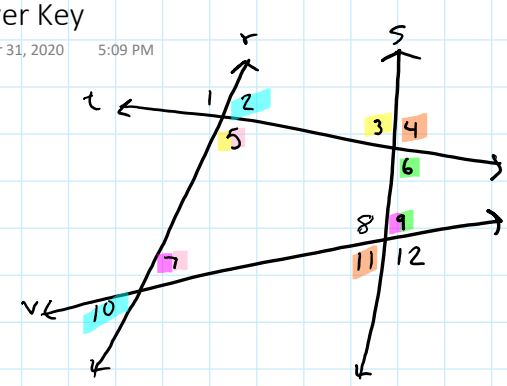
# 2.9 Answer Key

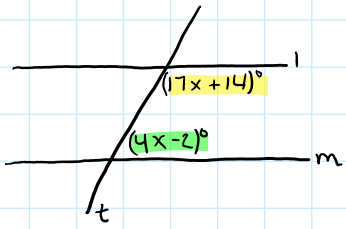
Saturday, October 31, 2020 5:09 PM

**1-6.**




1. $\angle 3 \cong \angle 5$
   r//s. alt. int. $\angle$'s $\cong \rightarrow$ //
2. $\angle 10 \cong \angle 2$
   t//v. alt ext. $\angle$'s $\cong \rightarrow$ //
3. $\angle 6$ supp $\angle 9$
   t//v. cons. int $\angle$'s supp $\rightarrow$ //
4. $\angle 9 \cong \angle 7$
   r//s. corr. $\angle$'s $\cong \rightarrow$ //
5. $\angle 11 \cong \angle 4$
   t//v. alt. ext. $\angle$'s $\cong \rightarrow$ //
6. $\angle 5$ supp. $\angle 7$
   t//v. Cons. int $\angle$'s supp $\rightarrow$ //

**7.**




con. int $\angle$'s supp.

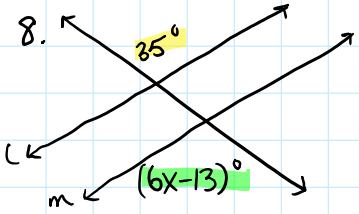
$17x+14+4x-2=180$

$21x+12=180$

$21x=168$

$\boxed{x=8}$

**8.**



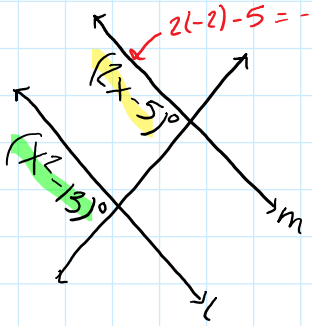

alt. ext. $\angle$'s $\cong$

$6x-13=35$

$6x=48$

$\boxed{x=8}$

**9.**




corr. $\angle$'s $\cong$

$x^2-13=2x-5$

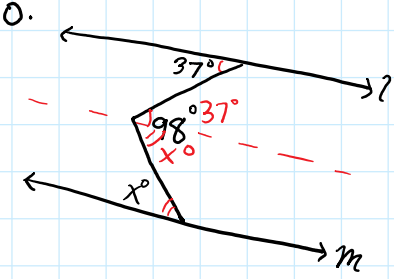
$x^2-2x+8=0$

$(x-4)(x+2)=0$

$x=4, \cancel{-2}$

$\boxed{x=4}$

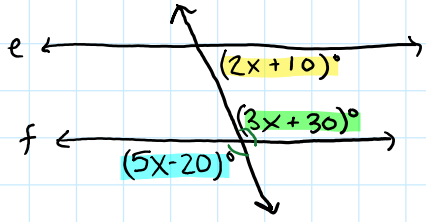
**10.**




$x+37=98$

$\boxed{x=61°}$

**11.** e + f //?




vert. $\angle$'s always $\cong$

$5x-20=3x+30$

$2x=50$

$x=25$

If //, then...

