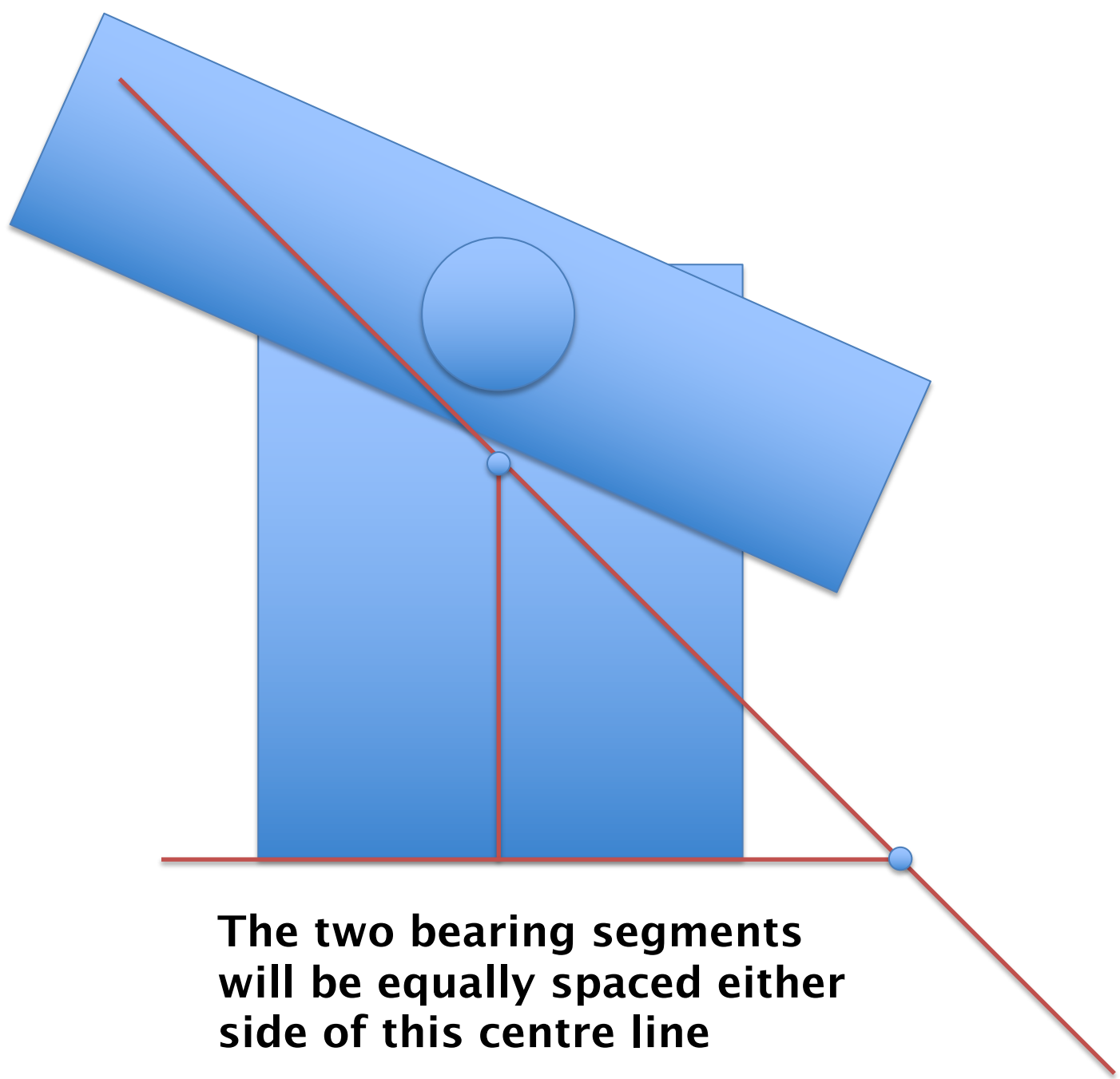
**Now you can
position your
telescope outline
onto the drawing**



The centre of gravity of the combined telescope and mount meets the angled line here

