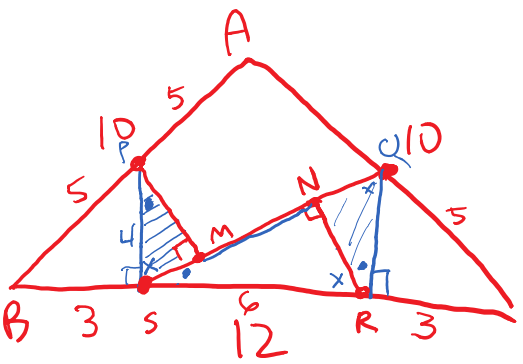
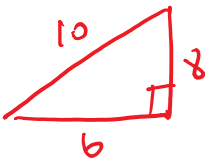
2D and 3 D Solids

October 5, 2015

#27 By Young & Plunkett




① Height = 8

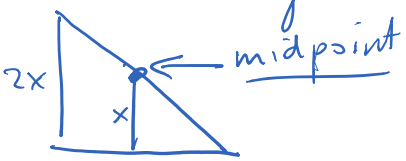



② MN = ?

③ Similar Triangles

$\triangle SNR \cong \triangle SNQ \cong \triangle RNQ$

④ QR = 4 B/C of Similar Triangle




⑤ Find $\overline{SQ}$.

$4^2 + 6^2 = \overline{SQ}^2$

$52 = \overline{SQ}^2$

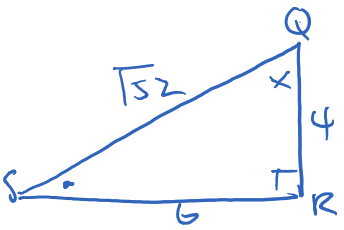
$\sqrt{52} = SQ$

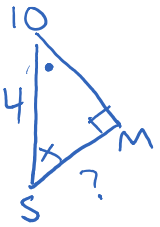
⑥ PS = 4 B/C half of height

$\triangle BPS$ = RIGHT TRIANGLE

⑦ Found all similar Triangles $\triangle SPM$ and $\triangle NRQ$.

Find $\overline{SM}$ & $\overline{NQ}$ then subtract from $\overline{SQ}$.




$\frac{\sqrt{52}}{4} = \frac{4}{?}$

$? = \frac{16}{\sqrt{52}}$ $\quad \sqrt{52} = 13$

$? = \frac{4\sqrt{52}}{13}$

∴ $MN = \sqrt{52} - \frac{4\sqrt{52}}{13} - \frac{4\sqrt{52}}{13}$

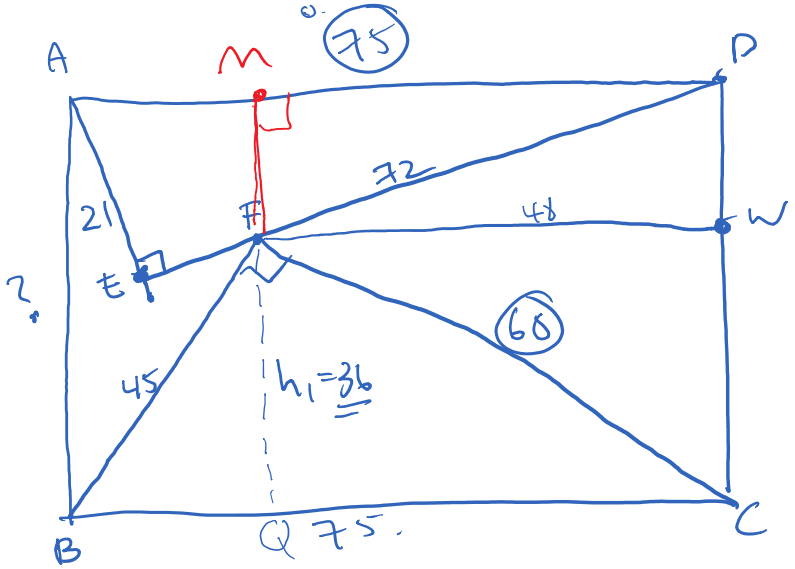
$= \frac{13\sqrt{52} - 8\sqrt{52} - 5\sqrt{52}}{13} = \frac{5\sqrt{4}\times\sqrt{13}}{13}$

OVERALL STRATEGY WAS Find $\overline{SQ}$ then Subtract $\overline{SQ}$ & $\overline{NQ}$.

$$= \frac{13\sqrt{52}}{13} - \frac{8\sqrt{52}}{13} = \frac{5\sqrt{52}}{13} = \frac{5\sqrt{4}\times\sqrt{13}}{13}$$

$$= \frac{10}{\sqrt{13}}$$

#28. Find $\overline{AB}$




① Find $\overline{AD}$ (pythagorean)

$AD^2 = 21^2 + 72^2$

$AD = 75$

② Find $\overline{FC}$

$FC^2 = 75^2 - 45^2$

$FC = 60$

③ Find height of $\overline{FQ}$.

$60 \times 45 = 75 \times h_1$

$\frac{60 \times 45}{75} = h_1$

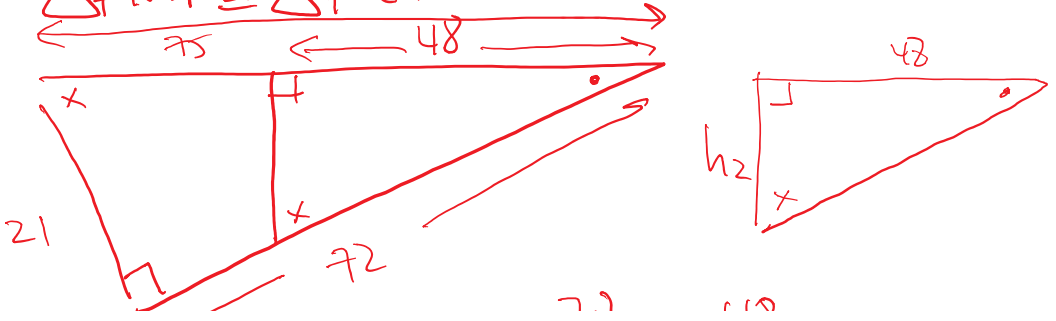
$36 = h_1$

④ Find $\overline{FW}$

$FW = 48$

⑤ USE similar Triangles

$\triangle FMP \cong \triangle AEF$



$$\frac{72}{21} = \frac{48}{h_2}$$

$$h_2 = \frac{48 \times 21}{72}$$

$$h_2 = 14$$

① Total Height =

$$= 36 + 14 = 50$$