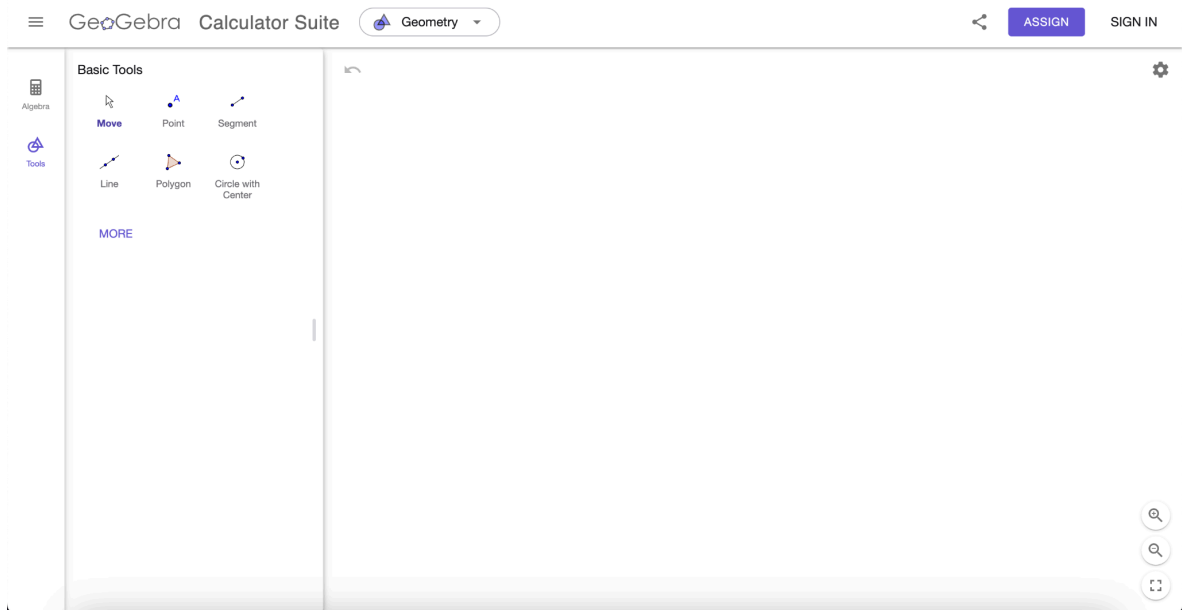


Photon Phun Reflection Diagram Creation Instructions

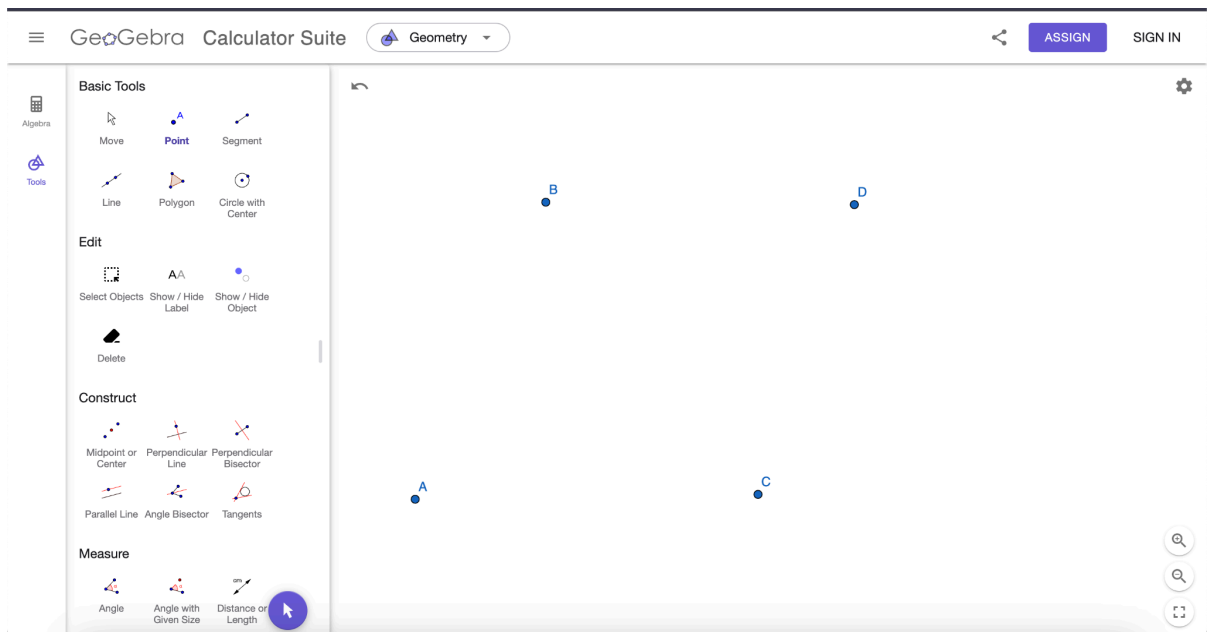
June 1, 2025 - Version 1

Here are instructions for making a reflection