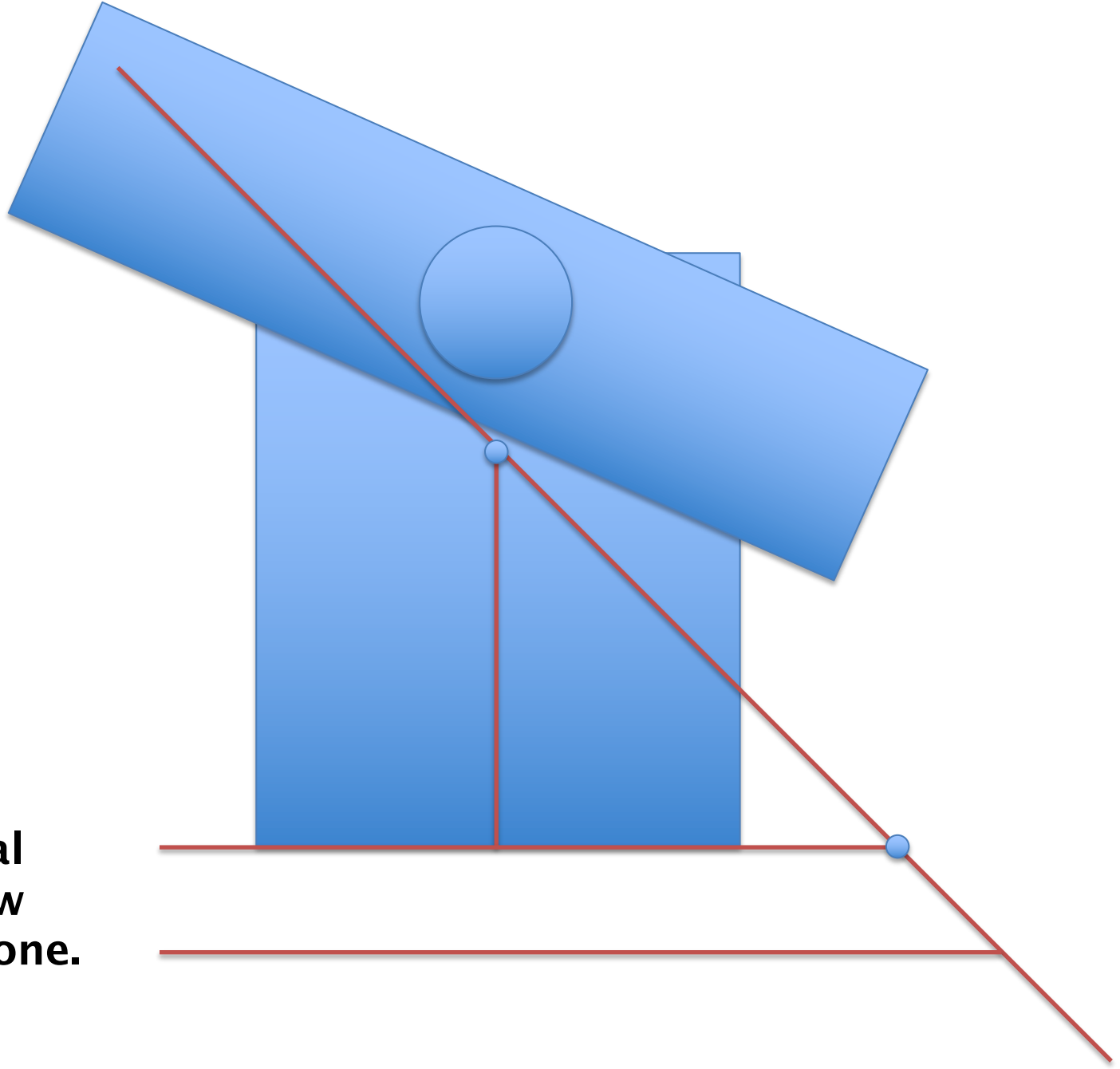


**Extend a line
vertically down
from the centre of
gravity**

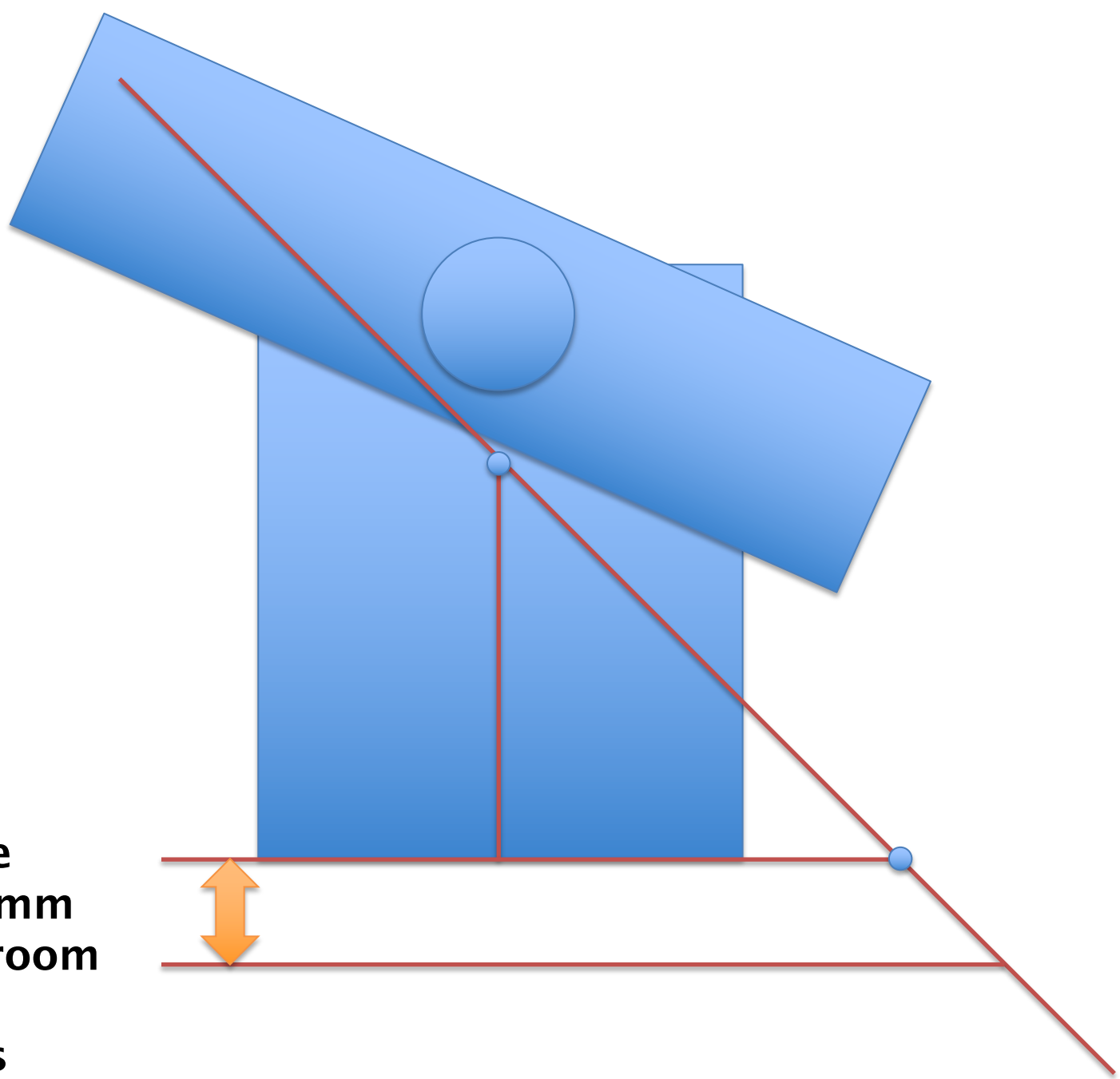


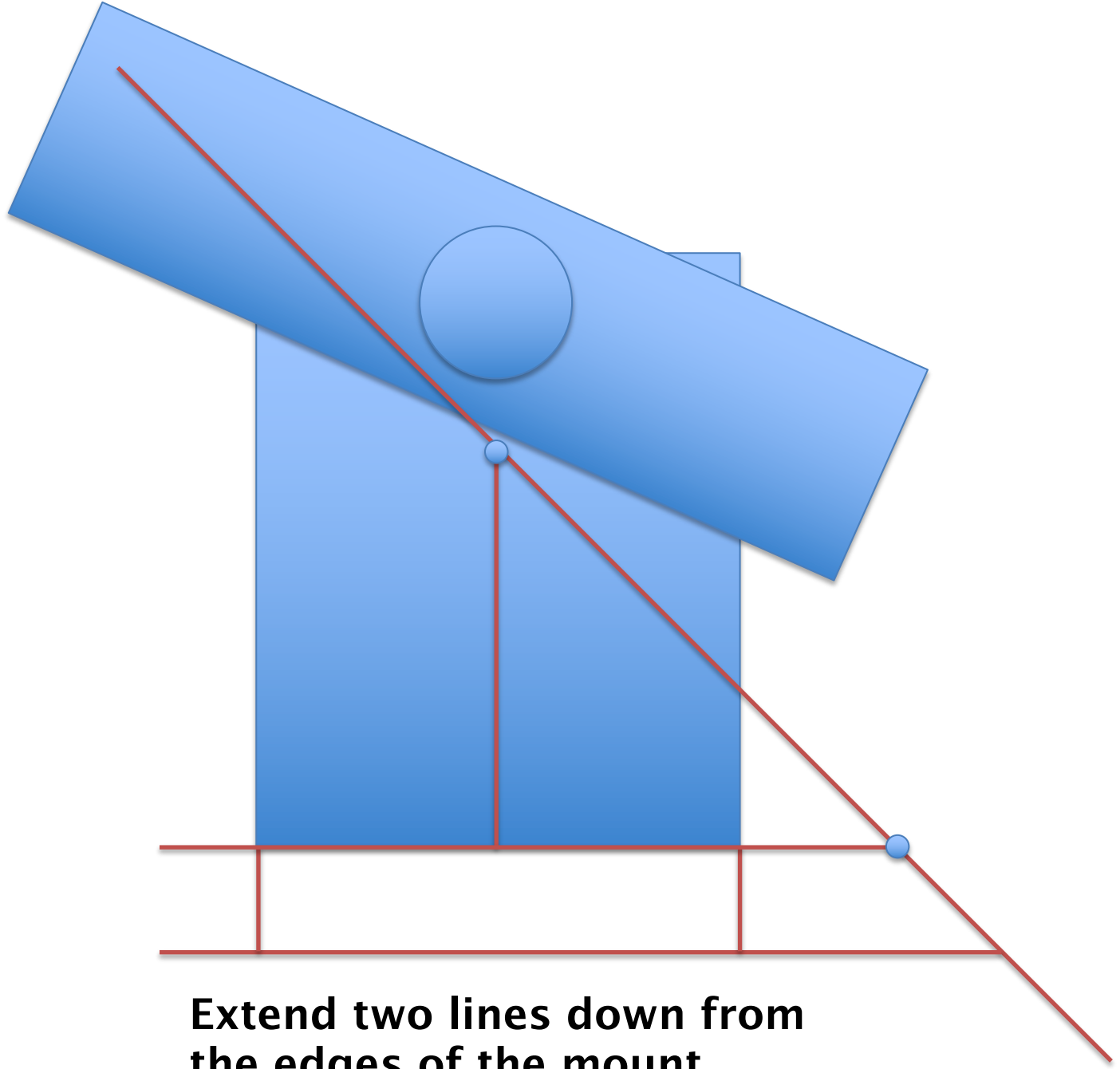
**The two bearing segments
will be equally spaced either
side of this centre line**

**Draw a
second
horizontal
line below
the first one.**



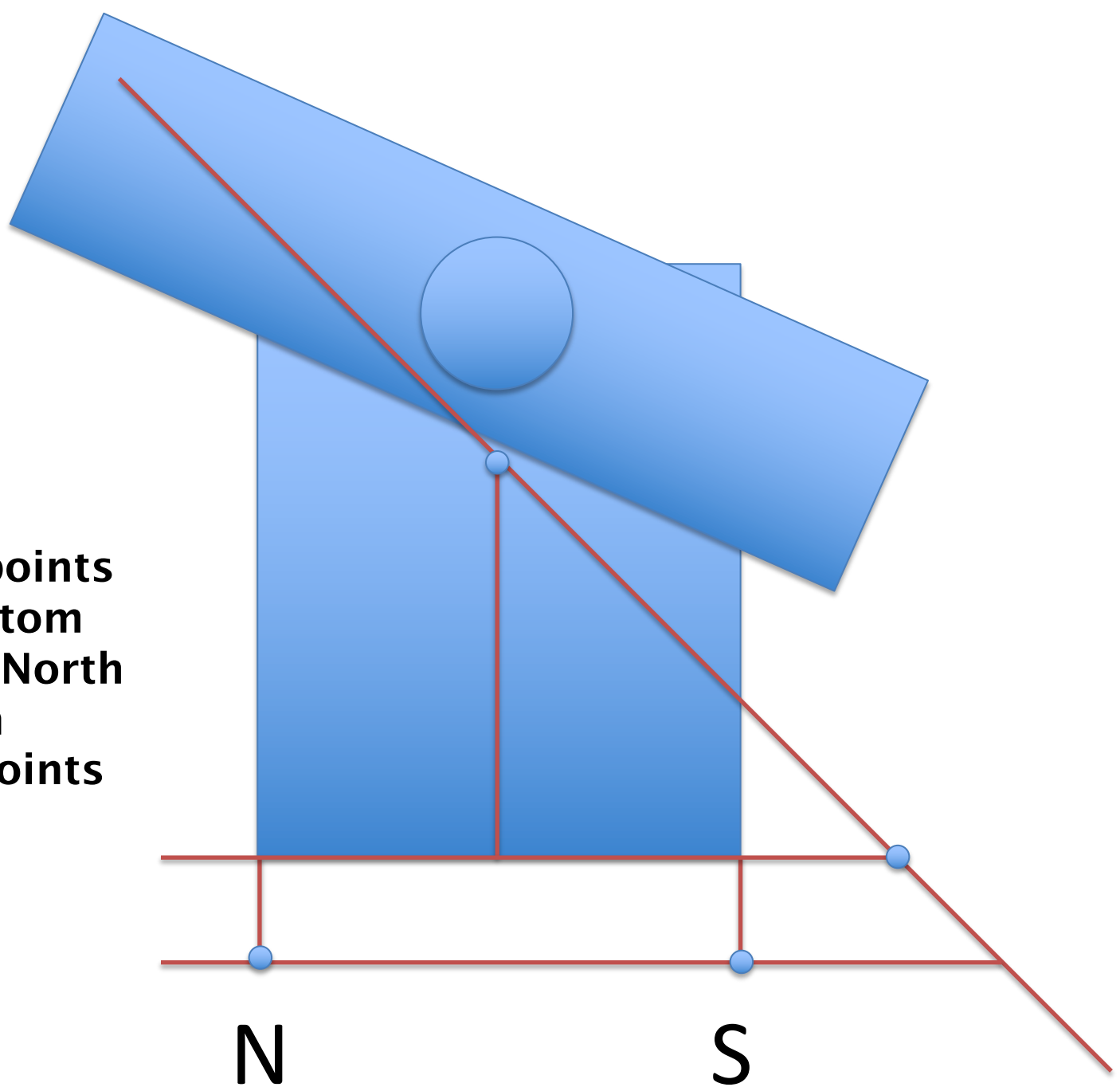
**The gap
should be
about 75mm
to allow room
for the
segments**

