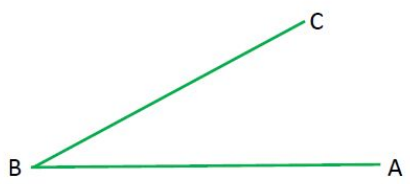
SchoolNova, Math 5b
Homework 13
Geometric Constructions
February 3, 2019

Please provide sufficient details about how you solved the problem. More difficult problems are marked with a $*$. If unable to solve a problem, please present your thoughts and any partial solution.

In the following geometric construction problems, you will be using a straightedge, that is, an unmarked ruler, and a compass. Students can watch the videos on geometric construction at the link $https://www.mathsisfun.com/geometry/constructions.html$

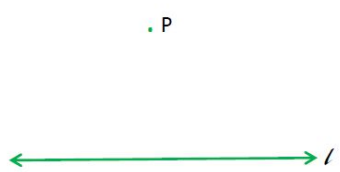
1. Given a segment $\overline{AB}$, construct a bisector, that is, a line that intersects at its midpoint.

2. Given an angle $\angle ABC$, construct its bisector.



3. Construct an angle that is congruent (has the same measure) to the given angle $\angle ABC$.

4. Construct a line that passes through the given point P, and is perpendicular to the given line l.



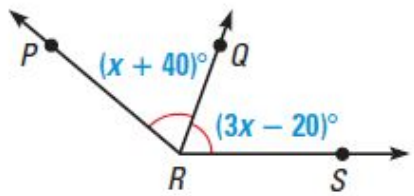
5. Construct a line that passes through the given point P, and is parallel to the given line l.

6. What will happen to the area of a square

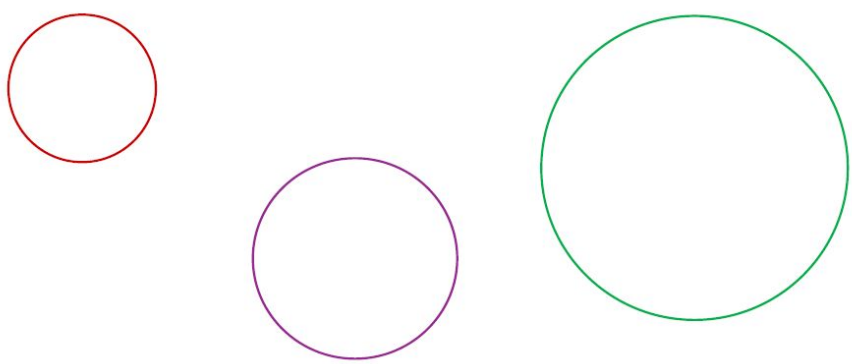
   (a) If its side is doubled?

   (b) If its side is halved?

7. In the figure $\overrightarrow{RQ}$ bisects $\angle PRS$. The measures of the two congruent angles are $x + 40$ deg and $3x - 20$ deg. Find x.



8. **Pi Activity:** Given below are several circles; use a string (and a ruler) to measure the diameter and the circumference of the circles. Then, for each circle, calculate the ratio of the circumference and the diameter.



9. $*$ **Infinite Series:** A football team practices running back and forth on the field in a special way. First they run from one end of the 100 yard field to the other. Then they turn around and run half the previous distance. Then they turn around again, and run half the previous distance, and so on. Suppose they continue the drill. What is the coordinate of the point that they approach?