diagram for the Photon Phun event at WESO:

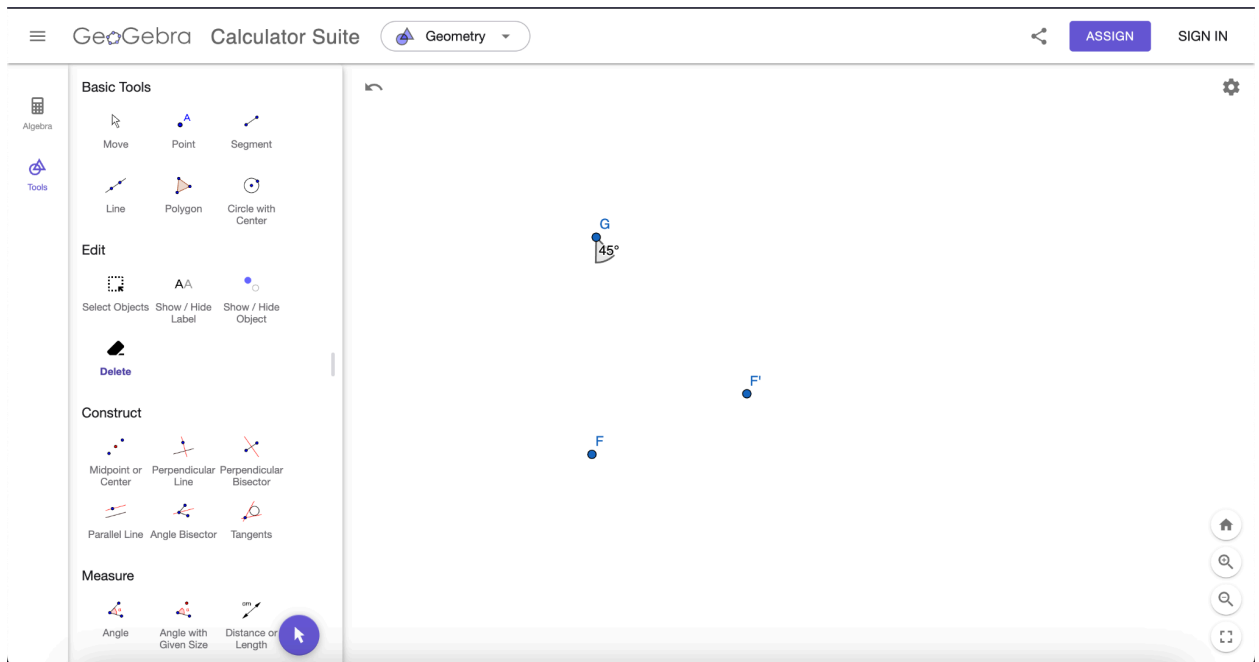
1. Go to GeoGebra at this link: <https://www.geogebra.org/>
2. Click “Start Calculator”. You should be at this screen:



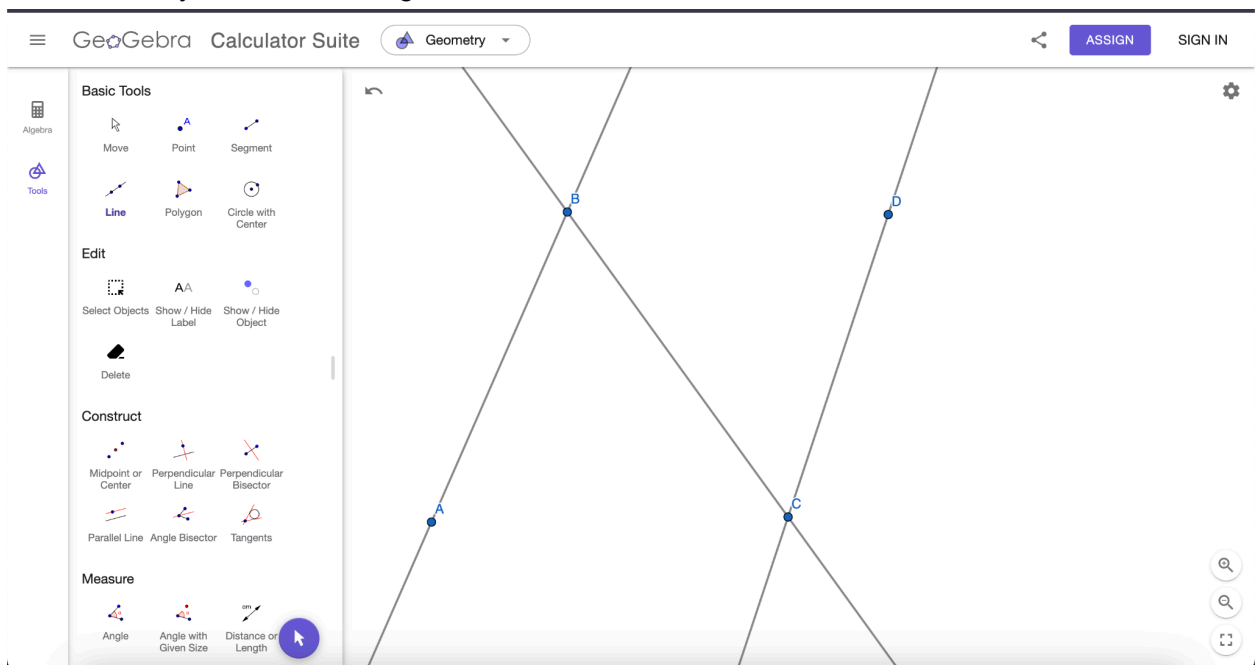
3. Click “Point” and put a few points down. The first point will be the source, the last point will be the target, and the points in between will be mirrors. Here, I will have two mirrors. Click the “More” menu.



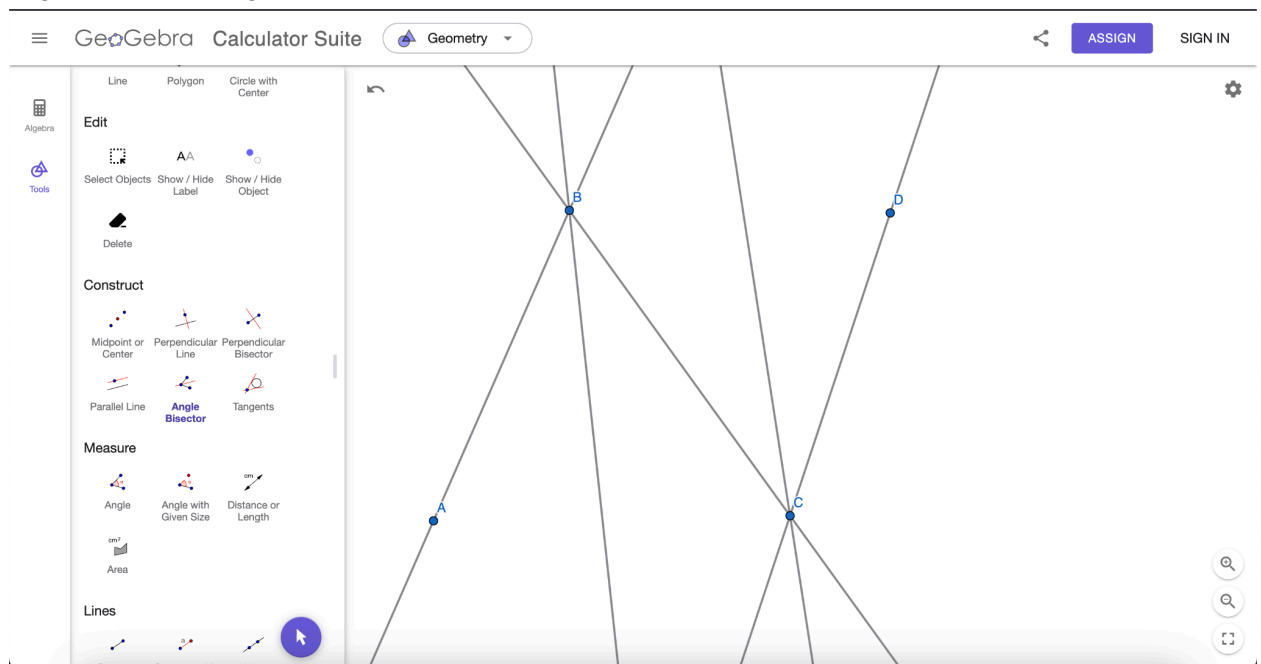
(Optional) To create a specific angle between three points, click “Angle with Given Size” and click two points (here F and G). It will pull up a box where you enter your specified angle measurement, and it will automatically place the third point (F’).