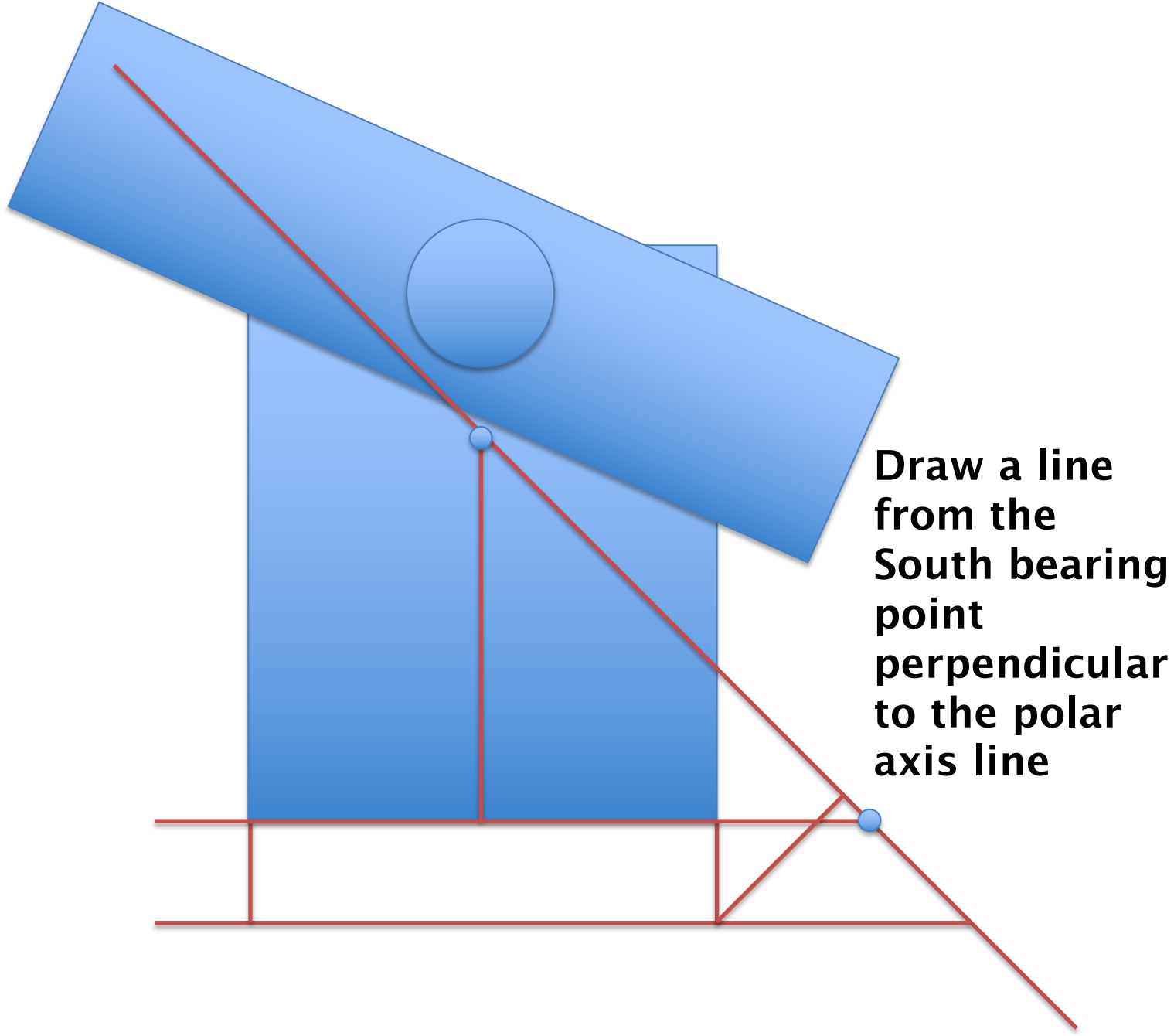




**Extend two lines down from
the edges of the mount**

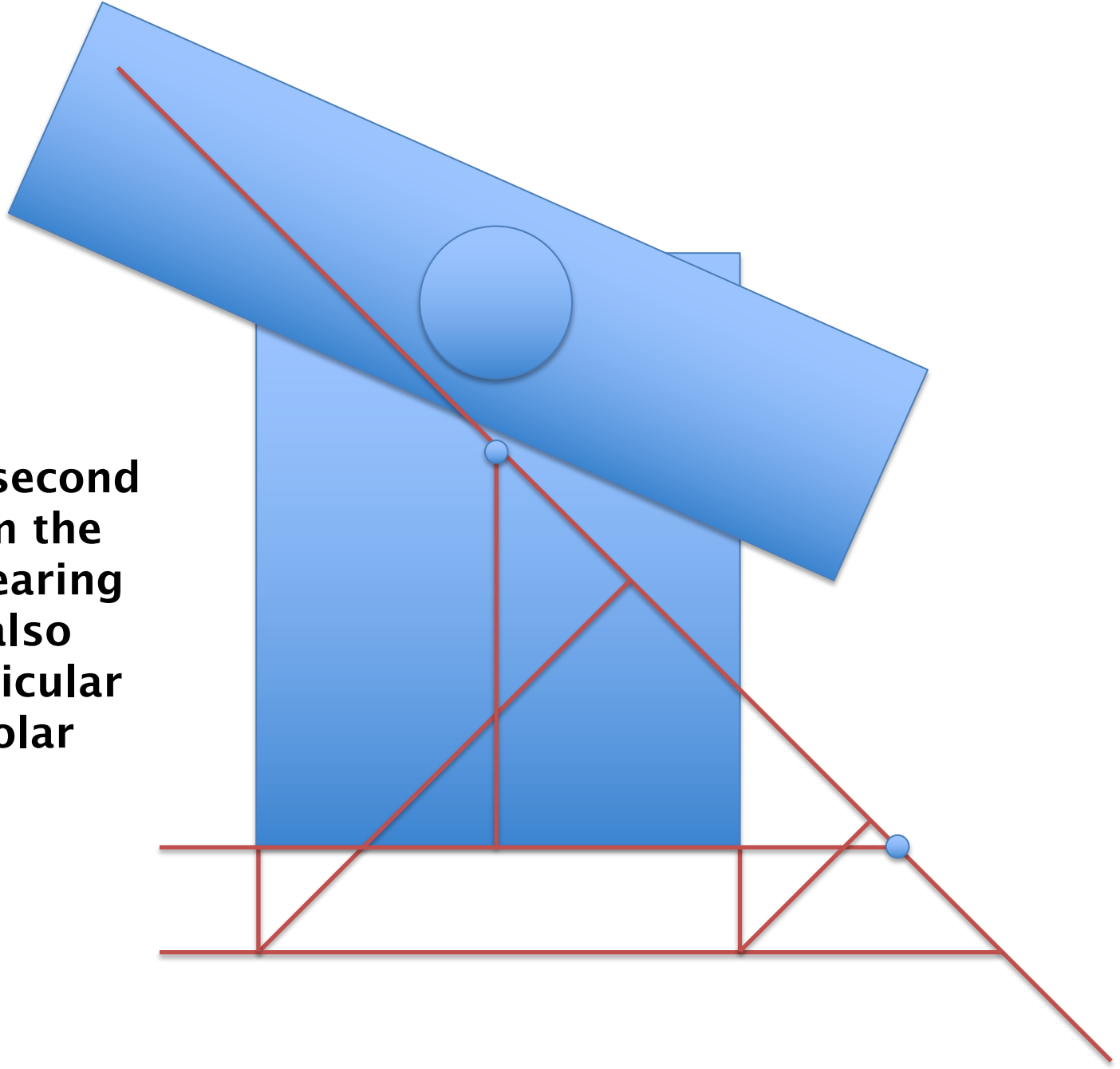
**The two points
at the bottom
mark our North
and South
bearing points**

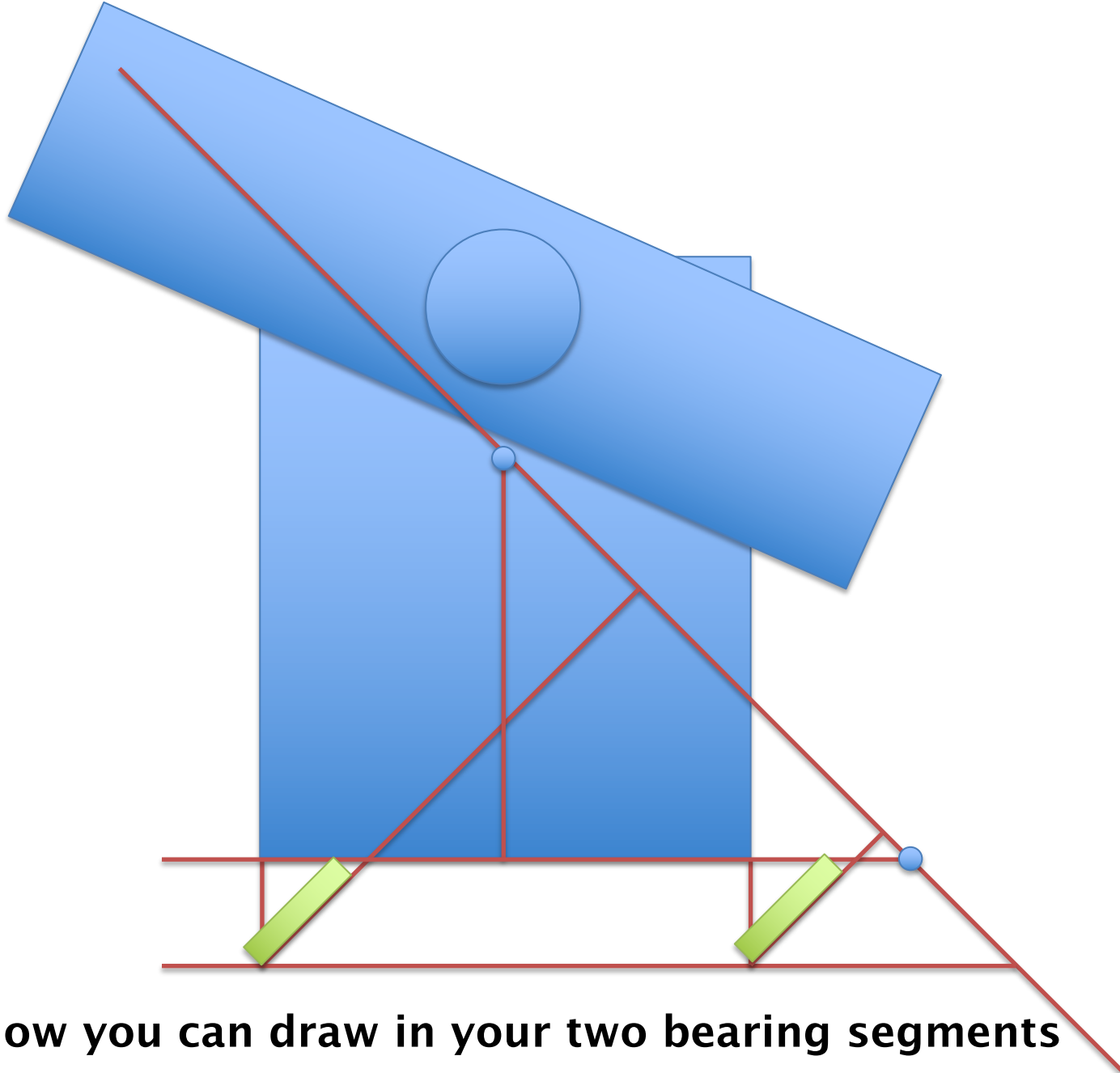




**Draw a line
from the
South bearing
point
perpendicular
to the polar
axis line**

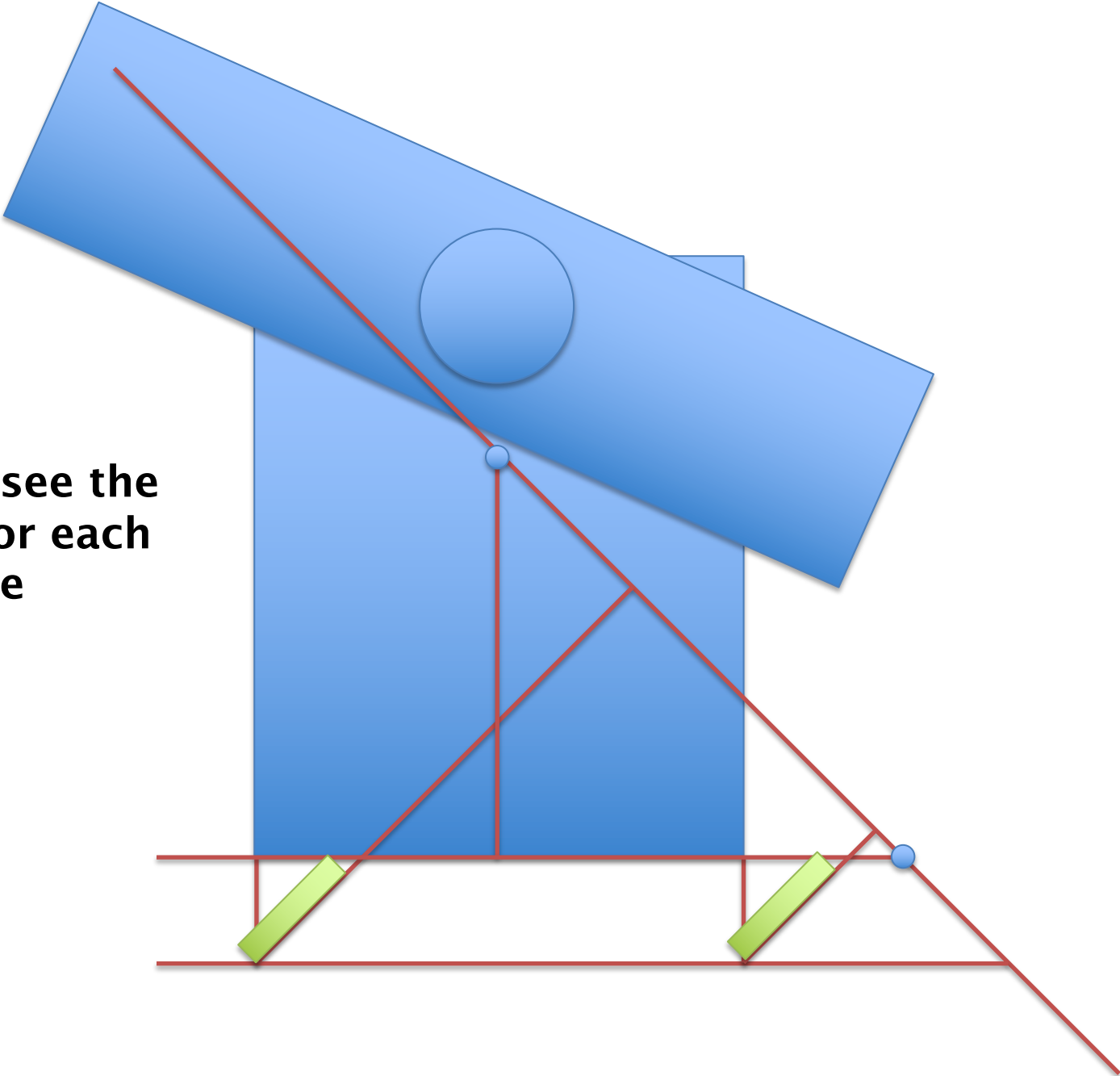
**Draw a second
line from the
North bearing
point – also
perpendicular
to the polar
axis line**



