

DELHI PUBLIC SCHOOL, JAMMU
SESSION 2019-20
SUBJECT: MATHEMATICS
ASSIGNMENT

TOPIC- INTRODUCTION TO TRIGNOMETRY

1. If $A = 60^\circ$ and $B = 30^\circ$ verify that $\sin(A+B) = \sin A \cos B + \cos A \sin B$
2. . Prove that $(\tan Q + 2)(2 \tan Q + 1) = 5 \tan Q + 2 \sec^2 Q$.
3. Prove that $\sin A (1 + \tan A) + \cos A (1 + \cot A) = \sec A + \operatorname{cosec} A$.
4. If $\sin Q + \cos Q = m$ and $\sec Q + \operatorname{cosec} Q = n$, then prove that $n(m^2 - 1) = 2m$.
5. Prove that : $(\sin A + \operatorname{cosec} A)^2 + (\cos A + \sec A)^2 = 7 + \tan^2 A + \cos^2 A$
6. If $x = r \sin A \cos C$, $y = r \sin A \sin C$ and $z = r \cos A$, prove that $r^2 = x^2 + y^2 + z^2$.
7. Prove that $(1 + \cot A - \operatorname{cosec} A)(1 + \tan A + \sec A) = 2$
8. If $\sec Q + \tan Q = p$, prove that $\sin Q = \frac{p^2 - 1}{p^2 + 1}$
9. If $\cos(40^\circ + x) = \sin 30$. Find the value of x .
10. If $\tan \theta + \sin \theta = m$ and $\tan \theta - \sin \theta = n$. Prove that $m^2 - n^2 = 4\sqrt{mn}$