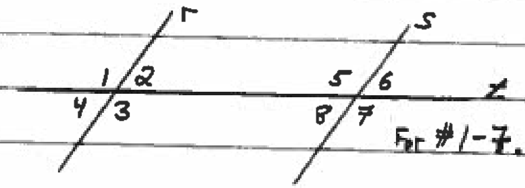
A#28 ① Chpt Review p. 111-112 #1-15, 17-19

② Chpt Test p. 112-113 #1-13

Key

① p. 111-112 CR #1-15, 17-19



For #1-7.

1. ∠5 and $\boxed{\angle 2}$ are same-side interior angles.

2. ∠5 and ∠1 are $\boxed{\text{corresponding}}$ angles

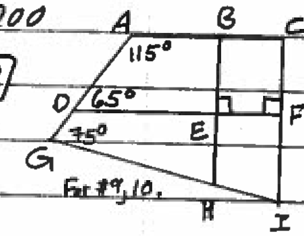
3. ∠5 and ∠3 are alternate interior angles.

4. Line j, not shown, does not intersect line r. Must lines r and j be ∥?
No, they could be skew.

5. If $m\angle 1 = 105°$, then $m\angle 5 = 105°$ (Corr. ∠s Post) and $m\angle 7 = 105°$ (Alt. Ext. ∠s Thrm).

6. $m\angle 2 = 70°$, $m\angle 8 = 6x - 2$ (Given)
$m\angle 2 = m\angle 8$ (Alt. Int. ∠s Thrm)
$70 = 6x - 2$
$6x = 72$
$\boxed{x = 12}$

7. $m\angle 3 = 8y - 40$, $m\angle 8 = 2y + 20$ (Given)
$m\angle 3 + m\angle 8 = 180°$ [S.S. Int. ∠s Thrm]
$8y - 40 + 2y + 20 = 180$
$10y = 200$
$\boxed{y = 20}$



For #9, 10.

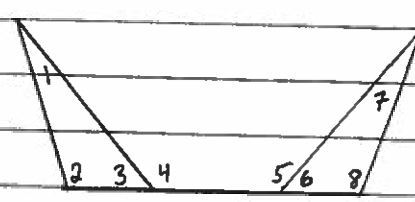
8. Lines a, b, and c are coplanar, a∥b, a⊥c (Given)
⟶ b⊥c (⊥ Transversal Thrm)

9. Which line is ∥ $\overleftrightarrow{AB}$? $\overleftrightarrow{DE}$ (S.S. Int. ∠s Converse)

10. Pair of ∥ lines: $\overleftrightarrow{BE} \parallel \overleftrightarrow{CF}$ (In a plane, 2 lines ⊥ to the same line are ∥.)

11. 5 ways to Prove lines ∥:
① Corr. ∠s Converse
② Alt. Int. ∠s Converse
③ S.S. Int. ∠s Converse
④ Alt. Ext. ∠s Converse
⑤ S.S. Ext. ∠s Converse
⑥ 2 lines ∥ to the same line are ∥.
⑦ In a plane, 2 lines ⊥ to the same line are ∥.

12. x and $2x - 15$ are the acute ∠s of a Rt. Δ.
$x + 2x - 15 = 90°$ [Acute ∠s of a Rt. Δ are complementary]
$3x = 105$
$\boxed{x = 35}$



For #13-15

13. $m\angle 6 + m\angle 7 + m\angle 8 = 180°$ [Δ Sum Thrm]

14. ① $m\angle 1 = 30°$, $m\angle 4 = 130°$ (Given)
② $m\angle 1 + m\angle 2 = m\angle 4$ (Ext. ∠ of a Δ Thrm)
$30 + m\angle 2 = 130$
$\boxed{m\angle 2 = 100°}$

15. ① $\angle 4 \cong \angle 5$, $\angle 1 \cong \angle 7$ (Given)
② ∠3 is supp. to ∠4, ∠6 is supp. to ∠5 (∠ Add Post)
③ $\angle 3 \cong \angle 6$ [≅ Supp. Thrm]
④ $\angle 2 \cong \angle 8$ [3rd ∠s Thrm]

A#28 continued

Key

p.112 #17-19 and [2] p.112-113 CT #1-13

17. Regular Polygon: $n = 18$

$I_1 = \frac{(n-2)180^\circ}{n}$

$I_1 = \frac{(16)180^\circ}{18}$

$\boxed{I_1 = 160^\circ}$

18. Regular Polygon: $n = 24$

$E_1 = \frac{360^\circ}{n}$

$E_1 = \frac{360^\circ}{24}$

$\boxed{E_1 = 15^\circ}$

19. Regular Polygon: $I_1 = 150^\circ$

① $I_1 + E_1 = 180^\circ$

$\boxed{E_1 = 30^\circ}$

② $E_1 = \frac{360^\circ}{n}$

$(n)30 = \frac{360}{n}(n)$ $n > 0$, # of sides

$30n = 360 \longrightarrow \boxed{n = 12}$

[2] p.112-113 CT #1-13

1. Two lines that have no points in common are sometimes parallel. [They could be skew.]
2. If a line is ⊥ to one of two ∥ lines, then it is $\boxed{\text{sometimes}}$ ⊥ to the other one. [They could be skew.]
3. If 2 lines are cut by a transversal and S.S. Int. ∠s are comp., then the lines are $\boxed{\text{never}}$ ∥. [must be supp.]
4. An obtuse Δ is $\boxed{\text{never}}$ a right Δ. [Can't have both an obtuse and right ∠ in a Δ.]
5. In Δ ABC, if $\overline{AB} \perp \overline{BC}$ then $\overline{AC}$ is $\boxed{\text{never}}$ ⊥ to $\overline{BC}$. [Can't have 2 rt. ∠s in a Δ.]
6. As the # of sides of a regular polygon increases, the measure of each exterior angle $\boxed{\text{always}}$ decreases. $\left[E_1 = \frac{360^\circ}{n}\right]$ Dividing by a larger n makes E_1 smaller!