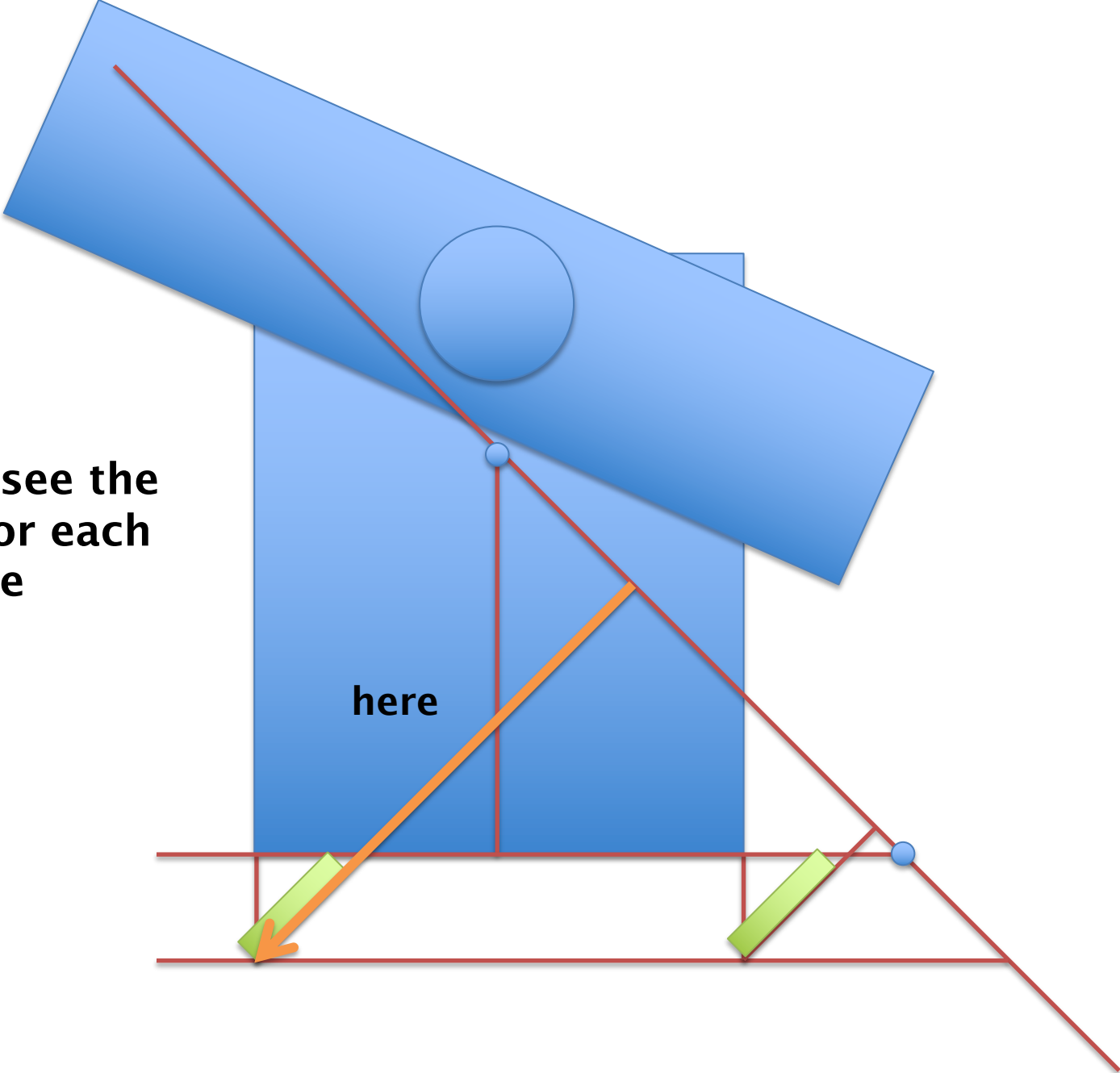


Now you can draw in your two bearing segments

**You can see the
radius for each
one**

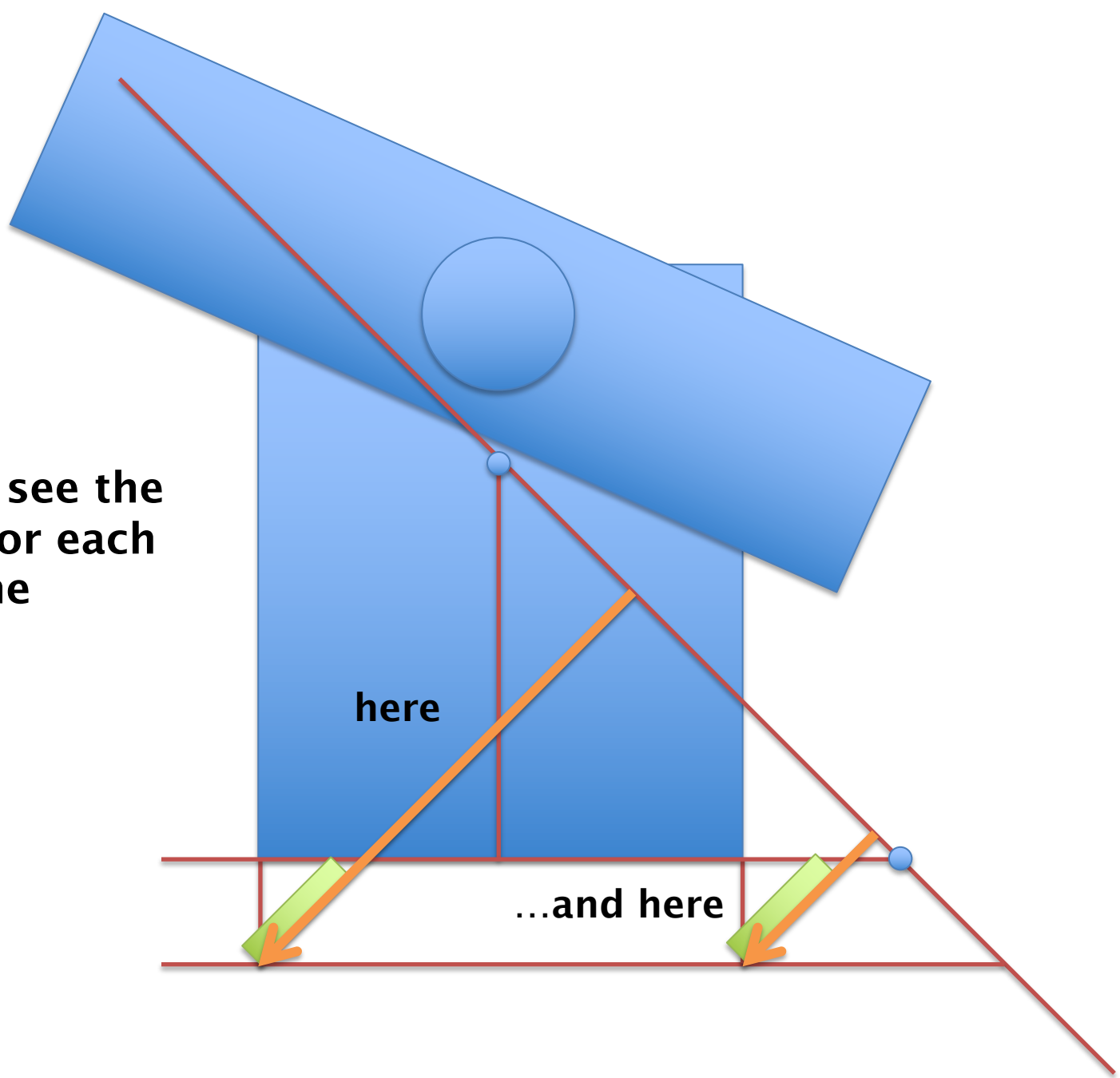


You can see the radius for each one



here

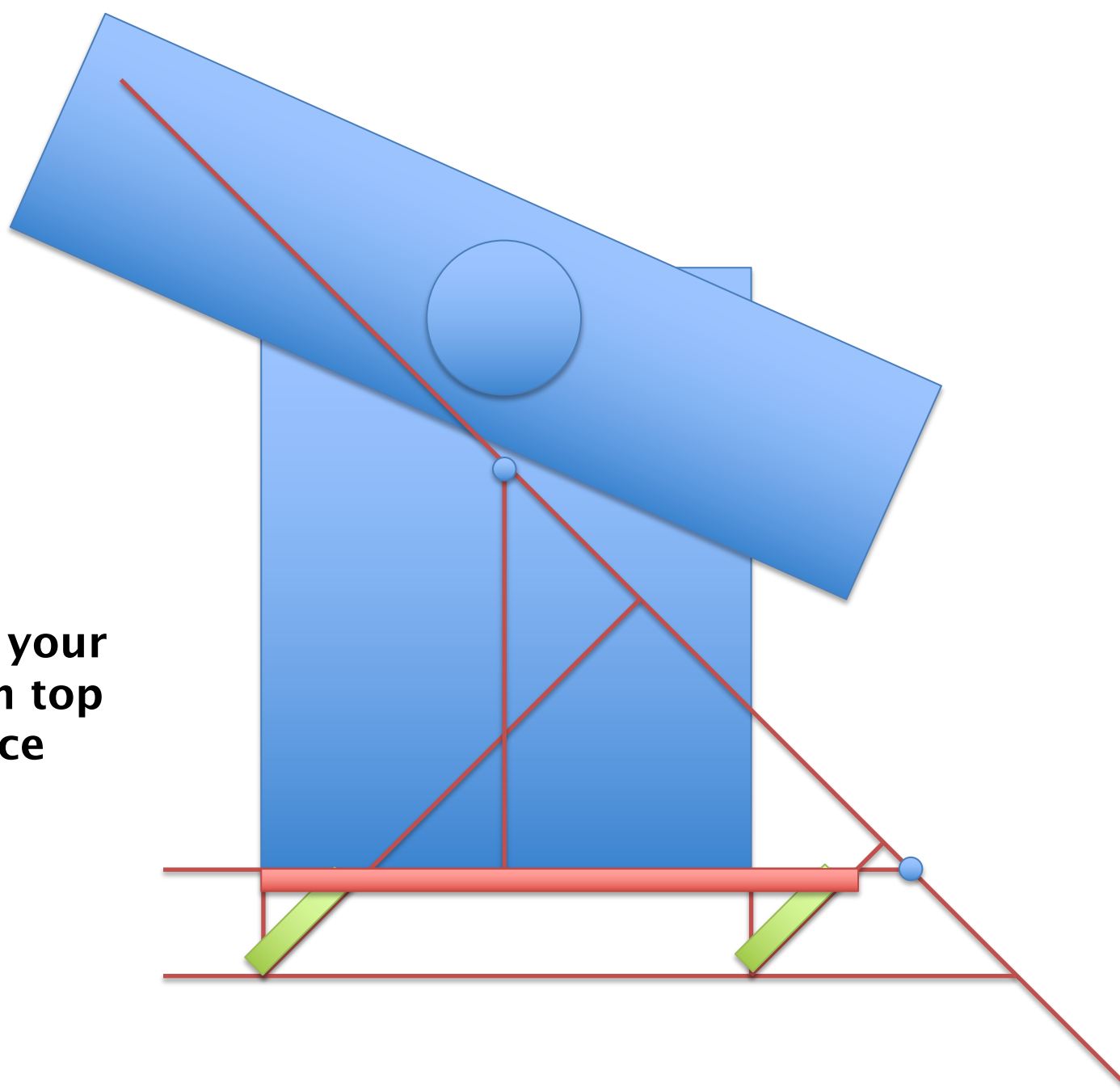
**You can see the
radius for each
one**

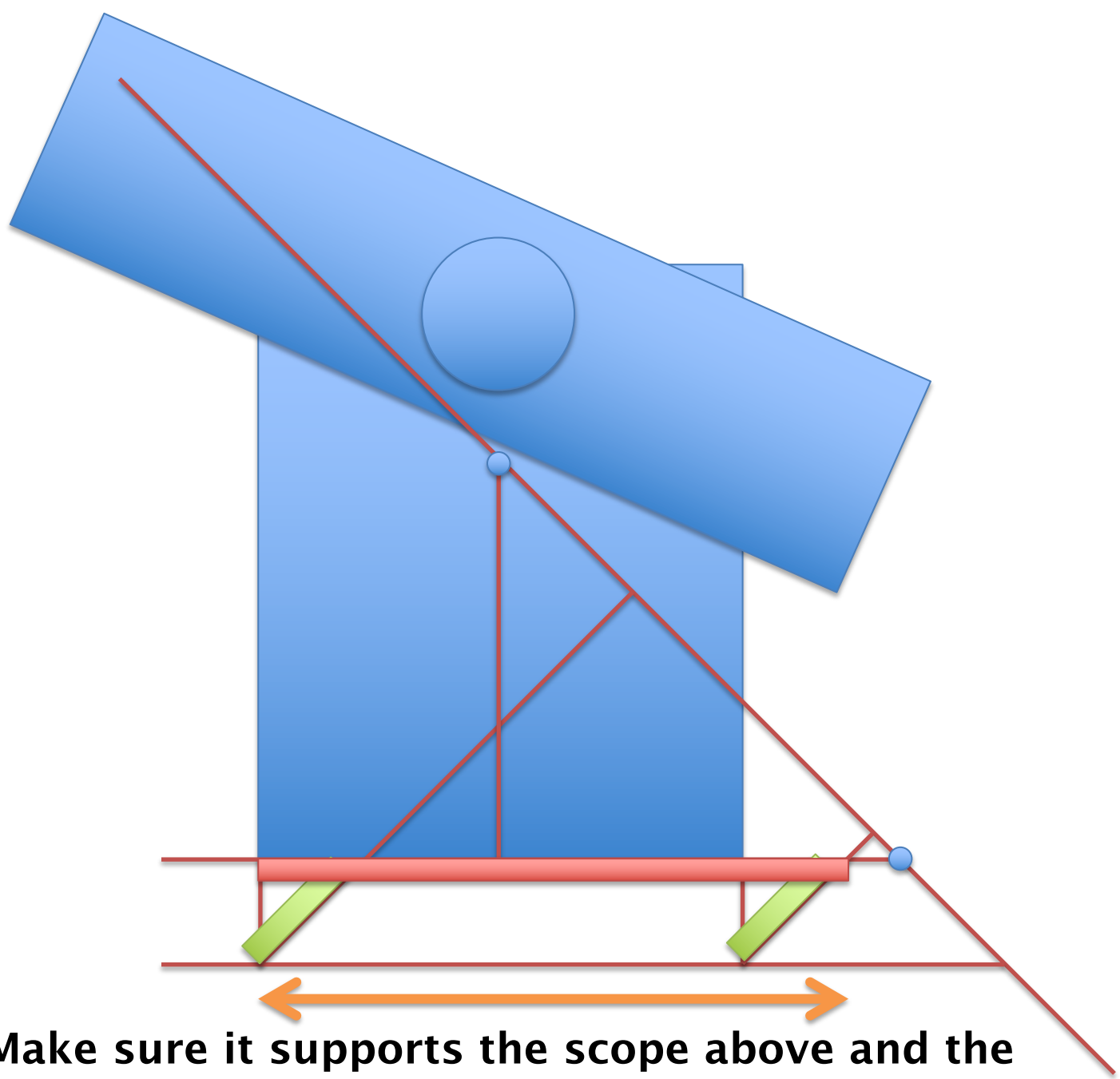


here

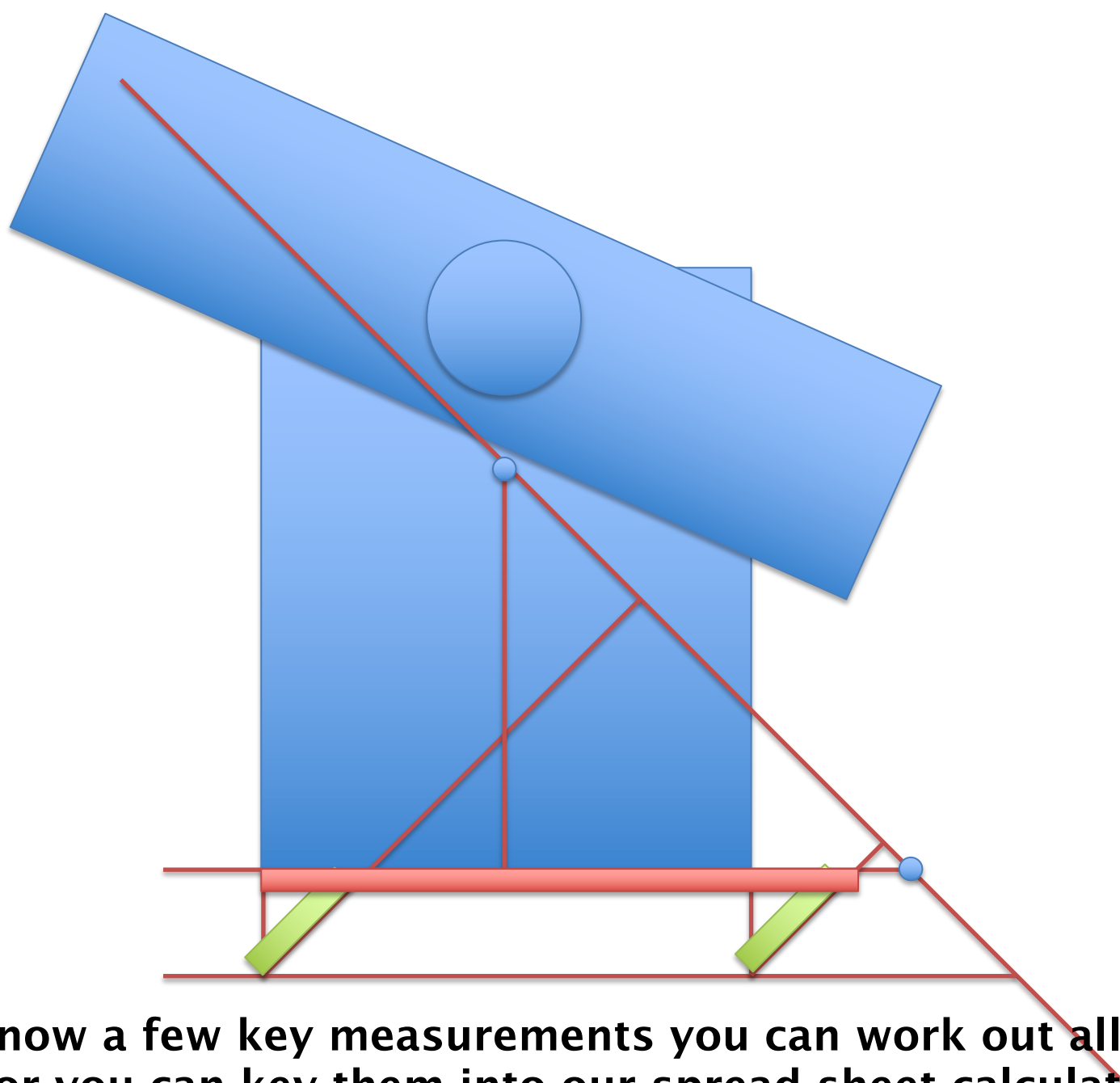
...and here

**Draw in your
platform top
surface**

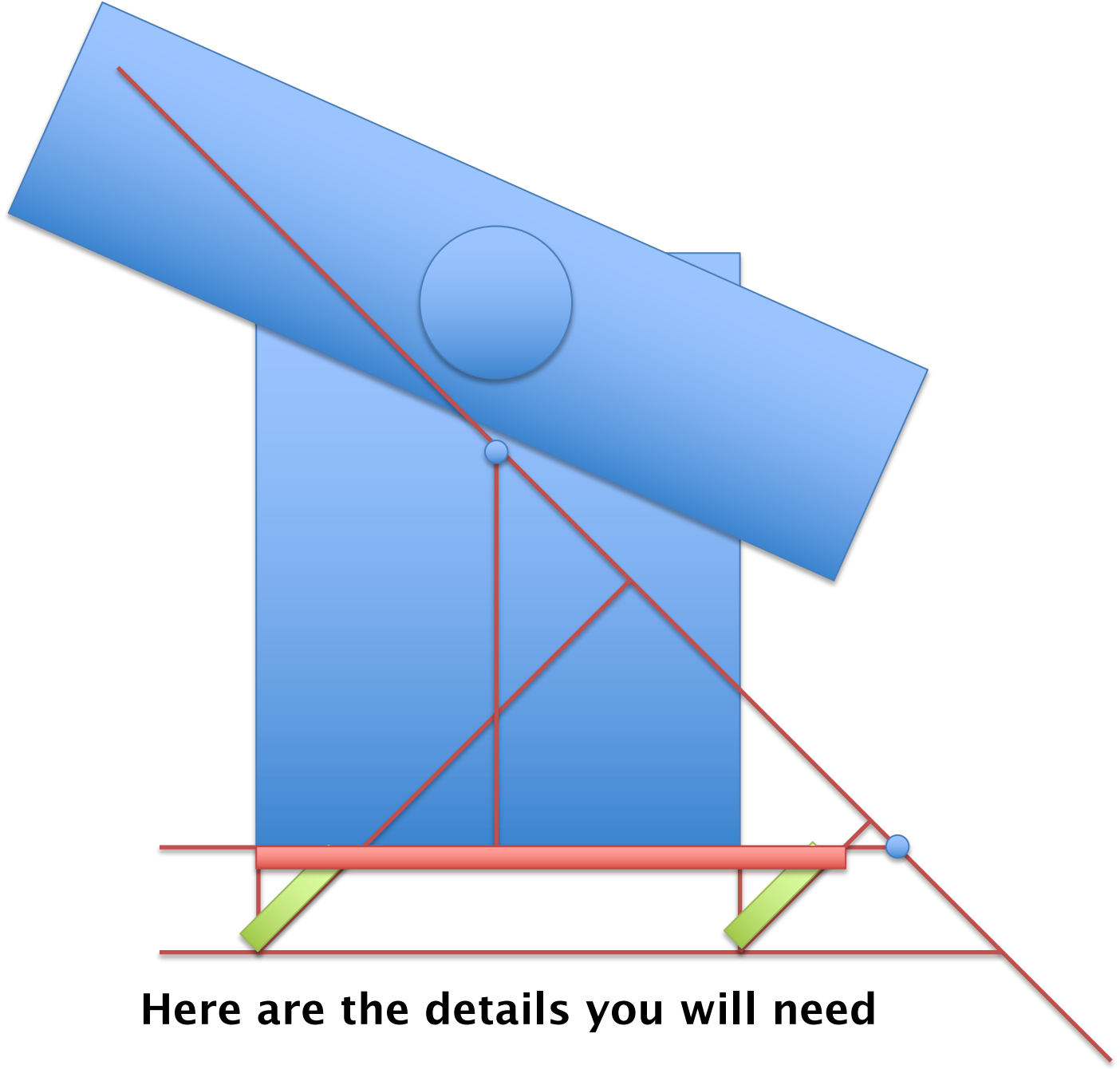




