Construction Techniques 4: Parallel and Perpendicular Lines

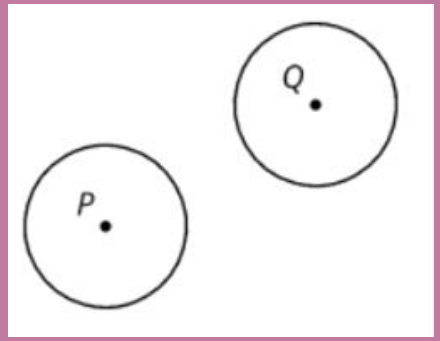
Illustrative Mathematics®

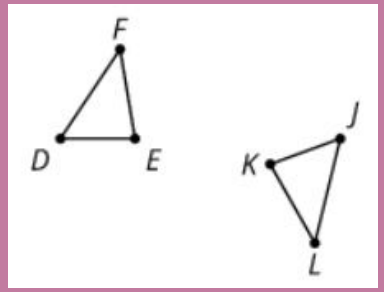
Learning Goal

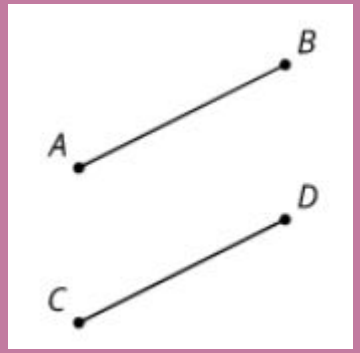
Let’s use tools to draw parallel and perpendicular lines precisely.

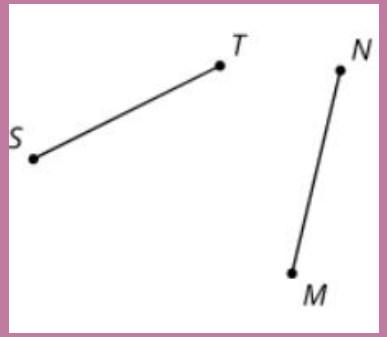
6.1 Math Talk: Transformations

Each pair of shapes is congruent. Mentally identify a transformation or sequence of transformations that could take one shape to the other.

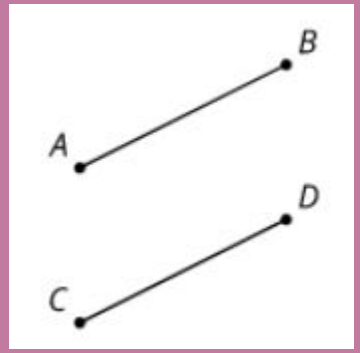






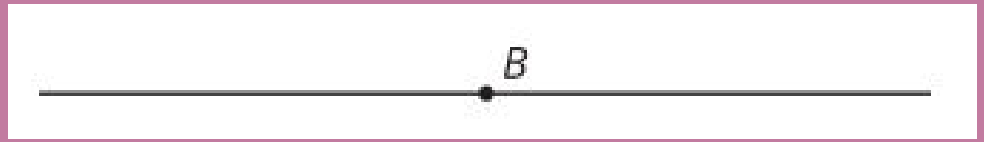


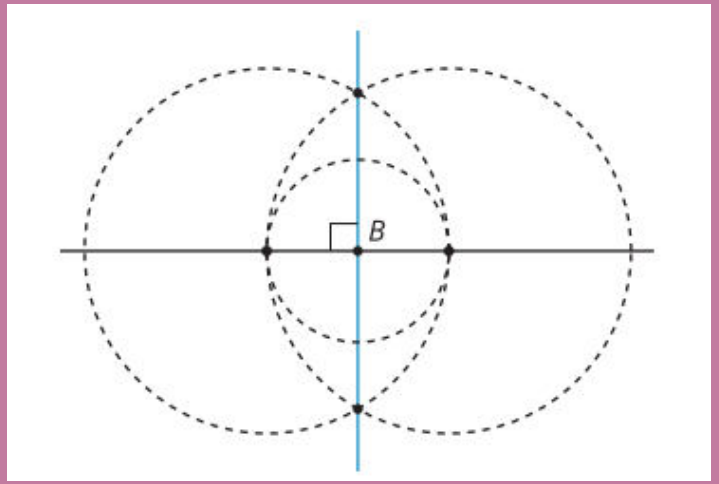
Activity Synthesis



Why don't we need to use a rotation for this pair?