$2x+10+3x+30=180$

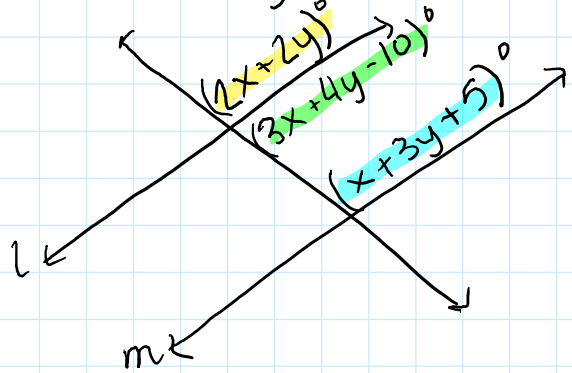
$5x+40=180$

$5(25)+40=180$

$165 \neq 180$

Not // since cons. int. not supp.

**12.** Find $x+y$ so $l \parallel m$




Corr. $\angle$'s $\cong$ ? Cons. int. supp.

$\begin{cases} 2x+2y = x+3y+5 \\ 3x+4y-10+x+3y+5=180 \end{cases}$

$\begin{cases} (x-y=5)\cdot -4 \\ 4x+7y=185 \end{cases}$

$-4x+4y=-20$

$+\ 4x+7y=185$

$11y=165$

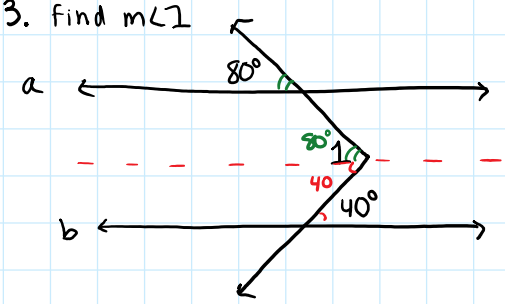
$\boxed{y=15}$

$x-y=5$

$x-15=5$

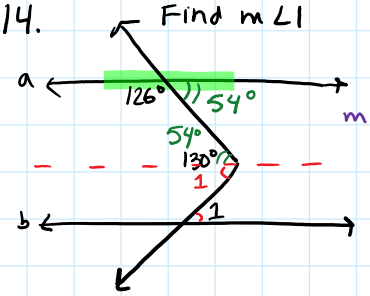
$\boxed{x=20}$

13. Find m∠1




m∠1 = 80 + 40 = 120°

14. Find m∠1



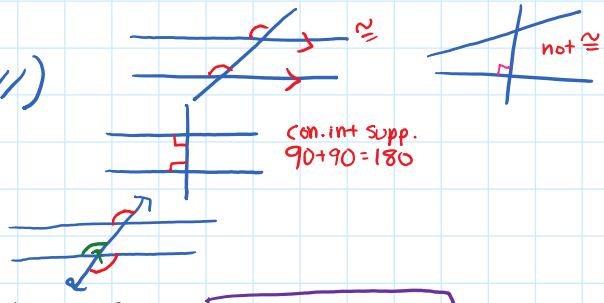

m∠1 + 54° = 130°

m∠1 = 76°

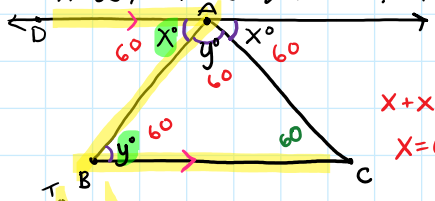
15. If 2 ∠'s corr., then ≅.
Sometimes (only if //)