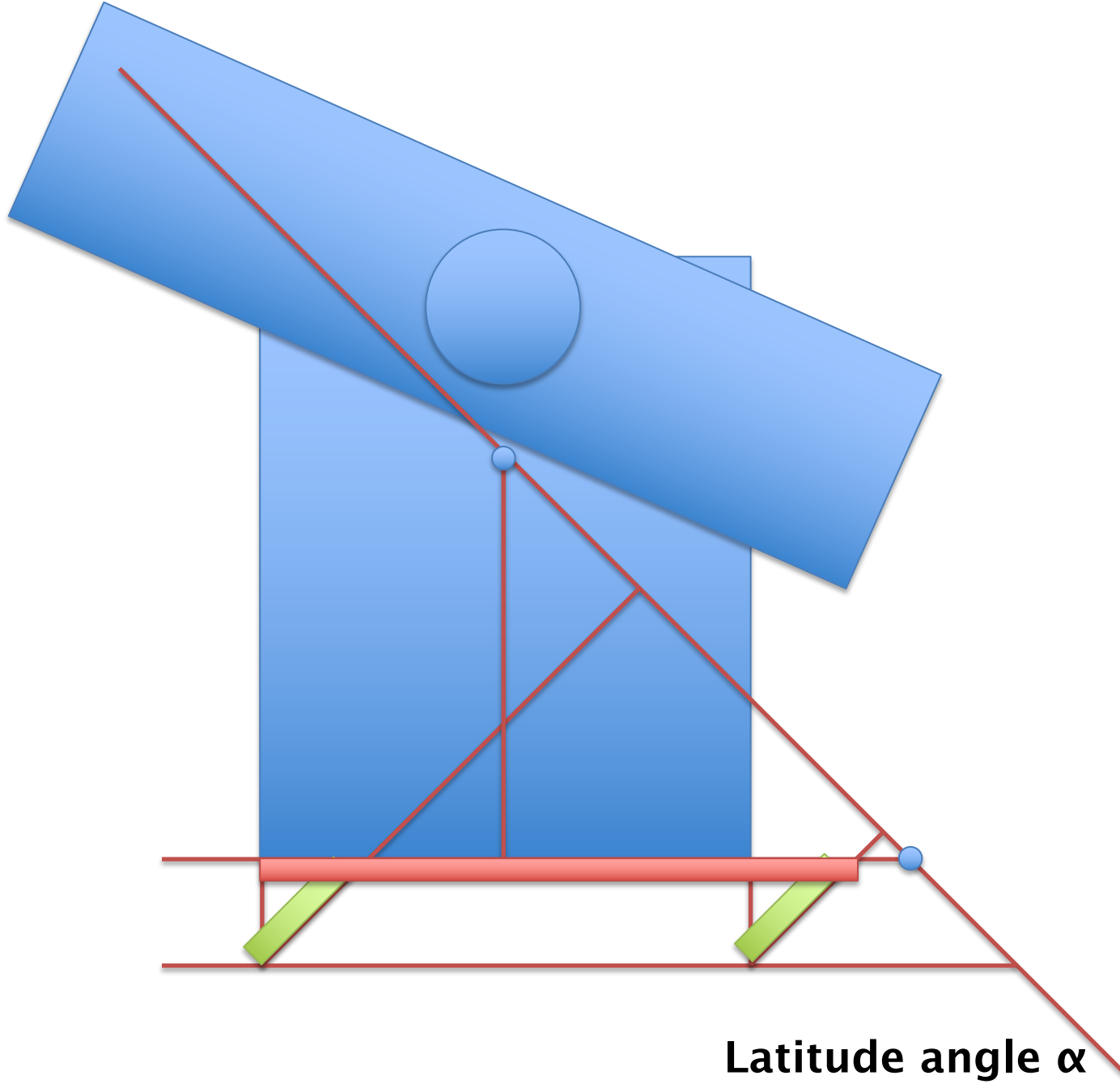
Make sure it supports the scope above and the bearing segments below



If you know a few key measurements you can work out all the sizes or you can key them into our spread sheet calculator

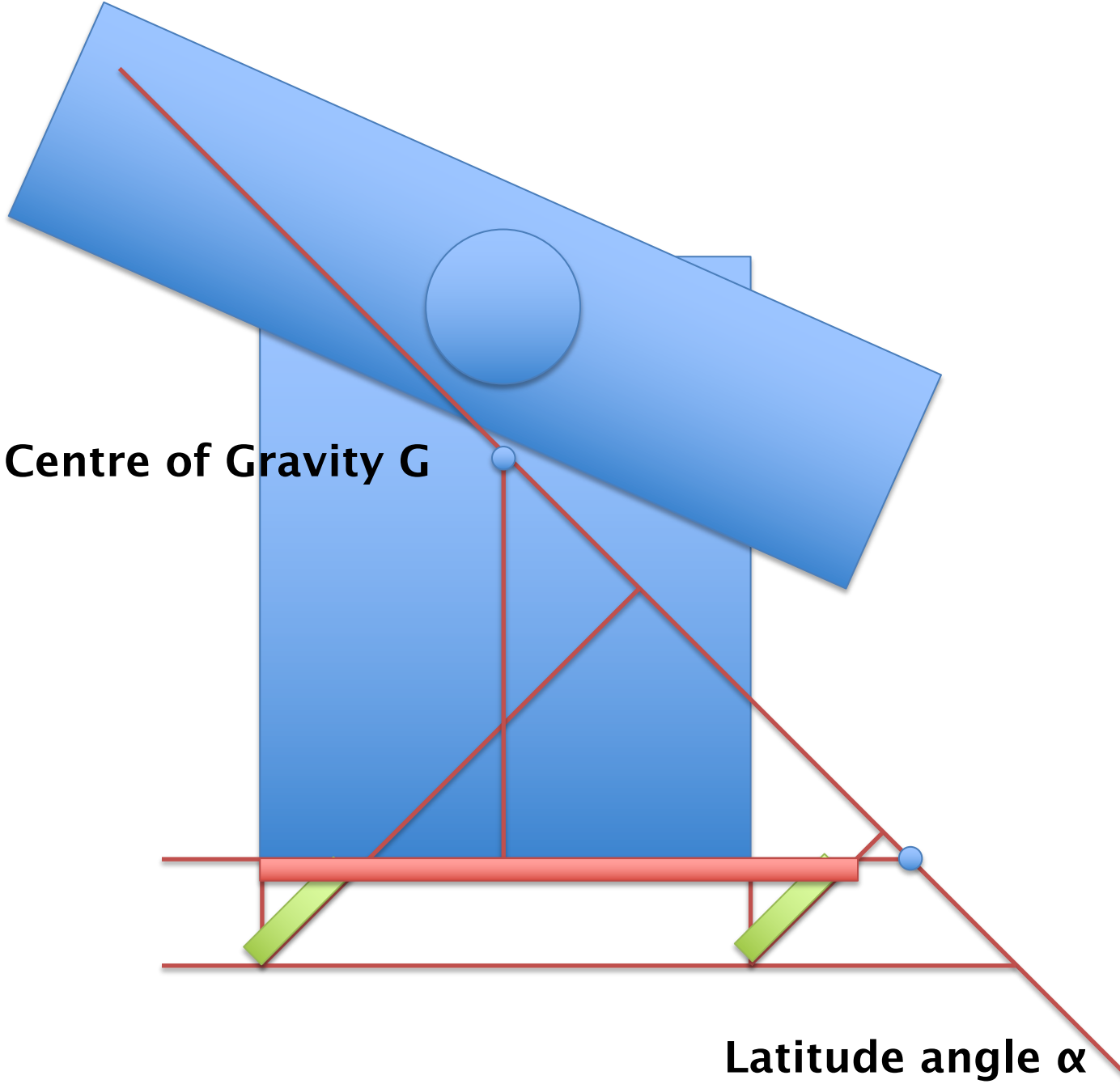


Here are the details you will need



Latitude angle α

Height of Centre of Gravity G



Latitude angle α

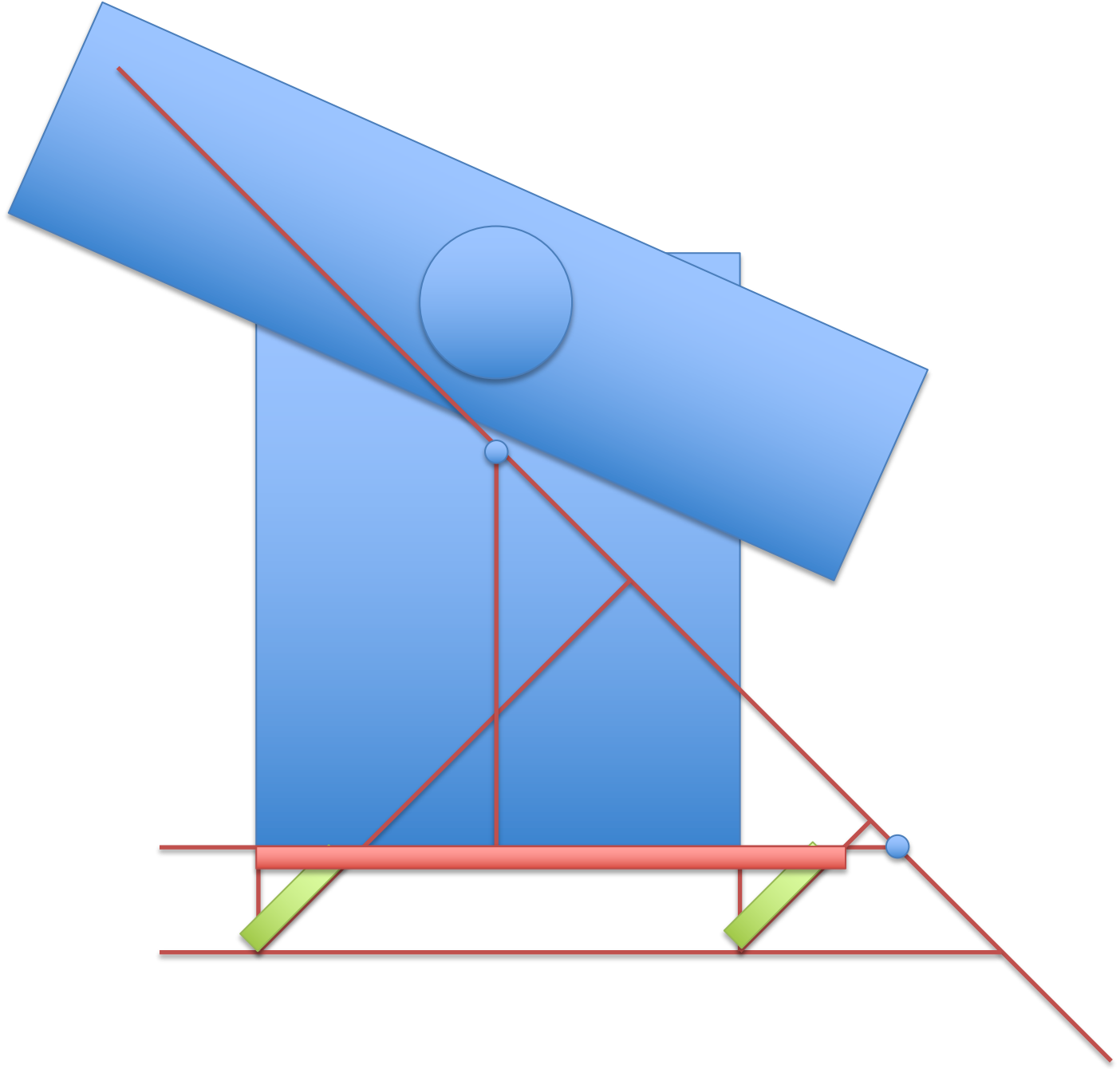


The diagram shows a blue tilted rectangular structure on a red base. A red line representing the center of gravity G is drawn from the top-left corner of the structure to the base. A vertical red line is drawn from the center of gravity G to the base. The width of the base is labeled E. The latitude angle α is shown between the base and the center of gravity line. The structure has a circular feature on its top surface. The base is supported by two green wedges. A horizontal red line is drawn below the base, and a vertical red line is drawn from the base to the center of gravity G.

