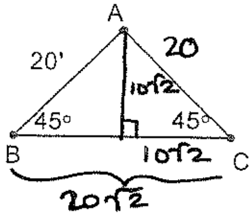
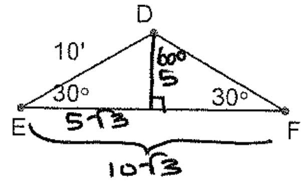
Name____________________________

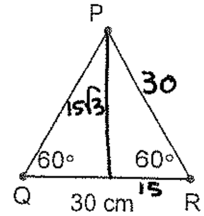
1. Find the areas of these triangles:



$A=\frac{1}{2}bh$
$=\frac{1}{2}(20\sqrt{2})(10\sqrt{2})$
$=200$
$\boxed{200\ ft^2}$

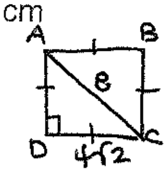


$A=\frac{1}{2}bh$
$=\frac{1}{2}(10\sqrt{3})(5)$
$=25\sqrt{3}$
$\boxed{25\sqrt{3}\ ft^2}$



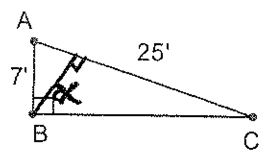
$A=\frac{1}{2}bh$
$=\frac{1}{2}(30)(15\sqrt{3})$
$=225\sqrt{3}$
$\boxed{225\sqrt{3}\ ft^2}$

2. Find the area of square ABCD if AC = 8 cm



$A=b\cdot h$
$=(4\sqrt{2})(4\sqrt{2})$
$=32$
$\boxed{32\ cm^2}$

3. Find the area of $\triangle$ABC and the length of the altitude from B



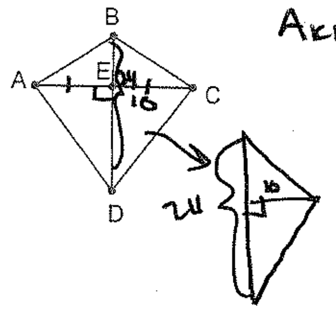
$a^2+b^2=c^2$
$7^2+b^2=25^2$
$b=24$

$A=\frac{1}{2}bh$
$=\frac{1}{2}(24)(7)$
$=84$

$A=\frac{1}{2}bh$
$84=\frac{1}{2}(25)x$
$6.72=x$

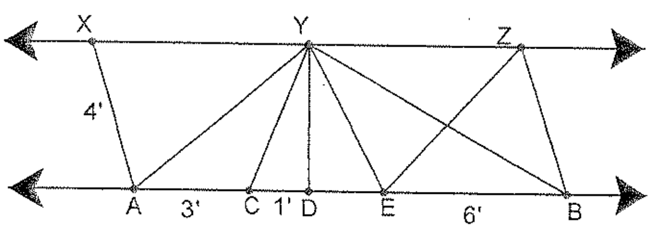
$\boxed{\begin{array}{l}A=84ft^2\\ x=6.72ft\end{array}}$

4. If $\overline{AC}\perp\overline{BD}$, AE = EC = 10", and BD = 24", find the area of the region bounded by ABCD



$A_{KITE}=A_{2\Delta s}$
$=2\cdot\frac{1}{2}\cdot b\cdot h$
$=2\cdot\frac{1}{2}(24)(10)$
$=240$
$\boxed{240\ in^2}$

5. In the following diagram $\overleftrightarrow{XZ} \parallel \overleftrightarrow{AB}$



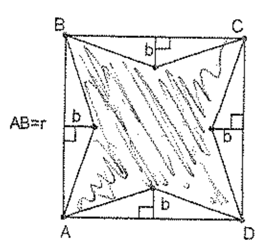
Find: a. $\frac{area\Delta AYC}{area\Delta AYD}$ b. $\frac{area\Delta AYC}{area\Delta EYB}$ c. $\frac{area\Delta AYC}{area\Delta EZB}$

a. $=\frac{\frac{1}{2}(3)(h)}{\frac{1}{2}(4)(h)}=\frac{3}{4}$ oR 3:4

b. $=\frac{\frac{1}{2}(3)(h)}{\frac{1}{2}(6)(h)}=\frac{3}{6}=\frac{1}{2}$ oR 1:2

c. $=\frac{\frac{1}{2}(3)(h)}{\frac{1}{2}(6)(h)}=\frac{3}{6}=\frac{1}{2}$

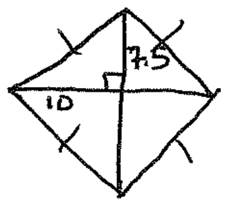
6. If ABCD is a square, find the area bounded by the star in terms of r and b



$A_{STAR}=A_{SQUARE}-A_{4\Delta s}$
$A_{SQUARE}=r^2$
$A_{4\Delta s}=4\cdot\frac{1}{2}\cdot b\cdot h$
$=4\cdot\frac{1}{2}(r)(b)$
$\boxed{A_{STAR}=r^2-2rb}$

1. 200 sq', $25\sqrt{3}$ sq', $225\sqrt{3}$ sq' 2. 32 cm^2 3. 84 sq', 6.72 ft 4. 240 sq" 5. a. 3:4 b. 1:2 c. 1: 2

