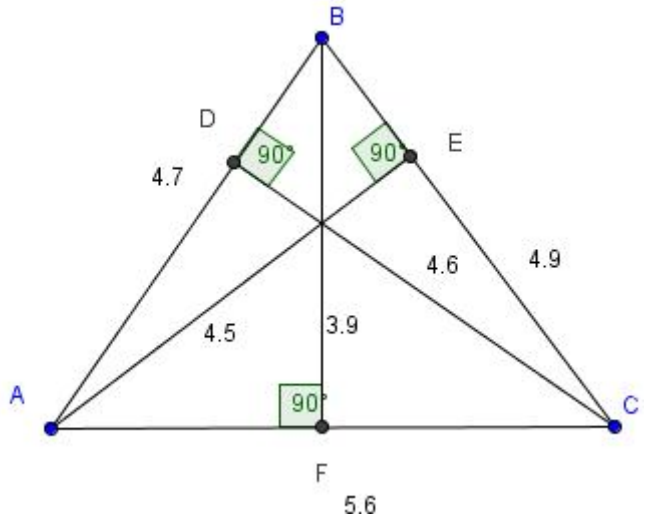
Student Activity Theorem 16

Use in connection with interactive file "Theorem 16" on the Student's CD.

Taking different sides of a triangle as the base explore the value of half that base times the corresponding perpendicular height.



(Please note the figures in the interactive file are corrected to 1 decimal place, which may lead to slight inaccuracies. For example, using the figures, ½ (5.8)(4.4) yields 12.76, not 12.8 as stated.)

1. If AC is the base, which line is the perpendicular height? Give a reason for your answer.

   _____

   _____

2. Without moving any of the points, what is the length of AC and the corresponding perpendicular height? If the area of a triangle is half the base multiplied by the perpendicular height, what is the area of the triangle ABC using AC as base?

   _____

   _____

3. Without moving any of the points, find the length of BC and the corresponding perpendicular height and using BC as the base find the area of the triangle ABC.

   _____

   _____

4. Without moving any of the points, find the length of AB and the corresponding perpendicular height and using AB as the base find the area of the triangle.

5. What do you notice about the values you got for the areas of the triangles in the above three questions?

6. If the perpendicular height is 4 and the area of the triangle is 12.8, find the length of the base correct to 1 decimal place. Do your figures agree with the interactive file?

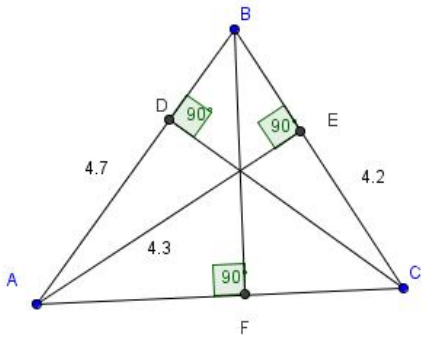
7. Move some or all of the points A, B or C and record a new set of bases and corresponding perpendicular heights and find the corresponding areas. Are the areas the same?

8. Repeat question 7 for a different set of values. What was the relationship between the areas this time?

9. From the calculations performed in the last set of questions, what conclusion do you come to regarding the choice of a line as the base of a triangle to find the area of a triangle?

Challenge

10. Find the lengths of the line segments CD, BF in the diagram below


B
D
90°
90°
E
4.7
4.2
4.3
A
90°
C
F