Stepping Stones for Geometry

1. Take an A4 size paper and cut out a square. Measure the length of the side. Measure the length of the diagonal. Using a calculator Divide the diagonal length by the side length. What number do you get ?

2. Repeat the same exercise by taking a square on graph paper or a grid lined paper.

3. Take the square of the number you got above using a calculator. What number do you get ?

4. On graph paper draw a rectangle with one side twice the other side. Draw the diagonal and measure it. Divide the length of the diagonal by the length of the smaller side. Take the square of this number.

5. Make a triangle out of paper. Carefully bisect all the angles by folding. What do you observe about the bisectors ?

6. Make a triangle out of paper. Find the mid point of each side by folding.

7. After finding the mid points, also fold the medians. What do you observe ?

8. Make a triangle with all angles as acute angles. Fold the height for each side as base. What do you observe about the three perpendiculars ?

9. Measure one base and the height from that base. Multiply the two numbers.

10. Measure the other base and the height from that base. Multiply the two numbers. Compare the numbers from questions 8 and 9.

11. Measure the angles of the triangle you have made with a protractor Add the numbers. Compare your result with others.

12. Measure the lengths of the sides of the triangle you have made. Call the three vertices as A,B and C. Bisect the angle A by folding. Let the bisector meet the side BC at D. Measure BD and DC. Multiply l(AB)x l(CD). Multiply l(BD)xl(AC). Compare the two numbers.

13. Divide l(AB)/l(AC). Divide l(BD)/l(DC). Compare the two numbers.

14. Draw a right angled triangle on graph paper such that the sides containing the right angle have lengths which are whole numbers. Can you guess the length of the hypotenuse using pythagorus theorem and your calculator ?

15. Draw a square with side 10 cm on graph paper. What will be the length of its diagonal ? Calculate it first, and then measure it.

16. Let ‘d’ be the length of the diagonal in question 15. Now draw a square on graph paper with side equal to d . Can you guess what will be the length of the diagonal ? Measure it.

17. Draw a circle. Take a point outside it and draw two tangents to the circle. Measure the length of each tangent. What do you observe ?