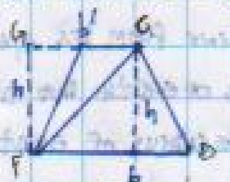
any triangle (not only a right triangle) is equal to $\frac{1}{2}$ the product of its base and shape. Show that because a trapezoid is composed of two triangles with the same height, but different bases, its area is equal to $(\frac{1}{2}h(b+b'))$ 14/12/2018



$GC_1 \times FD = A$ (AREA)

$\frac{Gb}{BD} = \frac{FG}{BC}$

$b' + b = 2B$ $\qquad$ $GB' \times h = \frac{1}{2}A$

$2B = GC = FD$ $\qquad$ $bD \times h = \frac{1}{2}A$

$2B \times H = A$ $\qquad$ $A + A = 2A$

$2B \times G = A$ $\qquad$ $\frac{1}{2}h(2A) = A$

$2B = FD = A$

$\frac{1}{2}h(b+b')$

$= \frac{1}{2}h(b+b') = \frac{1}{2}hb + \frac{1}{2}hb' = A$

9. A triangle with 3 equal sides (equilateral) also has 3 equal angles. Since the sum of the angles of any triangle is 180°, each angle is 60°. A perpendicular dropped from any vertex to the opposite side (an altitude) bisects that side and the angle from which it is drawn producing two 30°-60° right triangles. Apply the Pythagorean theorem to the 30°-60° right triangles to show that its sides are in the ratio $1:2\sqrt{3}$ and, therefore, that the altitude of any equilateral triangle is $\frac{1}{2}\sqrt{3}$ times the length of a side.

$COA = 180°$ $\qquad$ $\frac{CO}{CA} = \frac{BO}{BA}$

$A'BO = 180°$

$\angle C = 60$ $\quad$ $A = 30°$ $\quad$ $CA^2 = CO^2 + OA^2$

$\angle B = 60$ $\quad$ $A' = 30°$ $\quad$ $2^2 = 1^2 + OA^2$ $\quad$ $B = \sqrt{3}$ $\quad$ $5^2 = \frac{1}{2}(5)^2 + b^2$

$O = \frac{180°}{2} = 90°$ $\quad$ $\cancel{B^2 = 2^2 - 1^2}$ $\quad$ $b^2 = \frac{1}{2}(25) + 25$

$BO = 2/2$ $\quad$ $CA = 2$ $\quad$ $OA = \sqrt{2^2 + (1)}$ $\quad$ $b = \cancel{\sqrt{37.5}}$

$OA^2 = 2^2 - 1^2$ $\quad$ $OA = \sqrt{4+1}$ $\quad$ $OA = \sqrt{5}$

$\cancel{OA = \sqrt{3}}$ $\quad$ $\cancel{OA = \sqrt{3} + (\sqrt{1})}$ $\quad$ $\frac{1}{2}\sqrt{3} \times 2 = \sqrt{3}$

$2^2 = 1^2 + b^2$ $\quad$ $2^2 = 1^2 + \sqrt{3}^2$ $\quad$ $5^2 = 2.5^2 + b^2$

$b^2 = 2^2 - 1^2$ $\quad$ $4 = 1 + 3$ $\quad$ $b^2 = 25 - 6.25$

$b = \sqrt{3}$ $\quad$ $\sqrt{18.75} = \frac{1}{2}\sqrt{3} \times 5$ $\quad$ $b = \sqrt{18.75} = 4.33$

10. Find the area of an equilateral triangle in terms of the length of a side. (See problem 3). $A = (\frac{1}{2}S) \times (\frac{1}{2}\sqrt{3})(S)$

$\cancel{A = (S(\frac{1}{2}S)) \times 2}$ $\quad$ E.x.: $\cancel{A = (2(\frac{1}{2}2)) \times 2} = 4$, $A = (\frac{1}{2}2) \times (\frac{1}{2}\sqrt{3}) \times 2 = 1.73(\sqrt{3})$

2020/6/13