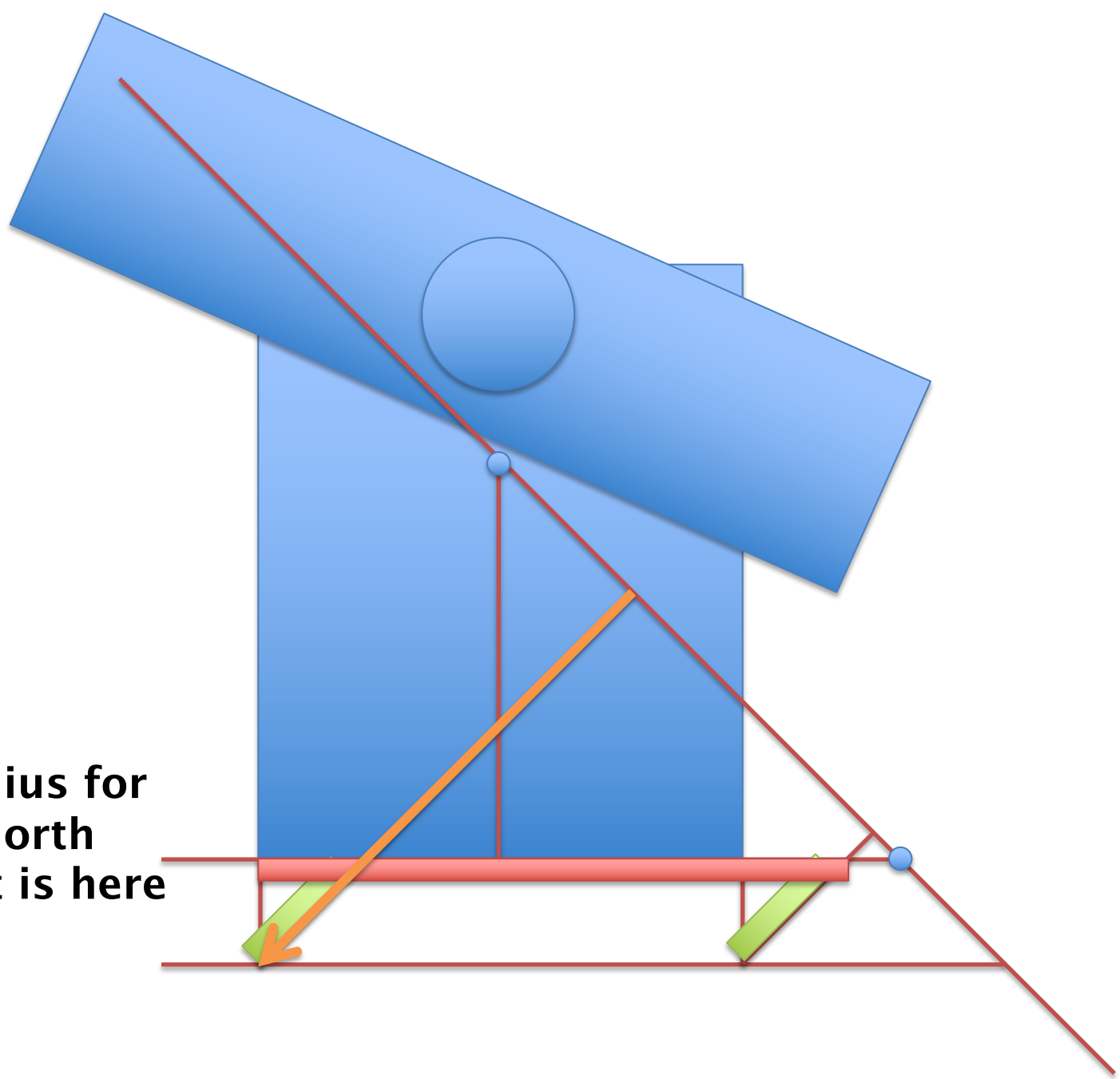
Height of Centre of Gravity G

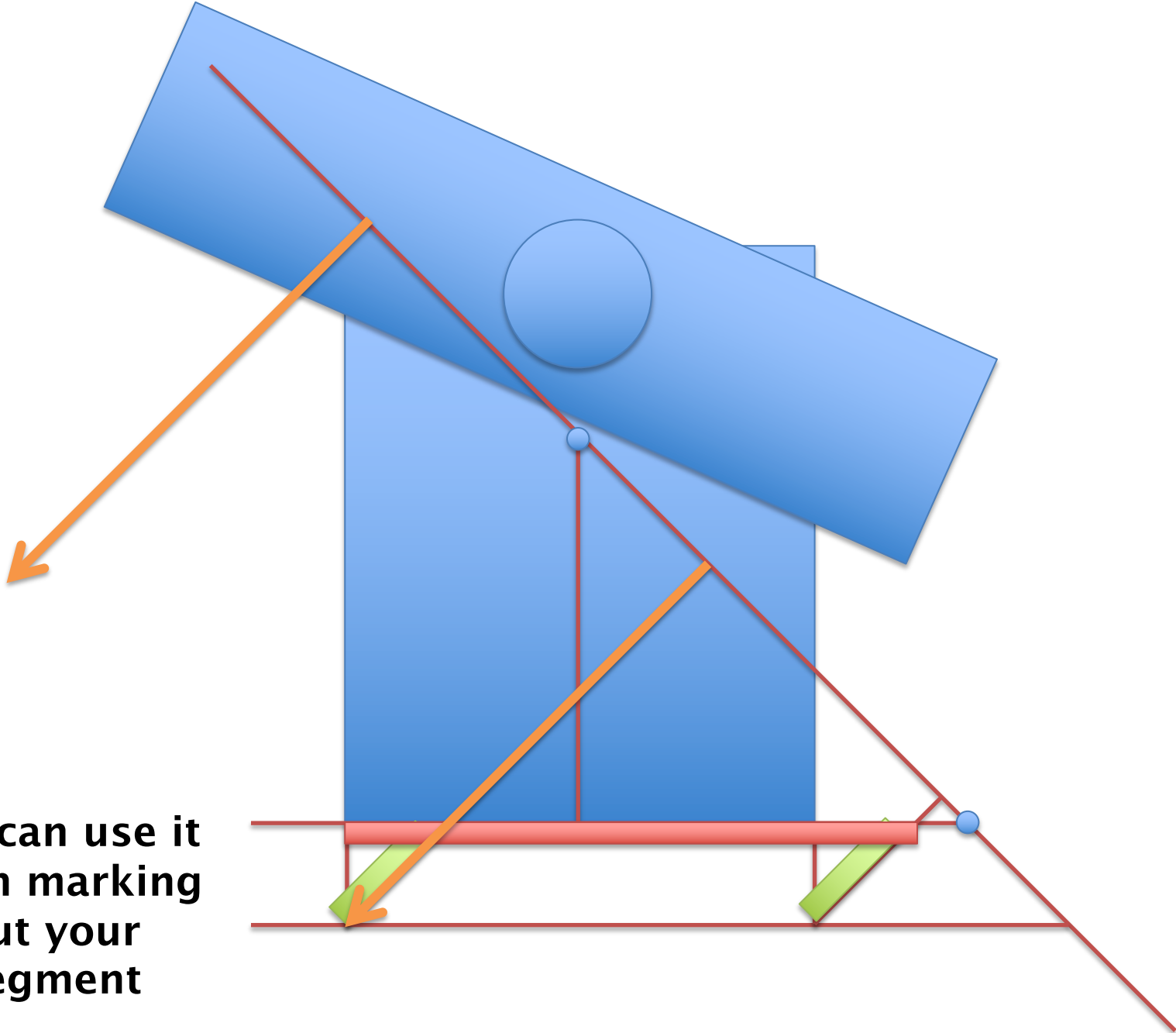
Width of base E

Latitude angle α



**The radius for
the North
segment is here**

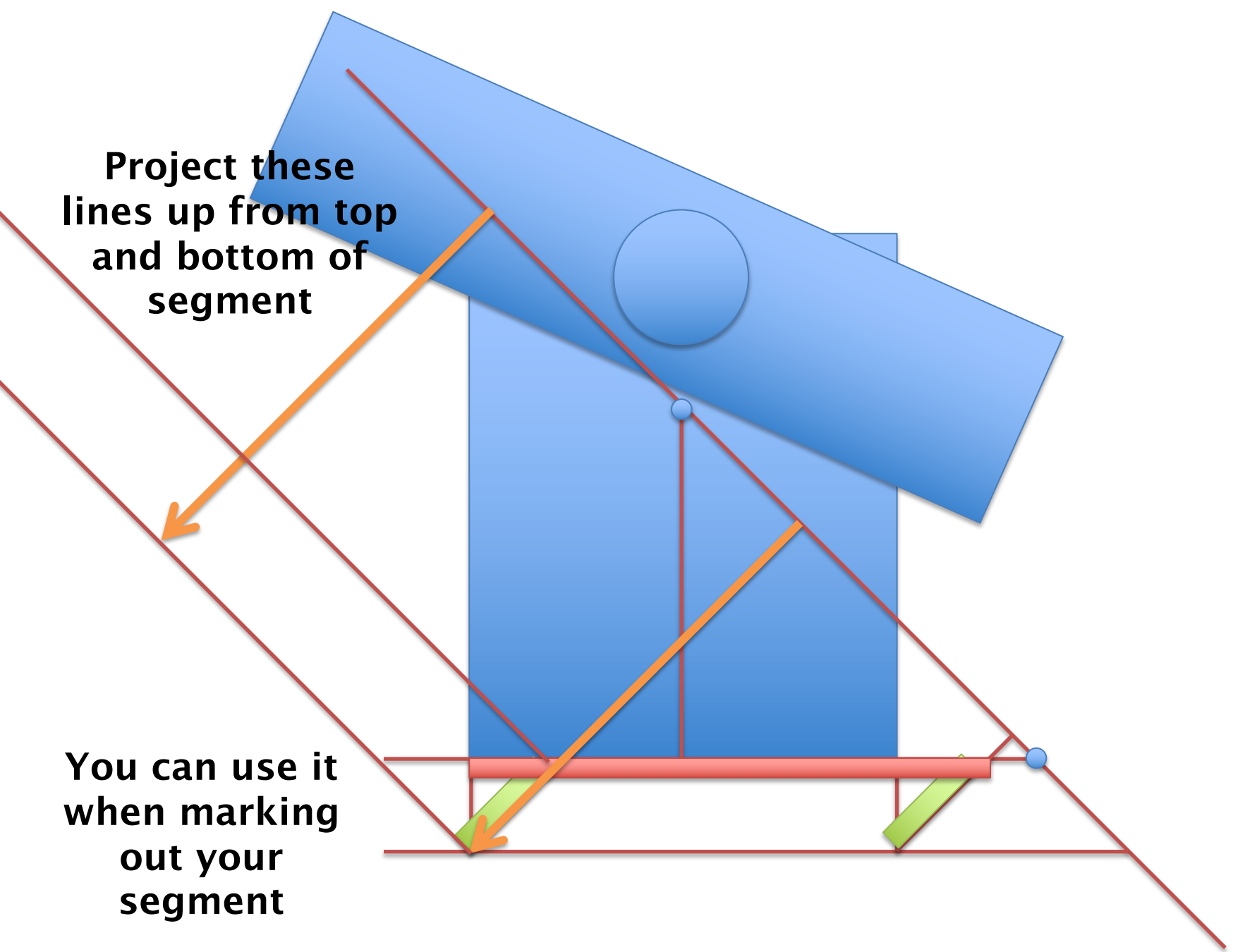


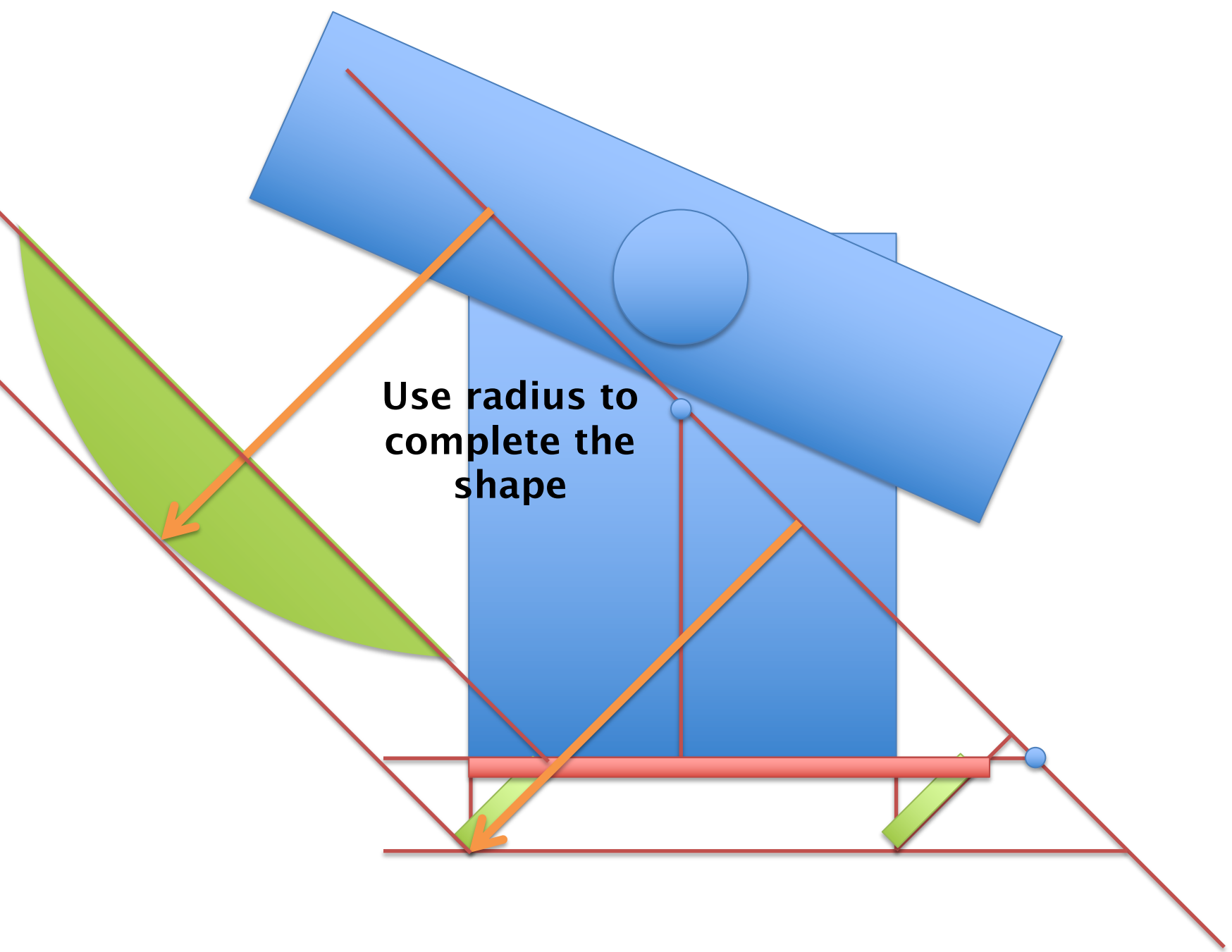


**You can use it
when marking
out your