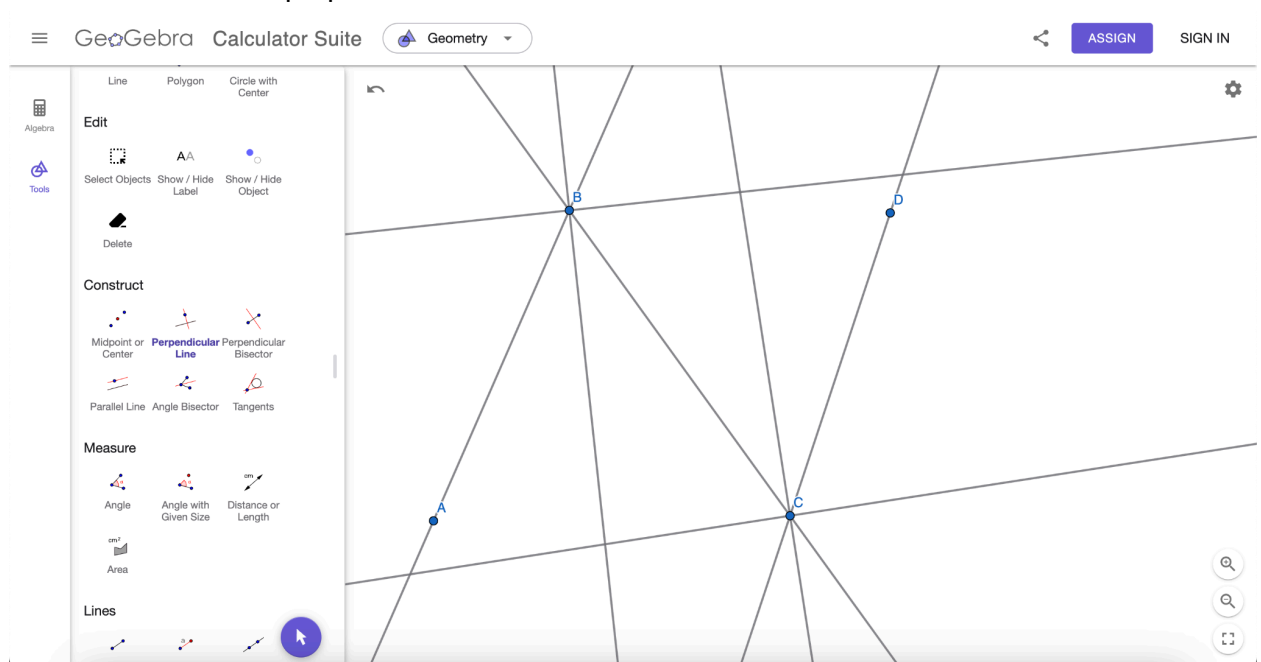
4. Click “Line” and draw line AB by clicking on point A and then point B. Similarly, draw BC, CD, etc. until you reach the target.



