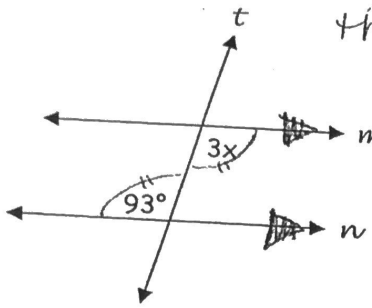
Geometry
Notes 3-3, Solving Parallel Line Problems

Name Key Notes
Date _____ Period _____

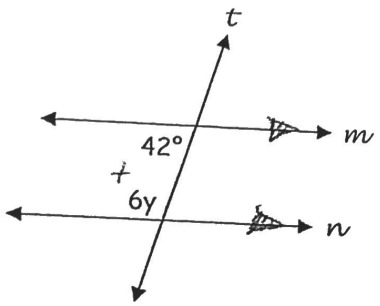
Solving Parallel Line Problems

Ex 1: Given lines $m \| n$. Find x.



mark // lines
these are AIA are ≅
$3x = 93$
$x = 31$

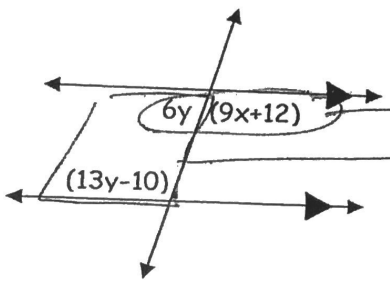
Ex 2: Given lines $m \| n$. Find y.



SSI are supp.
$42 + 6y = 180$
$6y = 138$
$y = 23$

Ex 3: Find x & y. (Problem-Solving Tip #1: One step at a time (don't try to solve for both at one time))

2 values!

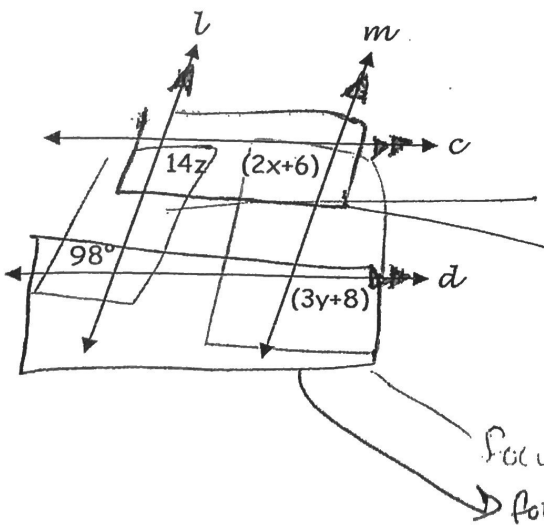


these make linear pair but have 2 variables.
SSI these add to 180; both use only y
Use this first
$6y + 13y - 10 = 180$
$19y - 10 = 180$
$19y = 190$
$y = 10$

Then go to linear pair & use substitution
$6(10) = 60°$
$60 + 9x + 12 = 180$
$9x + 72 = 180$
$9x = 108$
$x = 12$

Ex 4: Lines $l \| m$ and $c \| d$. Find x, y & z. (PST #2: Cover up what you don't need.)

2 sets of // lines 3 variables



So use PST #1; trying to find something w/ only 1 variable

* cover up other part of diagram not used

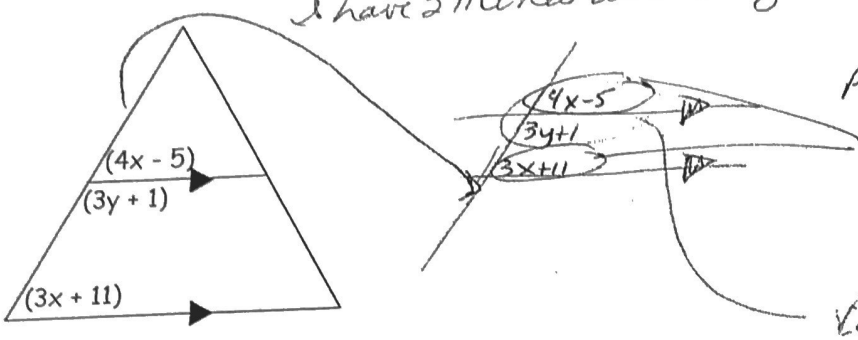
focus AIA are ≅ $98 = 14z$
$7 = z$

focus SSI = 180
$14(7) = 98°$
$98 + 2x + 6 = 180$
$2x + 104 = 180$
$2x = 76$
$x = 38$

focus on relationship
focus AEA are ≅ $98 = 3y + 8$
$90 = 3y$
$30 = y$

Ex 5: Find x & y. (PST #3: Redraw the picture 2 variables 2 lines in a Δ - different)

