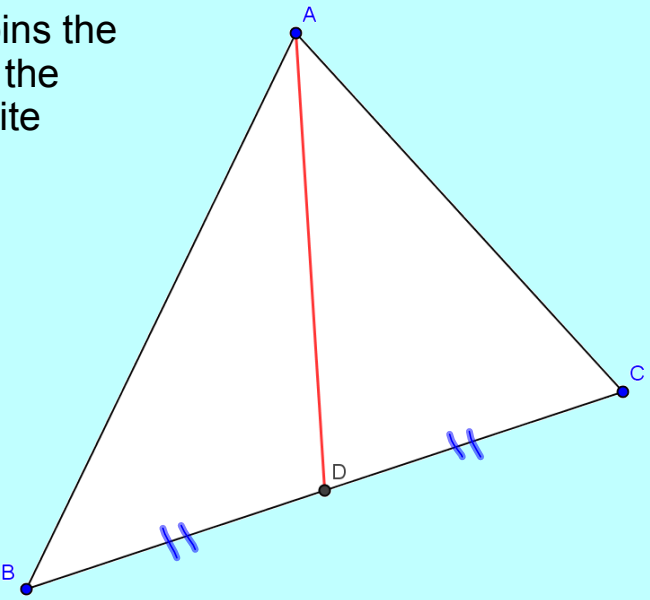
Median: A line that joins the vertex of a triangle to the midpoint of the opposite side.



① MP_{BC}

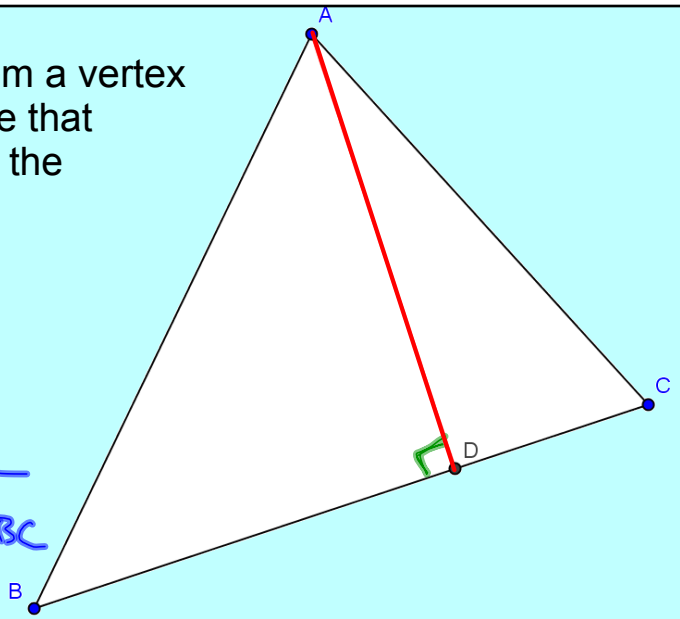
② m_{AD}

③ $y = m_{AD}x + b$

④ Sub A OR D into $y = m_{AD}x + b$

Feb 28-11:11 AM

Altitude: A line from a vertex to the opposite side that is perpendicular to the opposite side.



