Section 7.4
p. 316: 1-4(a & e only)
5, 6, 7, 10, 11, 13, 14, 17

#1 a. $\frac{360}{3} = \boxed{120°}$ e. $\frac{360}{15} = \boxed{24°}$

#2 a. ext $\measuredangle = \frac{360}{5} = 72°$

int $\measuredangle = 180 - 72 = \boxed{108°}$

e. ext $\measuredangle = \frac{360}{21} = 17.14...$

int $\measuredangle = 180 - \text{ans} = \boxed{162.86}$

#3 $60 = \frac{360}{n}$

$\boxed{n = 6}$

e. $7.5 = \frac{360}{n}$

$\boxed{n = 48}$

#4 a. int $\measuredangle = 144°$

ext $\measuredangle = 36°$

$36 = \frac{360}{n}$

$\boxed{n = 10}$

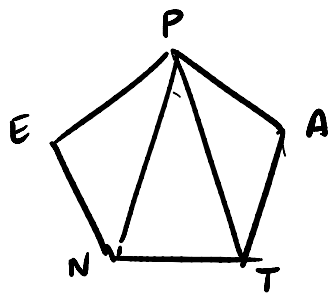
e. int $\measuredangle = 172\frac{4}{5}°$

ext $\measuredangle = 7.2$

$7.2 = \frac{360}{n}$

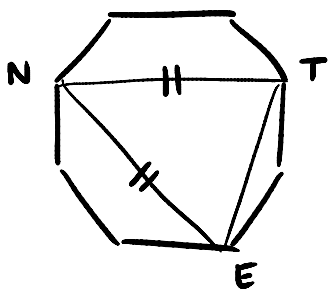
$\boxed{n = 50}$

#5 Given: PENTA is a regular pentagon
Prove: ΔPNT is isos.



1. PENTA is a reg. polygon — 1. Given
2. $\overline{PE} \cong \overline{EN} \cong \overline{PA} \cong \overline{AT}$ — 2. If reg. polygon → all sides $\cong$
3. $\measuredangle E \cong \measuredangle A$ — 3. If reg. polygon → all $\measuredangle$'s $\cong$
4. $\Delta PEN \cong \Delta PAT$ — 4. SAS
5. $\overline{PN} \cong \overline{PT}$ — 5. CPCTC
6. ΔPNT is isos. — 6. If at least 2 sides of a $\Delta \cong$ → Δ is isos

#6



isosceles

#7 In an equiangular polygon, the measure of each ext. ∡ is 25% of the measure of each int. ∡. What is the name of the polygon.

ext ∡ = x

int ∡ = 4x

$x + 4x = 180$

$5x = 180$

$x = 36$

$36 = \frac{360}{n}$

$\boxed{n = 10}$

DECAGON

#10

$5040 = 180(n-2)$

$28 = n-2$

$30 = n$

$\frac{5040}{30} = \boxed{168°}$

#11 The sum of a polygon's angle measure is nine times the measure of an exterior angle of a regular hexagon. What is the polygons name?

$180(n-2) = 9\left(\frac{360}{6}\right)$

$180(n-2) = 540$

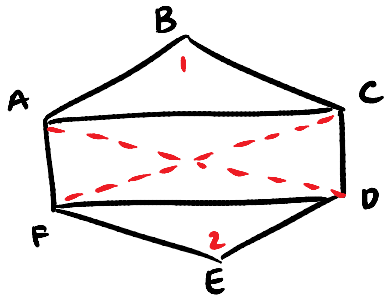
$n-2 = 3$

$n = 5$ Pentagon

#13 Always, Sometimes, Never

a. If the number of sides of an equiangular polygon is doubled, the measure of each exterior angle is halved A
b. The measure of an exterior angle of a decagon is greater than the measure of an exterior angle of a quadrilateral S
c. A regular polygon in equilateral A
d. An equilateral polygon is regular S
e. If the midpoints of the sides of a scalene quadrilateral are joined in order, the figure formed is equilateral S
f. If the midpoints of the sides of a rhombus are joined in order, the figure formed is equilateral but not equiangular N

#14 Given: ABCDEF is a reg hexagon
Prove: ACDF is a rectangle



1. ABCDEF is a reg hex
2. $\overline{AB} \cong \overline{BC} \cong \overline{DE} \cong \overline{EF}$
3. $\angle 1 \cong \angle 2$
4. $\triangle ABC \cong \triangle DEF$
5. $\overline{AC} \cong \overline{DF}$
6. $\overline{AF} \cong \overline{CD}$
7. ACDF is a ▱
8. Draw $\overline{AD}$ and $\overline{FC}$
9. $\angle AFE \cong \angle CDE$
10. $\angle EFD \cong \angle EDF$
11. $\angle AFD \cong \angle CDF$
12. $\overline{FD} \cong \overline{FD}$
13. $\triangle AFD \cong \triangle CDF$
14. $\overline{AD} \cong \overline{FC}$
15. ACDF is a ▭

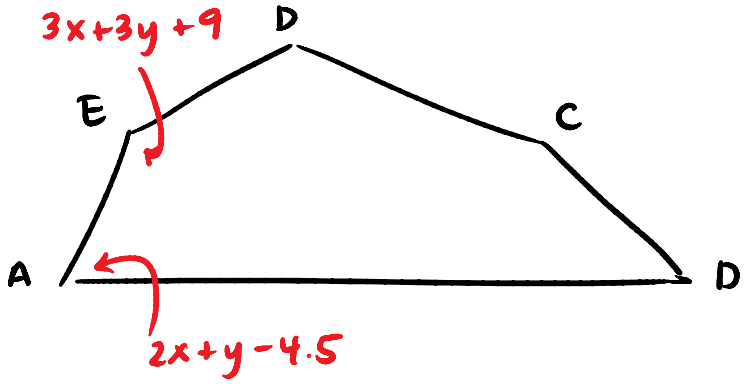
1. Given
2. If reg. hex → all sides ≅
3. If reg. hex → all ∠'s ≅
4. SAS
5. CPCTC
6. Same as 2
7. If Both pairs of opp sides ≅ → ▱
8. 2 pts determine a line
9. Same as 3
10. If △ → △
11. Subtraction prop.
12. Reflexive prop.
13. SAS
14. CPCTC.
15. If a ▱ has ≅ diags → ▭

#17 See semi-octagon

$m\angle E = 3x + 3y + 9$

$m\angle A = 2x + y - 4.5$

Find x and y



$\frac{1}{2}$ octagon

$\text{ext}\ \angle = \frac{360}{8} = 45°$

$\text{int}\ \angle = 135°$

$3x + 3y + 9 = 135$

$3x + 3y = 126$

$2x + y - 4.5 = 67.5$

$2x + y = 72$

$3x + 3y = 126 \Rightarrow 3x + 3y = 126$

$-3(2x + y = 72) \Rightarrow -6x - 3y = -216$

$-3x = -90$

$x = 30$

$y = 12$