16. If cons. int ∠'s ≅, then //
Sometimes (only if ⊥)

17. If // → alt. ext. ∠'s ≅
Always (Thm)




18. If DA // BC, is ABC equilateral? Find m∠DAB



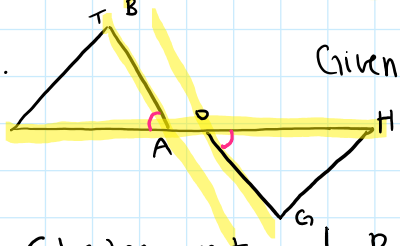

x ≅ y alt. int ≅

x + x + x = 180, since y = x

x = 60, y = 60

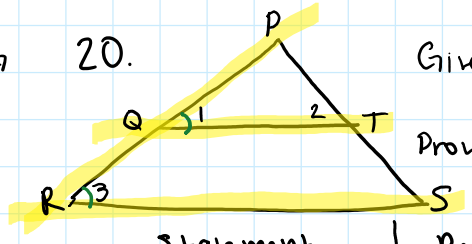
ABC equilateral.
m∠DAB = 60°

19. Given: ∠FAT ≅ ∠HOG
Prove: AT // GO



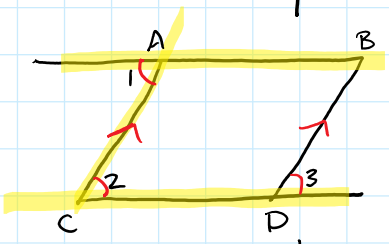

| Statement | Reason |
|---|---|
| 1. ∠FAT ≅ ∠HOG | 1. Given |
| 2. AT // GO | 2. Alt. ext. ∠'s ≅ → // □. |

20. Given: ∠1 comp ∠2, ∠3 comp ∠2
Prove: QT // RS




| Statement | Reason |
|---|---|
| 1. ∠1 comp ∠2, ∠3 comp ∠2 | 1. Given |
| 2. ∠1 ≅ ∠3 | 2. ∠'s comp. to same ∠ → ≅ |
| 3. QT // RS | 3. Corr. ∠'s ≅ → // □. |

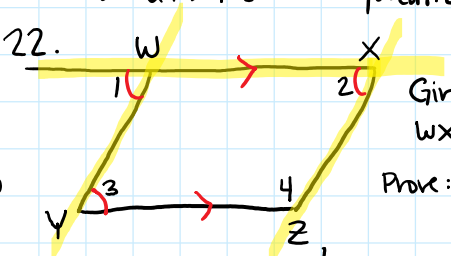
21.




Given: ∠1 ≅ ∠3
AC // BD
Prove: AB // CD

| Statement | Reason |
|---|---|
| 1. ∠1 ≅ ∠3, AC // BD | 1. Given |
| 2. ∠2 ≅ ∠3 | 2. // → corr. ∠'s ≅ |
| 3. ∠1 ≅ ∠2 | 3. Transitive |
| 4. AB // CD | 4. alt. int. ∠'s ≅ → // □. |

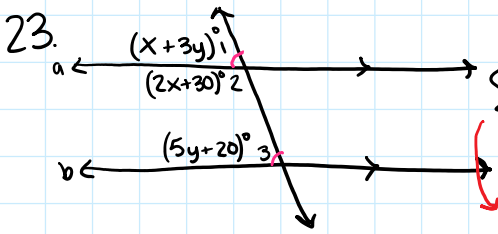
22.




Given: ∠2 ≅ ∠3
WX // YZ
Prove: WY // XZ

| Statement | Reason |
|---|---|
| 1. ∠2 ≅ ∠3, WX // YZ | 1. Given |
| 2. ∠1 ≅ ∠3 | 2. // → alt. int ∠'s ≅ |
| 3. ∠1 ≅ ∠2 | 3. Transitive |
| 4. WY // XZ | 4. Corr. ∠'s ≅ → // □. |

23.




$\angle 1 \cong \angle 3$, $\angle 1$ supp $\angle 2$

$x+3y = 5y+20$

$x+3y+2x+30 = 180$

$(x-2y = 20)-3$

$3x+3y = 150$

$-3x+6y = -60$

$3x+3y = 150$

$9y = 90$

$y = 10$

$x-2(10) = 20$

$x = 40$

$m\angle 1 = x+3y$

$= 40+3(10)$

$= 40+30$

$= \boxed{70}$