National Institute of Open Schooling
Senior Secondary Course: Mathematics
Lesson 5: Relation between Sides and Angles of a Triangle
Worksheet-5

1. If any triangle ABC , prove that

   $a(\sin B - \sin c) + b(\sin C - \sin A) + c(\sin A - \sin B) = 0$

2. If triangle ABC, the three angles are A, B and C and a, b, c be the length of the sides opposite to them respectively. If the triangle ABC is an acute angle triangle, then prove that

   $\cos A = \frac{b^2 + c^2 - a^2}{2ab}$

3. Three sides of any triangle ABC are a =18cm, b =24cm c =30cm , find the value of
   $\sin A$
   $\cos B$
   $\sin C$

4. In any triangle ABC, show that

   $= \frac{\sin(B-C)}{\sin(B+C)} = \frac{b^2 - c^2}{a^2}, if$

   a, b and c are the sides of cornesponding angles A,B and C respectively

5. Two trees A and B are on the same side of a river. From a point C in the river the distance of trees A and B are 200 meter and 220 Meter respectively if the angle C is $45°,$ then find the distance between the trees. $use \sqrt{2} = 1.44$

6. In a triangle ABC, if $a\cos A = b\cos B$ then prove that the triangle ABC is either isosceles or right angled.

7. For any triangle ABC, prove that

   $\frac{\cos A}{a} + \frac{\cos B}{b} + \frac{\cos c}{c} = \frac{a^2 + b^2 + c^2}{2abc}$

8 In triangle XYZ, if $x\cos X = b\cos Y$, where $x \neq y$, prove that triangle XYZ is a right angle triangle.

9 If three sides of a triangle ABC are a =3cm , b = 5cm, c = 7cm,then find sin A ,Cos B and sin C

10 In an equilateral triangle ABC, if a, b, and c are three sides of the triangle , then prove that

   $\frac{b}{c+a} + \frac{c}{a+b} = 1$