I have 2 lines and angles



PSTH1

corresp ∠s ≅ only one variable

$4x-5 = 3x+11$

$x = 16$

Vertical pair

$4(16)-5 = 64-5 = 59$

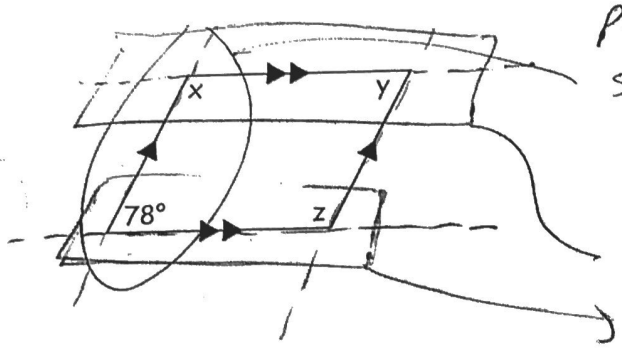
$59 + 3y + 1 = 180$

$3y + 60 = 180$

$3y = 120$

$y = 40$

Ex 6: Find x, y & z. (PST #4: Extend the lines 3 variables 2 pairs of lines looks like a quad)



PST#2 cover up

SSI are Supp

$x + 78 = 180$

$x = 102$

Cover up what not using

SSI are Supp

$102 + y = 180$

$y = 78$

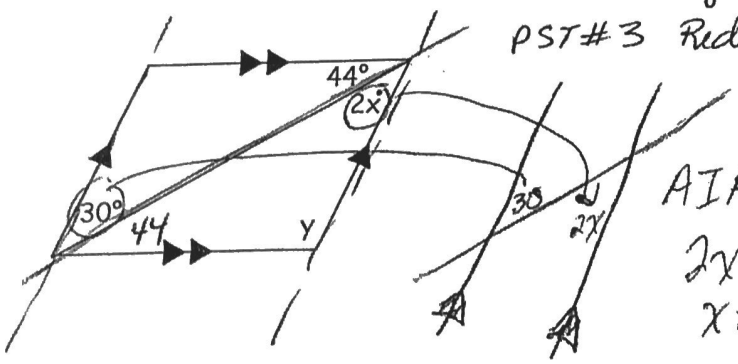
SSI are Supp

$78 + z = 180$

$z = 102$

Ex 7: Find x & y. 2 variables, 2 pairs of lines, there is a diagonal too –

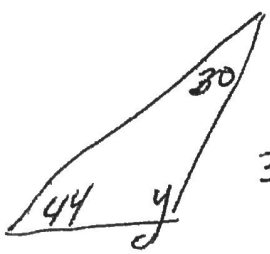
PST#3 Redraw !!



AIA are ≅

$2x = 30$

$x = 15$



I know the sum of 3 int ∠s of Δ is 180

$30 + 44 + y = 180$

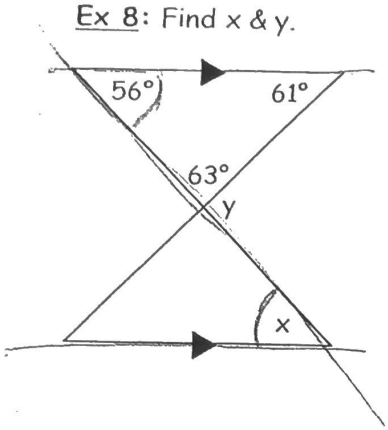
$74 + y = 180$

$y = 106$.

are there other ways?

AIA

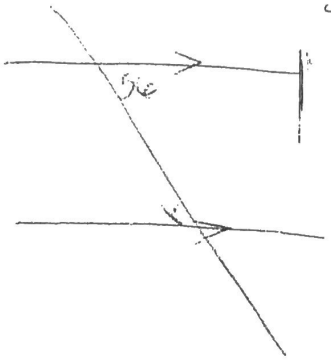
Ex 8: Find x & y.



63 & y are linear pair

$63 + y = 180$

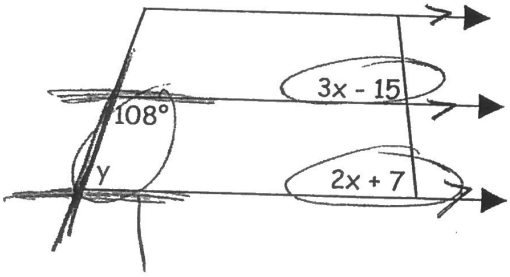
$y = 117$



AIA $\cong$

$56 = x$

Ex 9: Find x & y.



Correspond $3x - 15 = 2x + 7$

$x = 22$

SSI Supp $y + 108 = 180$

$y = 72$