7. The diagonals of a rhombus have lengths 15' and 20' Find the area of the rhombus and the length of one side.



$A = \frac{d_1 \cdot d_2}{2} = \frac{15 \cdot 20}{2}$

$= 150$

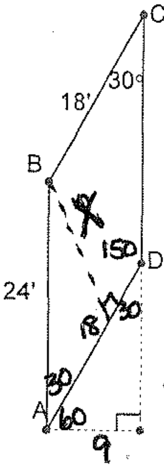
$a^2 + b^2 = c^2$

$7.5^2 + 10^2 = c^2$

$12.5 = c$

$\boxed{150 ft^2 : 12.5 ft}$

8. Find the area of parallelogram ABCD And the length of the altitude between Sides BC and AD



$A = b \cdot h$

$= 24 \cdot 9$

$= 216$

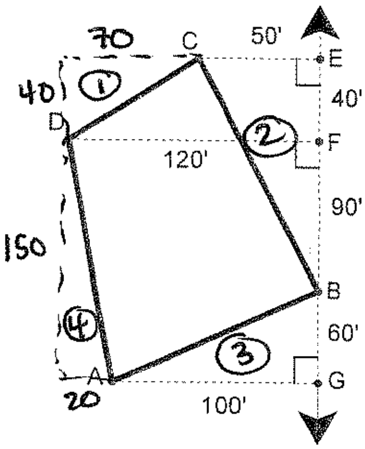
$A = b \cdot h$

$216 = 18 \cdot h$

$12 = h$

$\boxed{216 ft^2 : 12 ft}$

9. In surveying the filed ABCD shown here, a surveyor laid off a north-south line $\overleftrightarrow{NS}$ through point B and then he located the east-west lines $\overleftrightarrow{CE}$, $\overleftrightarrow{DF}$, and $\overleftrightarrow{AG}$. Find the area of the field ABCD. DF = 120'



$A_{ABCD} = A_{RECTANGLE} - A_{4\Delta s}$

$A_{RECTANGLE} = b \cdot h$

$= 120 \cdot 190$

$= 22,800$

$A_{\Delta 1} = \frac{1}{2}bh = \frac{1}{2}(40)(70)$

$= 1400$

$A_{\Delta 2} = \frac{1}{2}bh = \frac{1}{2}(50)(130)$

$= 3250$

$A_{\Delta 3} = \frac{1}{2}bh = \frac{1}{2}(100)(60)$

$= 3000$

$A_{\Delta 4} = \frac{1}{2}bh = \frac{1}{2}(20)(150)$

$= 1500$

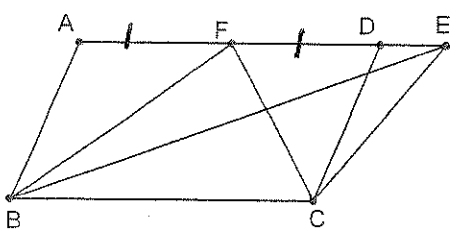
$A_{ABCD} =$

$22,800 - (1400 + 3250 + 3000 + 1500)$

$= 13,650$

$\boxed{13,650 ft^2}$

10. Find these ratios



$\overline{AD} \parallel \overline{BC}$, $\overline{AB} \parallel \overline{DC}$ and AF = FD

a. $\frac{area \Delta ABF}{area \Delta DCF}$ b. $\frac{area ABCD}{area \Delta DCF}$ c. $\frac{area ABCD}{area \Delta BCE}$ D. $\frac{area \Delta BCF}{area \Delta BCE}$

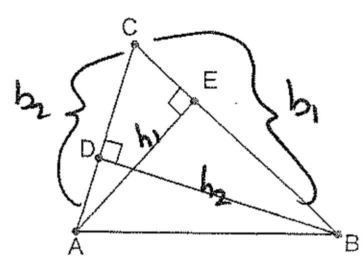
a. $= \frac{\frac{1}{2} AF \cdot h}{\frac{1}{2} DF \cdot h} = \frac{1}{1}$

b. $= \frac{AD \cdot h}{\frac{1}{2} FD \cdot h} = \frac{2FD \cdot h}{\frac{1}{2} AD \cdot h} = \frac{2}{\frac{1}{2}} = \frac{4}{1}$

c. $= \frac{AD \cdot h}{\frac{1}{2} BC \cdot h} = \frac{1}{\frac{1}{2}} = \frac{2}{1}$

D. $= \frac{\frac{1}{2} BC \cdot h}{\frac{1}{2} BC \cdot h} = \frac{1}{1}$

11. Find the area of ΔABC and AC



$\overline{BD} \perp \overline{AC}$, $\overline{AE} \perp \overline{CB}$,
CB = 20', DB = 16', AE = 12'

$A = \frac{1}{2} b_1 h_1$

$= \frac{1}{2}(20)(12)$

$= 120$

$\boxed{120 ft^2}$

$A = \frac{1}{2} b_2 h_2$

$120 = \frac{1}{2} b_2 (16)$

$15 = b_2$

$\boxed{15 ft}$

7. 150 sq', 12.5' 8. 216 sq', 12' 9. 13,650 ft^2 10. a. 1:1 b. 4:1 c. 2:1 d. 1:1 11. 120 sq', 15'