① m_{BC}

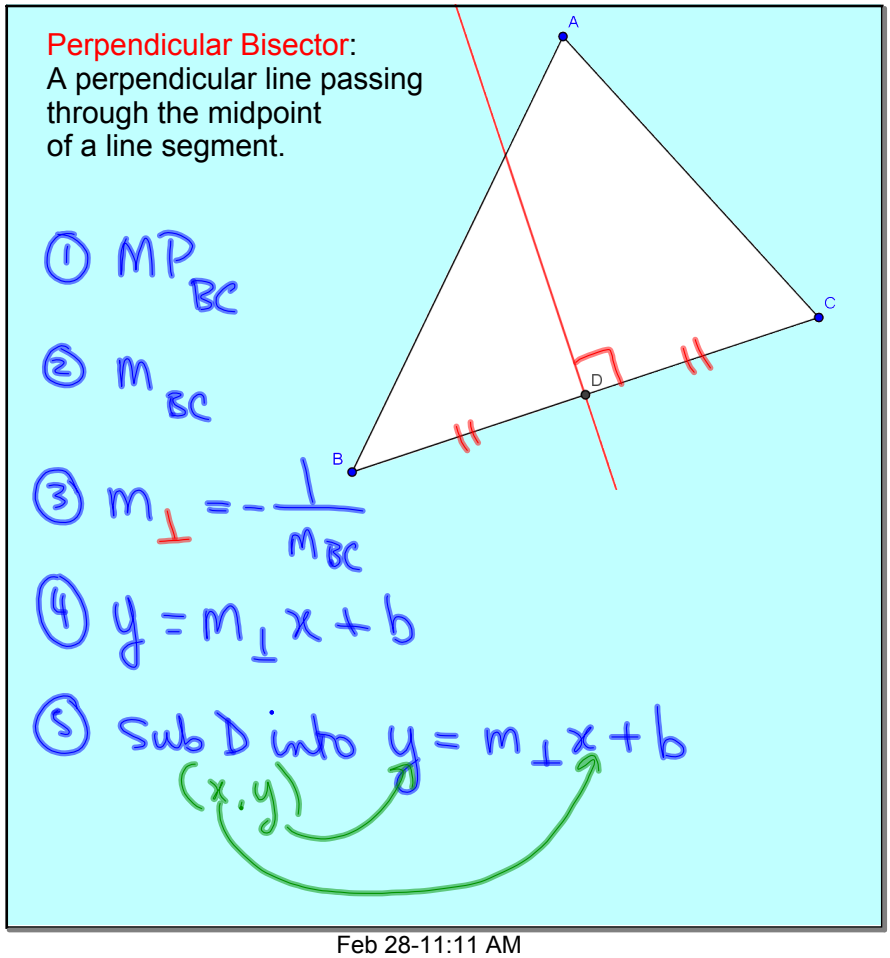
② $m_{AD} = -\frac{1}{m_{BC}}$

③ $y = m_{AD}x + b$

④ Sub A into $y = m_{AD}x + b$

Feb 28-11:11 AM

Perpendicular Bisector:
A perpendicular line passing through the midpoint of a line segment.



① MP_{BC}

② m_{BC}

③ $m_{\perp} = -\frac{1}{m_{BC}}$

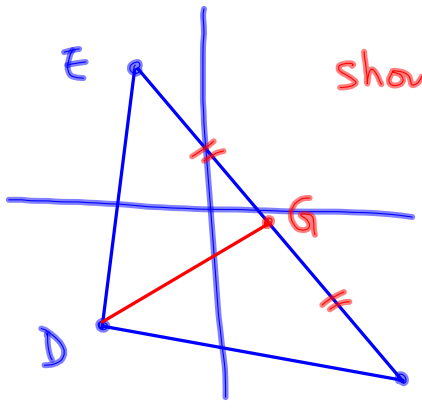
④ $y = m_{\perp}x + b$

⑤ Sub D into $y = m_{\perp}x + b$ (x, y)

Feb 28-11:11 AM

p102 # 4(c)

D(-3,-4) E(-2,4) F(5,-5)



Show $m_{DG} = -\frac{1}{m_{EF}}$

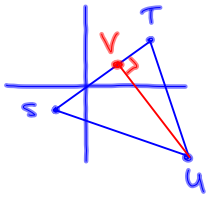
① find G

$x_G = \frac{-2+5}{2} = \frac{3}{2}$ $y_G = \frac{4+(-5)}{2} = -\frac{1}{2}$

Oct 11-10:46 AM

Ex.1 continues...
Triangle STU has vertices at S(-2,-3), T(9,4) and U(11, -4).

b. Find the equation of the altitude from U.