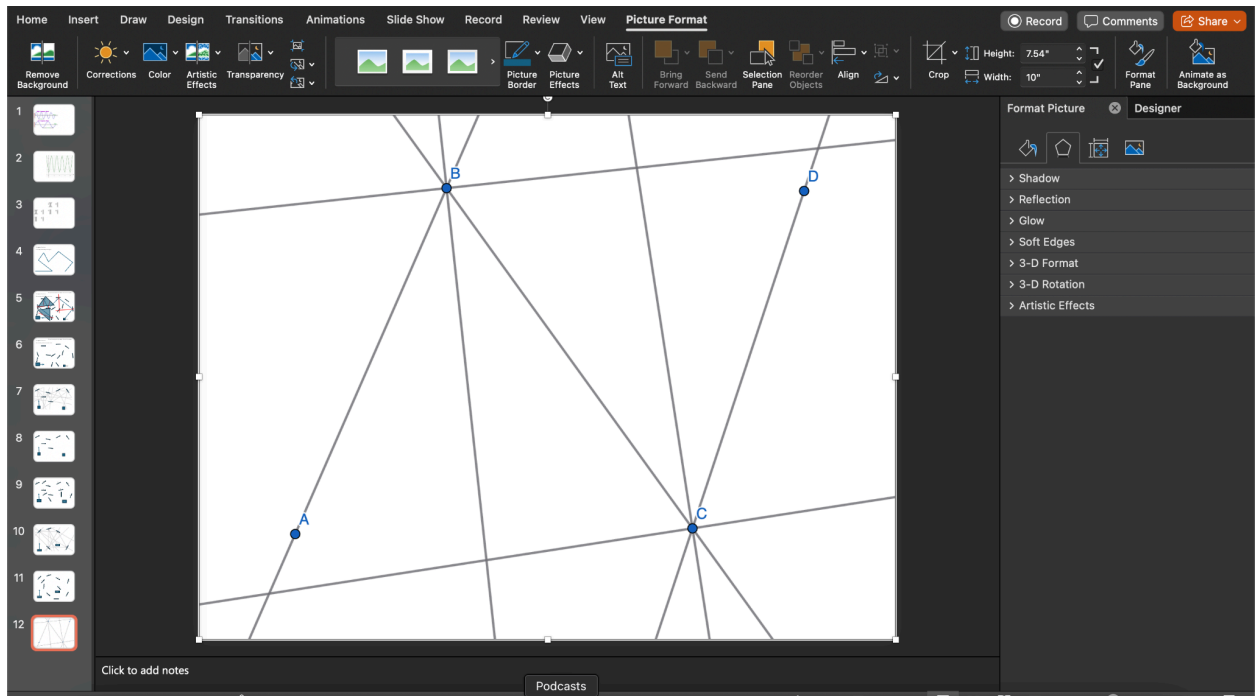
5. Click “Angle Bisector” and draw an angle bisector of the angle ABC by clicking on point A, then point B, then point C. Similarly, draw an angle bisector of angle BCD, etc. until all angles have an angle bisector.



