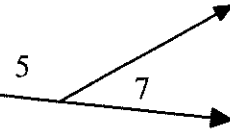


For #1 - 5: Complete each proof.

Given: $\angle 5$ and $\angle 7$ form a linear pair

Prove: $\angle 5 + \angle 7 = 180^\circ$

KW
s: linear pair
e: sum of 180°

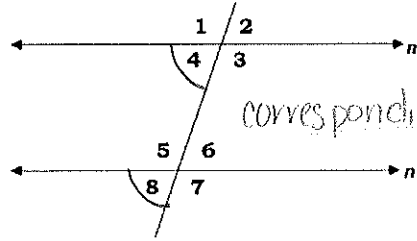


Statement	Reason
1. $\angle 5$ and $\angle 7$ form a linear pair	1. Given
2. $\angle 5 + \angle 7 = 180^\circ$	2. #1 If two angles form a linear, then they have a sum of 180° .

Given: $m \parallel n$

Prove: $\angle 4 \cong \angle 8$

KW
s: \parallel
e: \cong

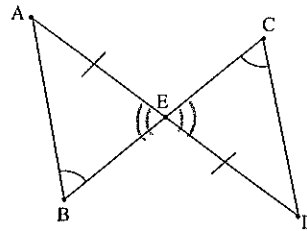


*mark congruencies on your diagrams!
corresponding

Statement	Reason
1. #2 $m \parallel n$	1. #3 Given
2. $\angle 4 \cong \angle 8$	2. #4 If \parallel lines, then corresponding \angle 's are \cong .

Given: $\angle B \cong \angle C$; $\overline{AE} \cong \overline{ED}$

Prove: $\overline{AB} \cong \overline{CD}$



Statement	Reason
1) $\angle B \cong \angle C$; $\overline{AE} \cong \overline{ED}$	1) #5 Given
2) $\angle AEB \cong \angle DEC$	2) #6 If two angles are vertical, then they are \cong .
3) $\triangle ABE \cong \triangle CED$	3) #7 AAS
4) $\overline{AB} \cong \overline{CD}$	4) #8 CPCTC

NOTE: I start w/ Δ sum thm. because $y + 90 = x$ has two unknown variables.

9) Find the value of each variable in the diagram shown.

① Δ Sum Thm.

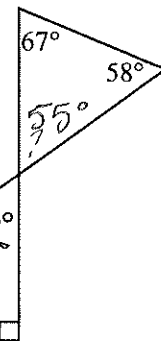
$$\begin{aligned} 67 + 58 + ? &= 180 \\ 125 + ? &= 180 \\ -125 & \quad -125 \\ \hline ? &= 55^\circ \end{aligned}$$

② Vertical \angle 's \cong

$y = 55^\circ$

③ Exterior \angle Thm

$$\begin{aligned} y + 90 &= x \\ 55 + 90 &= x \\ \hline x &= 145^\circ \end{aligned}$$



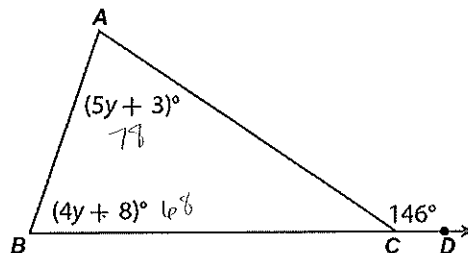
10) Find y in the diagram shown.

Exterior \angle Thm.

$$5y + 3 + 4y + 8 = 146$$

$$\begin{aligned} 9y + 11 &= 146 \\ -11 & \quad -11 \\ \hline 9y &= 135 \\ \hline y &= 15 \end{aligned}$$

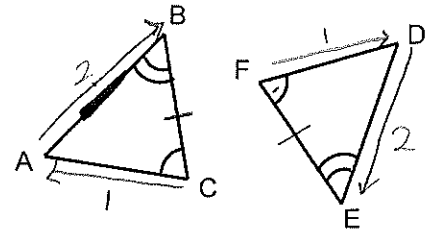
$y = 15$



11) If $\triangle CED \cong \triangle RQP$, which of the following is true?

- A. $\angle C \cong \angle Q, \angle E \cong \angle R, \angle D \cong \angle P$
- B. $\angle C \cong \angle Q, \angle E \cong \angle P, \angle D \cong \angle R$
- C. $\angle C \cong \angle P, \angle E \cong \angle R, \angle D \cong \angle Q$
- D. $\angle C \cong \angle R, \angle E \cong \angle Q, \angle D \cong \angle P$**

$\angle C$ and $\angle R$ are in the same position in the congruency statement. This means $\angle C \cong \angle R$. A, B, C do not have $\angle C \cong \angle R$.

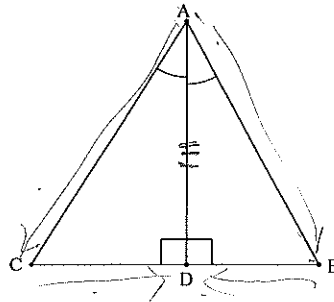


12) Use the diagram to the right to complete the congruence statement:

$\triangle FDE \cong \triangle CAB$

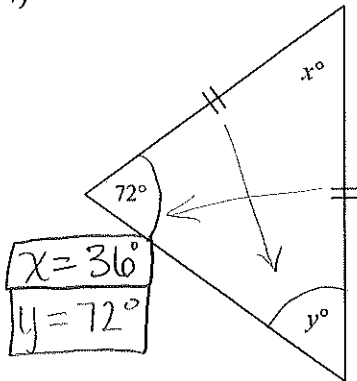
13) **Multiple Choice.** The triangles below are congruent. Which statement correctly describes the congruence of the triangles shown in the diagram below?