① $m_{TS} = \frac{y_S - y_T}{x_S - x_T}$

$= \frac{-3-4}{-2-9}$

$= \frac{-7}{-11}$

$m_{TS} = \frac{7}{11}$

② $m_{UV} = -\frac{11}{7}$

③ $y = -\frac{11}{7}x + b$

④ Sub U into $y = -\frac{11}{7}x + b$

(11, -4) $-4 = -\frac{11}{7}(11) + b$

$-4 = -\frac{121}{7} + b$

$-4 + \frac{121}{7} = b$

$-\frac{28}{7} + \frac{121}{7} = b$

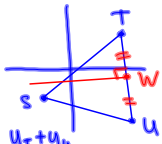
$\frac{93}{7} = b$

∴ altitude from U is $y = -\frac{11}{7}x + \frac{93}{7}$

Mar 4-9:52 AM

Ex.1 continues...
Triangle STU has vertices at S(-2,-3), T(9,4) and U(11, -4).

c. Find the equation of the perpendicular bisector of side TU.



① MP_{TU}

$x_W = \frac{x_T + x_U}{2}$

$= \frac{9+11}{2}$

$= 10$

$y_W = \frac{y_T + y_U}{2}$

$= \frac{4+(-4)}{2}$

$= \frac{0}{2}$

$= 0$

∴ W(10, 0)

② $m_{TU} = \frac{y_U - y_T}{x_U - x_T}$

$= \frac{-4-4}{11-9}$

$= \frac{-8}{2}$

$m_{TU} = -4$

③ $m_{\perp} = \frac{1}{4}$

④ $y = \frac{1}{4}x + b$

⑤ Sub W into $y = \frac{1}{4}x + b$

(10, 0) $0 = \frac{1}{4}(10) + b$

$0 = \frac{10}{4} + b$

$-\frac{10}{4} = b$

$b = -\frac{5}{2}$

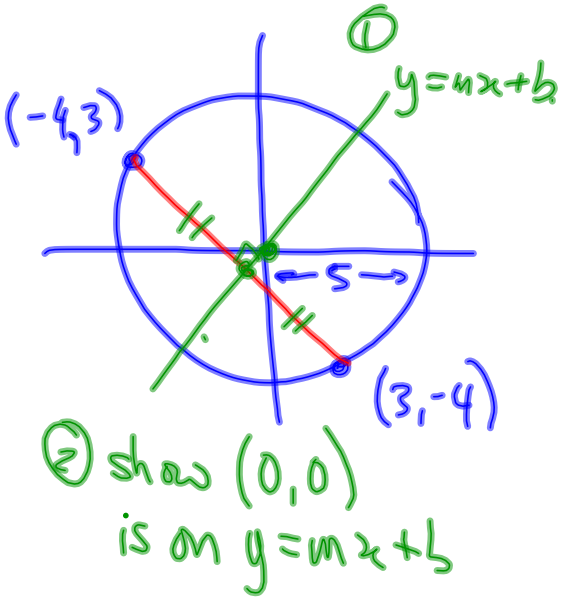
∴ perpendicular bisector of TU is $y = \frac{1}{4}x - \frac{5}{2}$

Mar 4-9:52 AM

Assigned Work:

Triangle ABC has vertices A(3, 4), B(-5, 2) and C(1, -4). Find the equation for the altitude from A to BC.

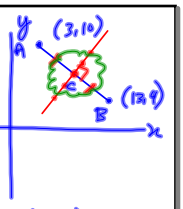
p.79 #12
p.80 #13c,14
p.102 #4
p.110 #13b



Feb 28-12:00 PM

p.80 #14

perpendicular bisector



① $x_m = \frac{3+13}{2}$
$= 8$

$y_m = \frac{10+4}{2}$
$= 7$

MP is C(8,7)

② $m_{AB} = \frac{y_B - y_A}{x_B - x_A}$
$= \frac{4-10}{13-3}$
$= \frac{-6}{10}$
$= -\frac{3}{5}$

③ $m_\perp = \frac{5}{3}$

④ $y = \frac{5}{3}x + b$

⑤ sub (8,7) $7 = \frac{5}{3}(8) + b$
$7 = \frac{40}{3} + b$
$7 - \frac{40}{3} = b$
$\frac{21}{3} - \frac{40}{3} = b$
$\frac{-19}{3} = b$

∴ the possible sites for the fair are along $y = \frac{5}{3}x - \frac{19}{3}$

Oct 11-10:31 AM