6.2 Standing on the Shoulders of Giants



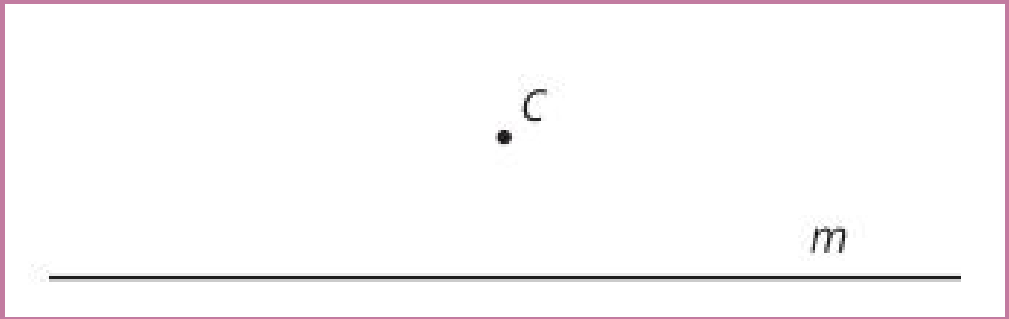


Constructions we already know:

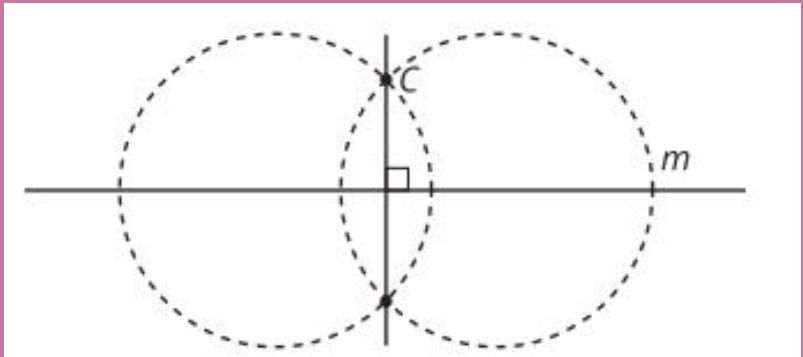
- circles of a certain radius
- lines and line segments through two points
- regular hexagons
- equilateral triangles
- a perpendicular bisector of a given segment
- a perpendicular line through a point on the given line
- a perpendicular line through a point *not* on the given line (added in this lesson)
- a parallel line through a point *not* on the given line (added in this lesson)

6.2 Standing on the Shoulders of Giants

Here is a line m and a point C not on the line. Use straightedge and compass tools to construct a line perpendicular to line m that goes through point C. Be prepared to share your reasoning.