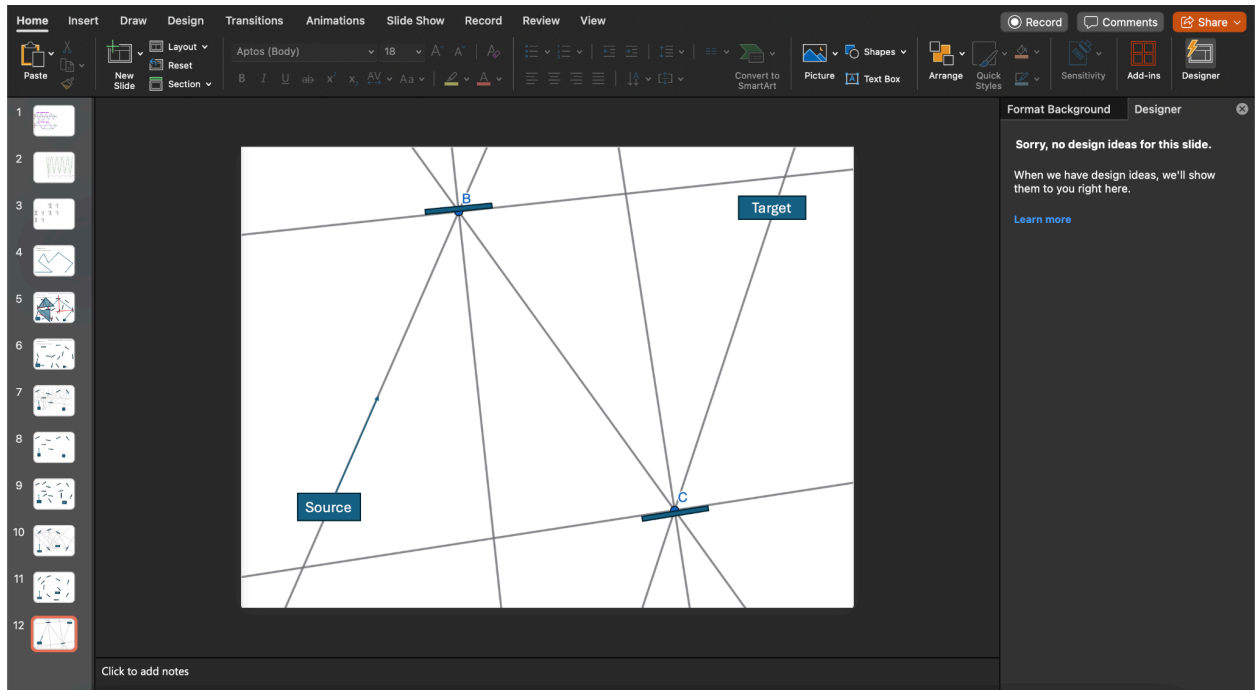
6. Click “Perpendicular Line” and draw perpendicular lines of the angle bisectors made in step 5 by clicking on the relevant angle bisector line and then clicking on the corresponding point. For example, I would click on the angle bisector of ABC and then click on B to create a perpendicular line at B.



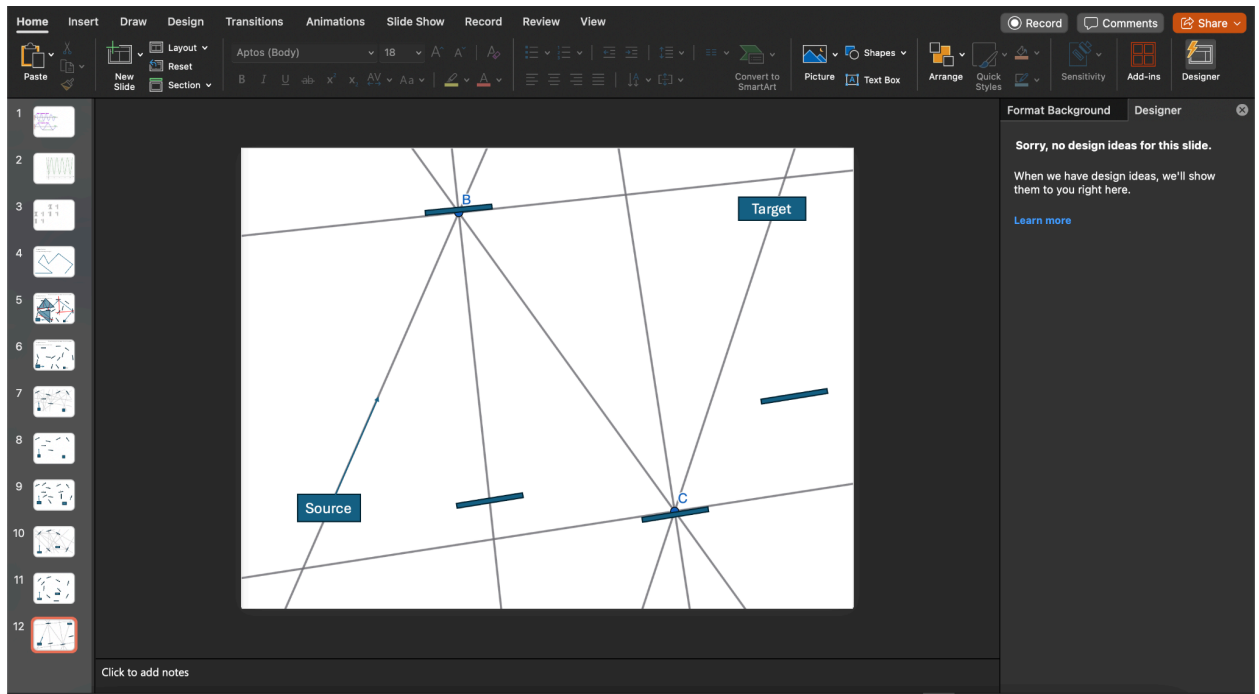
7. Now, take a screenshot of this and put it into PowerPoint or something similar. Crop as needed:



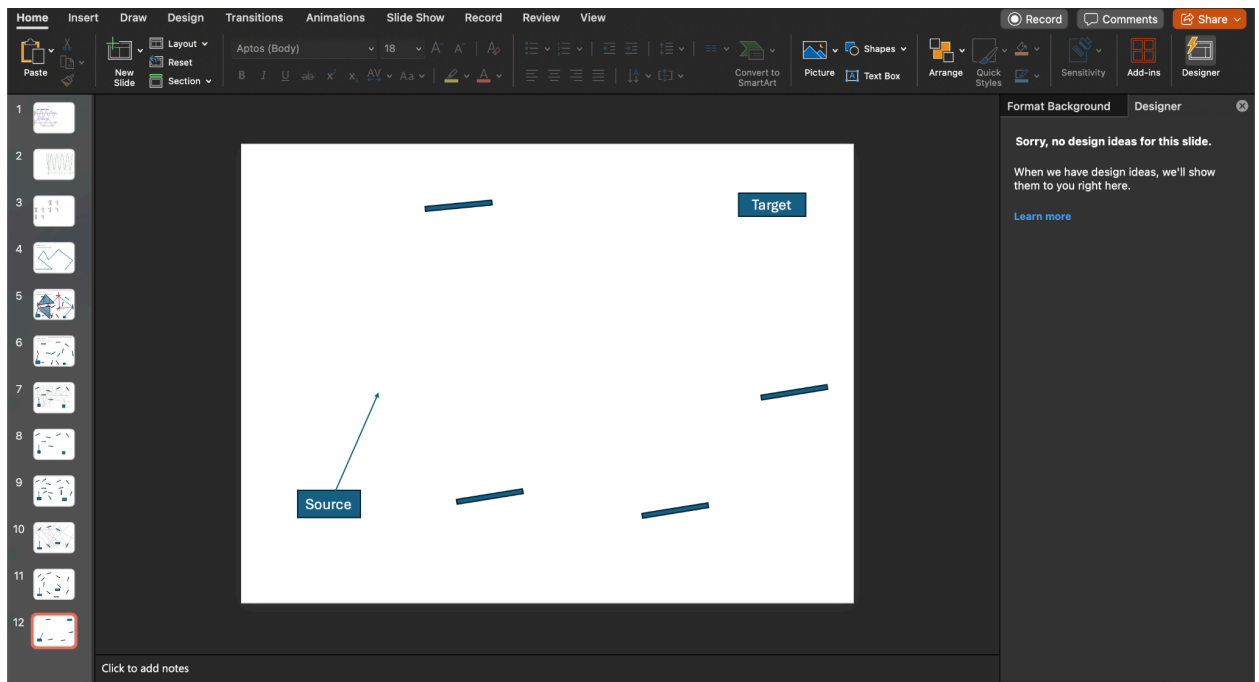
8. Label the first point “Source”, the last point “Target”. Draw an arrow from the source aligned with the line from the source to the first mirror. Align thin rectangles with the perpendicular bisector lines created in step 6. These will be mirrors.



9. Add some miscellaneous mirrors, making sure they do not interfere with the light's path (the lines drawn in step 4).



10. Remove the GeoGebra background.



11. Check the diagram by hand to make sure it works, and adjust if needed. You now have a reflection diagram!