segment**

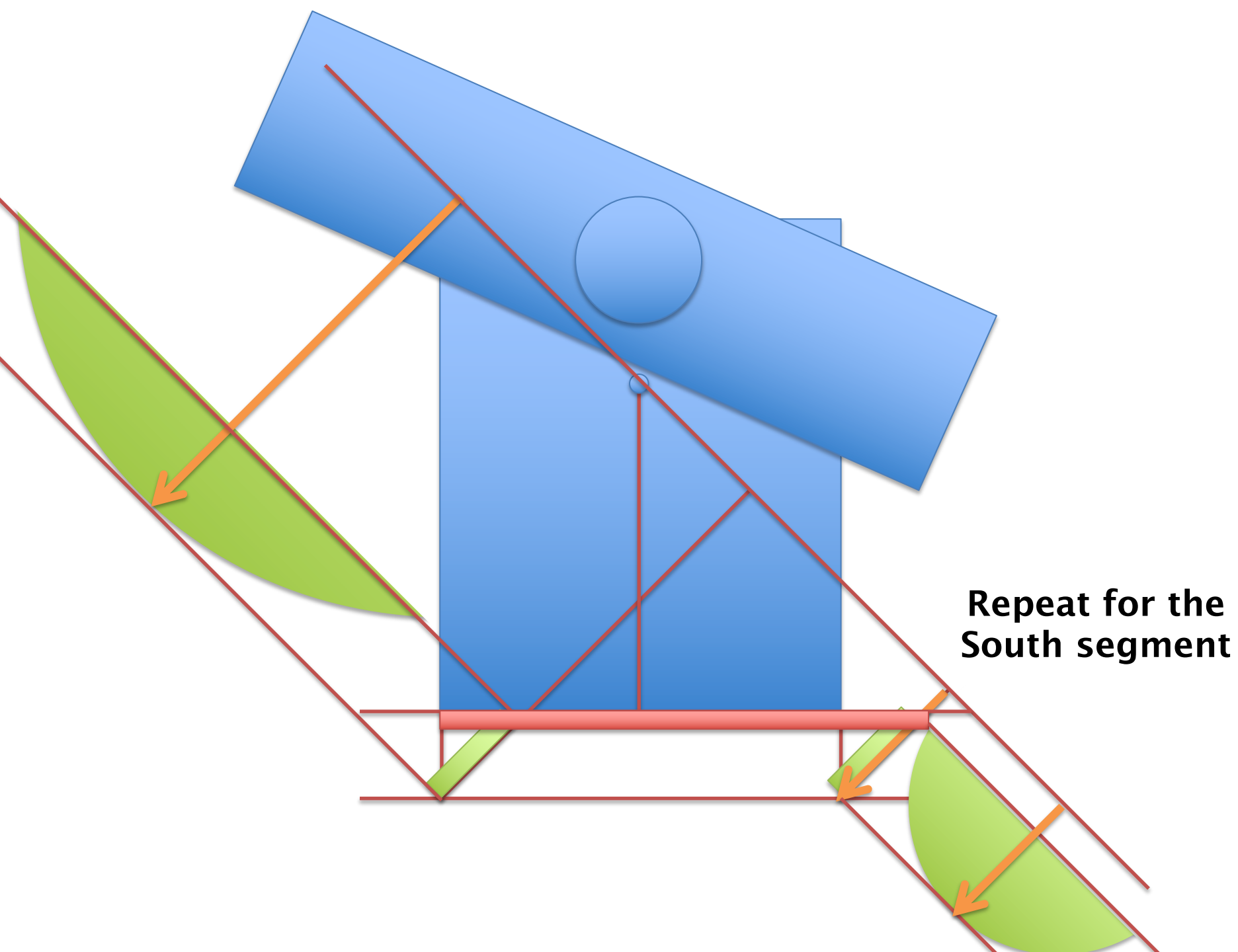
**Project these
lines up from top
and bottom of
segment**

**You can use it
when marking
out your
segment**

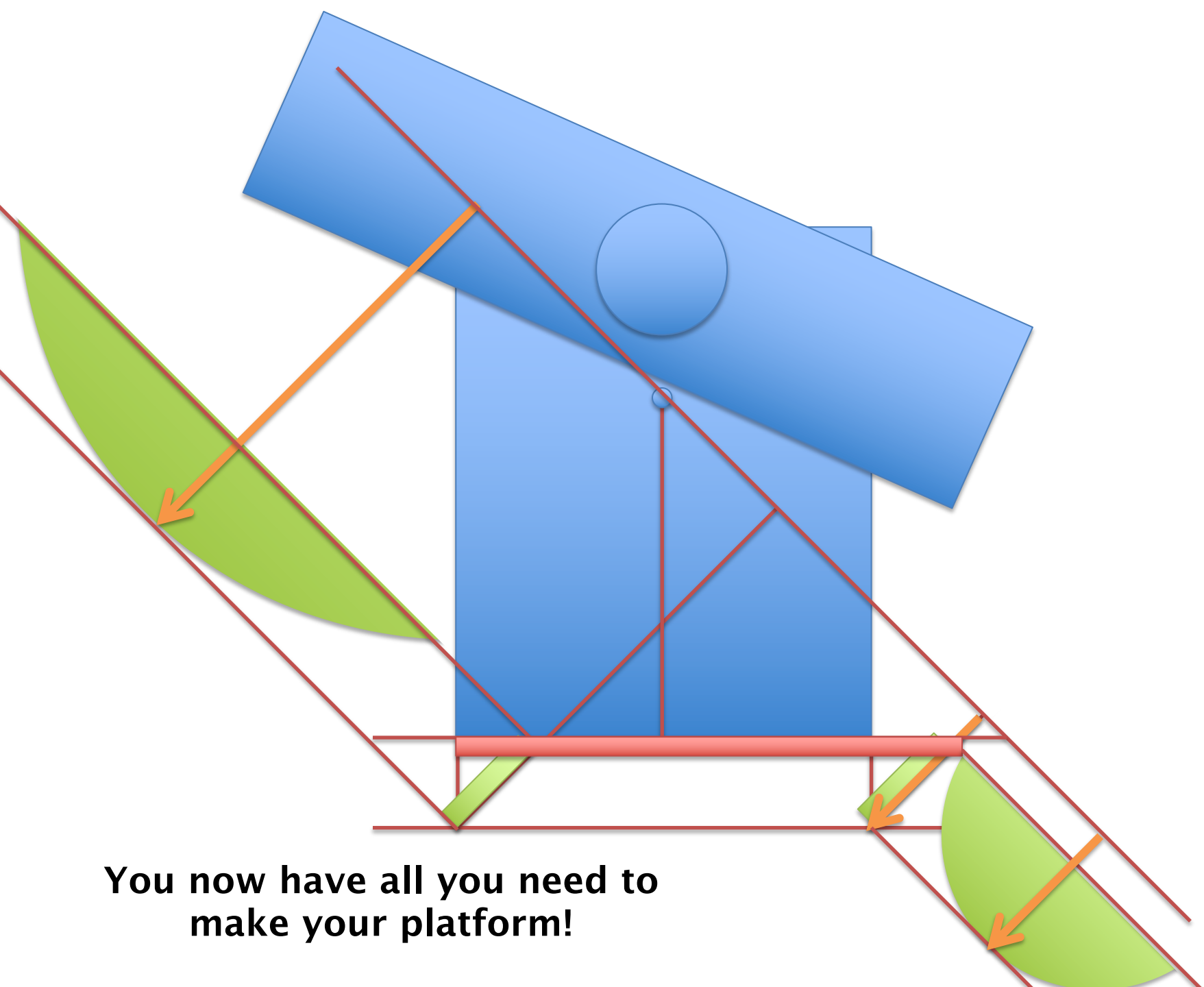




**Use radius to
complete the
shape**



Repeat for the South segment



**You now have all you need to
make your platform!**