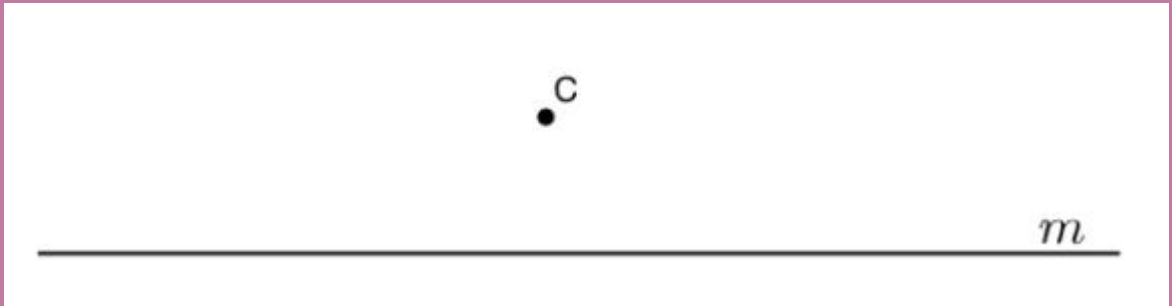
Activity Synthesis



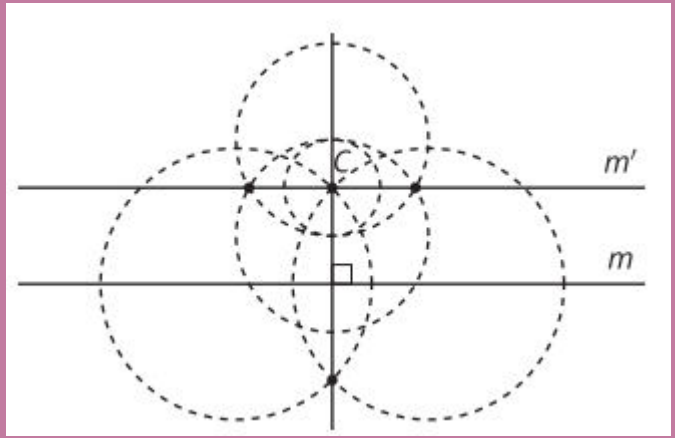
- How was this construction different from perpendicular line constructions you have done before?
- How did thinking about the differences help you plan what to do?
- How does knowing some constructions help you do other, more complicated constructions?

6.3 Parallel Constructions Challenge

Here is a line *m* and a point *C* not on the line. Use straightedge and compass moves to construct a line parallel to line *m* that goes through point *C*.

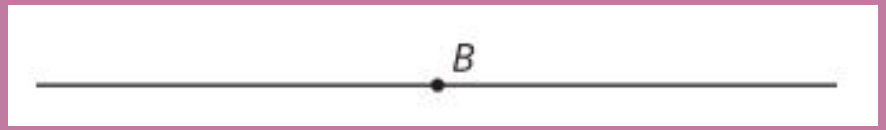


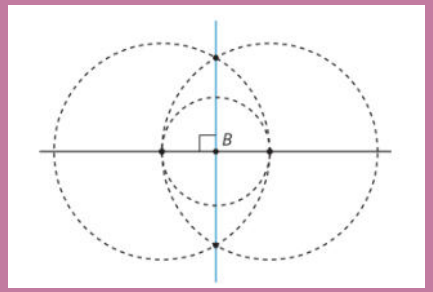
Activity Synthesis

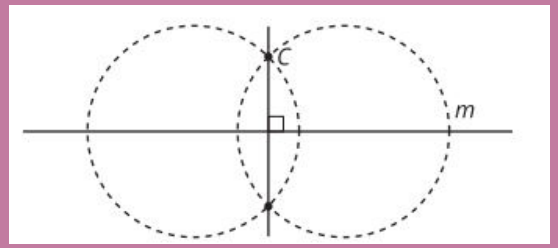


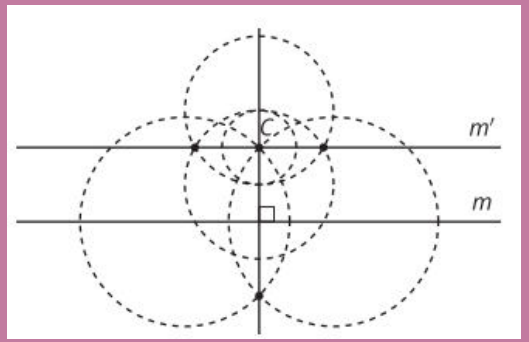
How does knowing some constructions help you do other, more complicated constructions?

Lesson Synthesis









What other figures they could draw using this inventory?