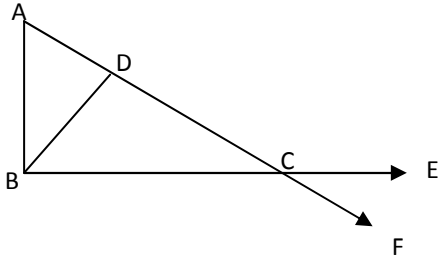


1) Use the picture below to answer the following questions:



- a) $\vec{CE} \cup \vec{CF} = \underline{\angle ECF}$
- b) $\overline{CB} \cup \vec{BE} = \underline{\vec{BE}}$
- c) $\vec{DF} \cap \vec{CA} = \underline{\vec{DC}}$
- d) $\overline{CB} \cap \overline{AD} = \underline{\emptyset}$

For questions 2 – 5, determine if the statements are Sometimes, Always, or Never true.

- A 2) The supplement of an angle is larger than its complement.
- S 3) Vertical angles are supplementary.
- N 4) The acute angles of a scalene right triangle are congruent.
- A 5) In an isosceles triangle, the bisector of the vertex angle also bisects the base.

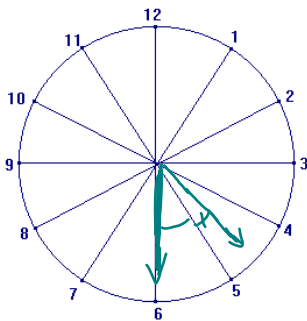
6) Find the supplement and complement of $39^\circ 46' 30''$. Write your answers in terms of DEGREES only.

$$\begin{array}{r}
 180^\circ 60' 60'' \\
 - 39^\circ 46' 30'' \\
 \hline
 140^\circ 13' 30'' \\
 \text{Supp } 140 \frac{9}{40}^\circ
 \end{array}$$

$$\begin{array}{r}
 50^\circ 13' 30'' \text{ comp} \\
 50 + \frac{13\frac{1}{2}}{60} \cdot \frac{2}{2} = 50 + \frac{27}{120} \\
 = 50 \frac{9}{40}^\circ
 \end{array}$$

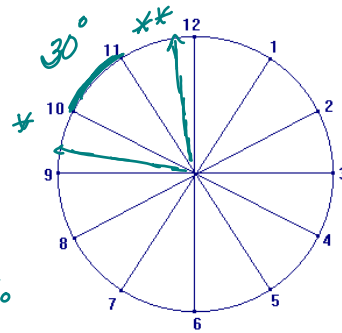
7) Find the angle
a) 4:30

$$\begin{array}{r}
 30 \\
 + 15 \\
 \hline
 45^\circ
 \end{array}$$



b) 11:47

$$\begin{array}{r}
 18 \\
 30 \\
 23 \frac{1}{2} \\
 \hline
 71 \frac{1}{2}^\circ
 \end{array}$$



$$\begin{array}{l}
 * 3 \cdot 6 = 18^\circ \\
 ** \\
 \frac{47}{60} \cdot \frac{30}{1} = \frac{47}{2} \\
 = 23 \frac{1}{2}^\circ
 \end{array}$$

8) The sum of an angle, its complement, and its supplement is 200° more than the angle. Find the supplement of the angle.

$$\begin{array}{l}
 \text{Let } x = m \text{ of } \angle \\
 90 - x = \text{comp} \\
 180 - x = \text{Supp}
 \end{array}$$

$$\begin{array}{l}
 x + 90 - x + 180 - x = 200 + x \\
 270 - x = 200 + x \\
 70 = 2x \\
 35 = x \\
 \text{Supp is } 145^\circ
 \end{array}$$

9) The supplement of the complement of an angle is 132° . What is the supplement of the angle?

Let $x = m \angle$
 $90 - x = \text{Comp of } \angle$
 $180 - (90 - x) = \text{Supp of comp}$
 $90 + x = \text{Supp of Comp}$

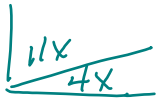
$90 + x = 132$
 $x = 42$
 $\text{Supp of } \angle = 138^\circ$

10) An acute angle of a triangle measures $(40 - 2x)^\circ$. Find the restrictions on x .

$0 < 40 - 2x < 90$
 $-40 < -2x < 50$
 $20 > x > -25$

$-25 < x < 20$

11) The measures of two complementary angles are in the ratio of 4:11. Find the measure of the supplement of the smaller angle.



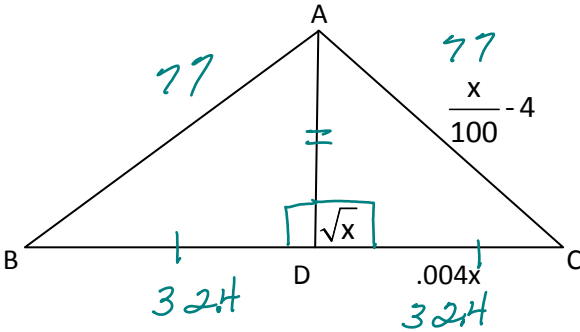
$15x = 90$
 $x = 6$

$4x = 24 \Rightarrow \text{supp is } 156^\circ$

12) Given: \overline{AD} is the altitude to \overline{CB}
 \overline{AD} is the median to \overline{CB}

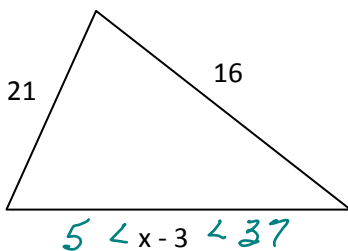
$\sqrt{x} = 90$
 $x = 8100$

Find: The perimeter of $\triangle ABC$



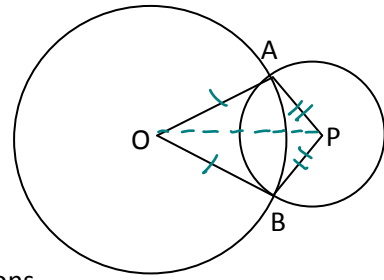
$P = 218.8$

13) Find the restrictions on x .



