Assignment 1

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***Abstract*—This document contains the solution for Assignment 1 (ICSC Class 10 2017 Q.11(b))**

Problem: PQR is a triangle.S is a point on the side QR of PQR such that $\angle PSR = \angle QPR$. Given $QP = 8cm$,$PR = 6cm$ and $SR = 3cm$

1) Prove $\Delta PQR \sim \Delta SPR$
2) Find the length of sides QR and PS
3) $\dfrac{\text{area}(\Delta PQR)}{\text{area}(\Delta SPR)}$

Solution:

1) In ΔPQR and ΔSPR
   $\angle PSR$ = $\angle QPR$.
   $\angle r$ is common to both
   3rd angles are equal
   therefore $\Delta PQR \sim \Delta SPR$
   Hence sides are proportional.
2) $$\frac{QR}{PR} = \frac{PQ}{PS} = \frac{PR}{SR}$$
   $$\implies \frac{QR}{6} = \frac{8}{PS} = \frac{6}{3}$$
   $$\implies QR = 12 \text{ and } PS = 4$$
3) $$\frac{\text{area}(\Delta PQR)}{\text{area}(\Delta SPR)} = \frac{6^2}{3^2} = \frac{4}{1}$$