7. ① $m\angle 1 = 3x - 20$, $m\angle 2 = x$ (Given)

② $m\angle 2 = m\angle 3$ [Corr. ∠s Post / Def. of ≅ ∠s]

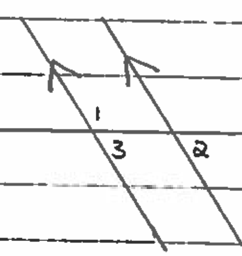
③ $m\angle 1 + m\angle 3 = 180^\circ$ [∠ Add Post]

④ $m\angle 3 = x$ [Trans. Prop. of =]

⑤ $3x - 20 + x = 180^\circ$ [Subst. Prop. of = (1, 4 → 3)]

$4x = 200$

$\boxed{x = 50}$



For #7-8

8. ① $m\angle 2 = 2x + 12$, $m\angle 3 = 4(x-7)$ [Given]

② $m\angle 2 = m\angle 3$ [Corr. ∠s Post. / Def. of ≅ ∠s]

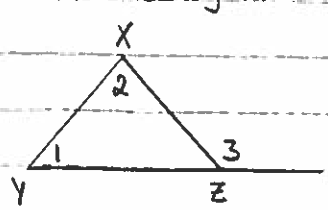
③ $2x + 12 = 4(x-7)$ [Trans Prop. of =]

$2x + 12 = 4x - 28$

$40 = 2x$

$\boxed{x = 20}$

9. XYZ is regular.



① $\angle 1 \cong \angle 2 \cong \angle XZY$ [Def. of Regular]

$m\angle 1 = m\angle 2 = 60^\circ$ [Equiangular → 3 60° ∠s]

② $m\angle 3 = m\angle 1 + m\angle 2$ [Ext. ∠ of a Δ thm]

$m\angle 3 = 60 + 60$

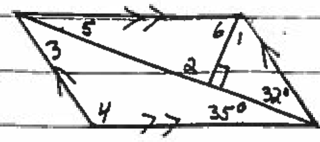
$\boxed{m\angle 3 = 120^\circ}$

A #28 continued

Key

p. 112-113 #10-13

10.



① $m\angle 1 = 58°$ [The acute ∠s of a Rt △ are comp.]

② $m\angle 2 = 90°$ [Def. of ⊥]

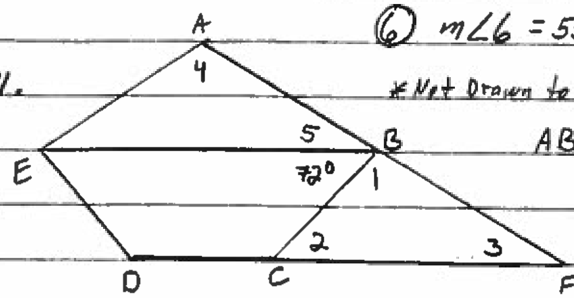
③ $m\angle 3 = 32°$ [Alt. Int. ∠s Thrm]

④ $m\angle 4 = 113°$ [△ Sum thrm]

⑤ $m\angle 5 = 35°$ [Alt. Int. ∠s thrm]

⑥ $m\angle 6 = 55°$ [△ Sum Thrm]

11.



*Not Drawn to scale!

ABCDE is regular.

$n = 5$

① $E_1 = \frac{360°}{n}$

$E_1 = \frac{360°}{5}$

$E_1 = 72°$

② $I_1 + E_1 = 180°$

$I_1 = 108°$

③ $m\angle 1 = E_1$

$m\angle 1 = 72°$

④ $m\angle 2 = E_1$

$m\angle 2 = 72°$

⑤ $m\angle 3 = 36°$ [△ sum thrm]

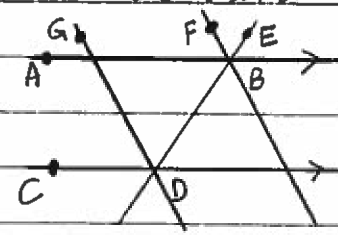
⑥ $m\angle 4 = I_1$

$m\angle 4 = 108°$

⑦ $m\angle 5 = 36°$ [∠ Add Post]

12. $\overline{EB} \parallel \overline{DF}$ [Corr. ∠s Converse] * ∠3 ≅ ∠5 [Def. of ≅ ∠s]

13. Given: $\overleftrightarrow{AB} \parallel \overleftrightarrow{CD}$, $\overrightarrow{BF}$ bisects ∠ABE, $\overrightarrow{DG}$ bisects ∠CDB



Prove: $\overleftrightarrow{BF} \parallel \overleftrightarrow{DG}$

Statements	Reasons
① $\overleftrightarrow{AB} \parallel \overleftrightarrow{CD}$, $\overrightarrow{BF}$ bisects ∠ABE, $\overrightarrow{DG}$ bisects ∠CDB	① Given
② ∠ABE ≅ ∠CDB	② Corr. ∠s Post.
③ $m\angle ABE = m\angle CDB$	③ Def. of ≅ ∠s
④ $m\angle EBF = \frac{1}{2} m\angle ABE$, $m\angle BDG = \frac{1}{2} m\angle CDB$	④ ∠ bisector Thrm #2
⑤ $m\angle EBF = \frac{1}{2} m\angle CDB$	⑤ Subst. Prop. of = (3 → 4)
⑥ ∠EBF ≅ ∠BDG	⑥ Def. of ≅ ∠s
⑦ $\overleftrightarrow{BF} \parallel \overleftrightarrow{DG}$	⑦ Corr. ∠s Converse