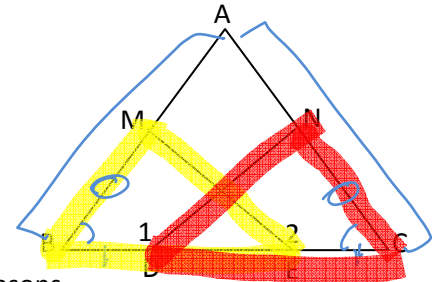
$5 < x - 3 < 37$
 $8 < x < 40$

- 14) Given: $\odot O$ and $\odot P$
 Prove: $\angle OAP \cong \angle OBP$



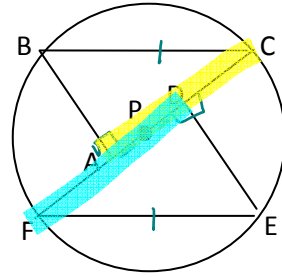
Statements	Reasons
1) $\odot O \cap \odot P$	1) Given
2) $OA \cong OB$ $PA \cong PB$	2) All radii of a \odot are \cong
3) Draw OP	3) 2 pts determine a seg
4) $OP \cong OP$	4) Reflexive
5) $\triangle OAP \cong \triangle OBP$	5) SSS (2, 2, 4)
6) $\angle OAP \cong \angle OBP$	6) c.p.c.t.c

- 15) Given: $\triangle ABC$ is isosceles with base \overline{BC}
 $\overline{BD} \cong \overline{EC}$
 M and N are midpoints $\leftarrow \div, \times, \text{def midpt}$
 Prove: $\angle 1 \cong \angle 2$
 supps



Statements	Reasons
1) $\triangle ABC$ is isos w/ base \overline{BC}	1) Given
2) $\overline{AB} \cong \overline{AC}$	2) Legs of isos \triangle are \cong
3) $\angle B \cong \angle C$	3) If 2 sides of a \triangle are \cong opp \angle s are \cong
4) M & N are midpts	4) Given
5) $\overline{MB} \cong \overline{NC}$	5) Division
6) $\overline{BD} \cong \overline{EC}$	6) Given
7) $\overline{BE} \cong \overline{DC}$	7) Addition
8) $\triangle MBE \cong \triangle NCD$	8) SAS (5, 3, 7)
9) $\angle MEB \cong \angle NDC$	9) c.p.c.t.c
10) $\angle MEB$ & $\angle 2$ are supps $\angle NDC$ & $\angle 1$ are supps	10) If 2 \angle s form a str \angle they are supps
11) $\angle 1 \cong \angle 2$	11) If 2 \angle s are supps to \cong \angle s, they are \cong .

16) Given: $\odot P$, $\overline{BC} \cong \overline{FE}$
 $\overline{AB} \perp \overline{FC}$, $\overline{DE} \perp \overline{FC}$
 $\overline{PA} \cong \overline{PD}$
 Prove: $\angle C \cong \angle F$



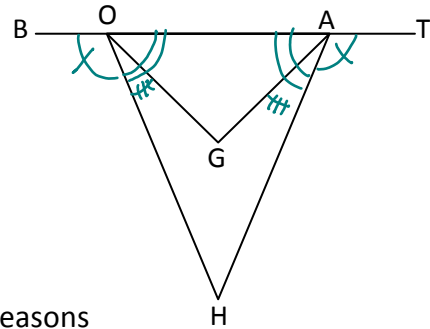
Statements

Reasons

- 1) $\odot P$
- 2) $\overline{PC} \cong \overline{PF}$
- 3) $\overline{PA} \cong \overline{PD}$
- L 4) $\overline{AC} \cong \overline{DF}$
- H 5) $\overline{BC} \cong \overline{FE}$
- 6) $\overline{AB} \perp \overline{FC}$, $\overline{DE} \perp \overline{FC}$
- R 7) $\angle BAC$ & $\angle FDE$ are rt \angle
- 8) $\triangle BAC \cong \triangle EDF$
- 9) $\angle C \cong \angle F$

- 1) Given
- 2) All radii of a \odot are \cong
- 3) Given
- 4) Addition
- 5) Given
- 6) Given
- 7) All angles are \perp , they form rt \angle
- 8) HL \cong (5, 4, 7)
- 9) CPCTC

17) Given: \overline{OG} bisects $\angle HOA$
 \overline{AG} bisects $\angle HAO$
 $\angle HOB \cong \angle HAT$
 Prove: $\angle BOG \cong \angle TAG$



Statements

Reasons

- 1) $\angle BOH$ & $\angle HOA$ are supp
 $\angle HAT$ & $\angle HAO$ are supp
- 2) $\angle HOB \cong \angle HAT$
- 3) $\angle HOA \cong \angle HAO$
- 4) \overline{OG} bis $\angle HOA$
 \overline{AG} bis $\angle HAO$
- 5) $\angle HOG \cong \angle HAG$
- 6) $\angle BOG \cong \angle TAG$

- 1) \angle 2 \angle form a str \angle , they are supp
- 2) Given
- 3) \angle \angle are supp $\therefore \cong$, they are \cong
- 4) Given
- 5) Division
- 6) Addition