- A. $\triangle ACD \cong \triangle AED$; by SAS
- B. $\triangle ACD \cong \triangle AED$; by ASA**
- C. $\triangle ACD \cong \triangle DAE$; by SAS
- D. $\triangle ACD \cong \triangle DAE$; by ASA



For #14 – 15: Find the variable(s).

14)



Isosceles Δ 's have congruent base angles.

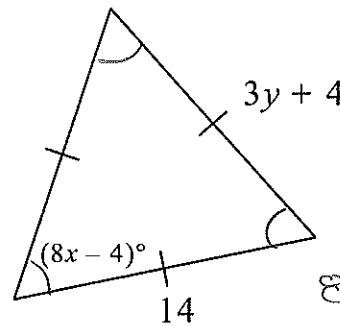
$x = 36^\circ$
 $y = 72^\circ$

$$72 + 72 + x = 180^\circ$$

$$144 + x = 180$$

$$\underline{-144 \quad -144}$$

15)



Equilateral Δ 's have 3 congruent interior angles.
 $\frac{180}{3} = 60^\circ$

$$8x - 4 = 60^\circ$$

$$\quad +4 \quad +4$$

$$\frac{8x = 64}{8} \quad \frac{64}{8} \quad \boxed{x = 8}$$

16) Find the perimeter of the triangle shown to the right.

Find variable

$$7x - 18 = 5x - 6$$

$$\underline{-5x \quad -5x}$$

$$2x - 18 = -6$$

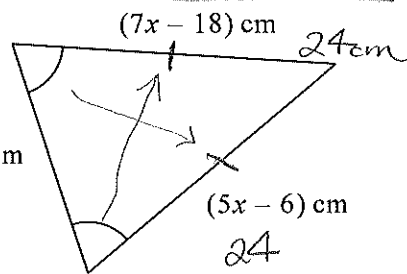
$$\quad +18 \quad +18$$

$$\frac{2x = 12}{2 \quad 2}$$

$\boxed{x = 6}$

② sub. x into one side equation to find length, 14 cm

$$5(6) - 6 =$$

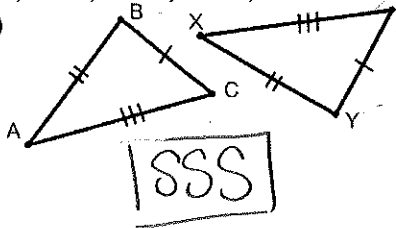
$$30 - 6 = \boxed{24}$$


Isosceles Δ have 2 \cong sides

③ congruent sides : find perimeter
 $24 + 24 + 14 = \boxed{62}$

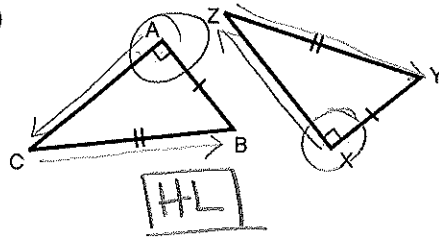
For #17 – 19: Provide the postulate or theorem why each set of triangles are congruent. Choose from SSS, SAS, ASA, AAS, or HL.

17)



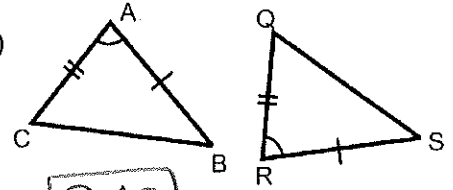
SSS

18)



HL

19)



SAS

For #20 – 22: Using the triangles from #18, complete the following:

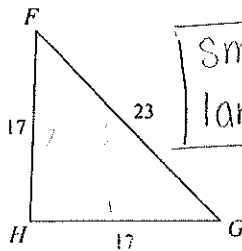
20) $\triangle ACB \cong \triangle XZY$

21) $\angle C \cong \angle Z$

22) $\overline{XZ} \cong \overline{AC}$

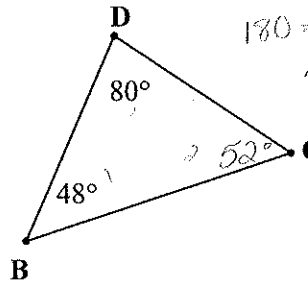
For #23 – 24: use the provided diagrams.

23) Name the smallest and largest angle.



Smallest: $\angle F$ & $\angle G$
largest: $\angle H$

24) Name the shortest and longest sides.



$180 = \angle C + 80 + 48$
 $\angle C = 52^\circ$

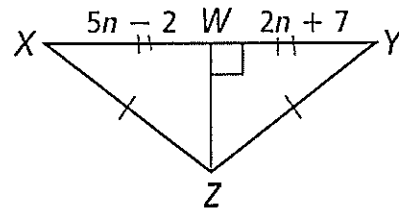
shortest: \overline{DC}
longest: \overline{BC}

25) Multiple Choice. Which side lengths below could form a real triangle? Select all that apply.

- A. 3, 4, 7 $3+4=7$
- B. 9, 2, 10 $9+2 > 10$
- C. 3, 3, 6 $3+3=6$
- D. 11, 11, 11 $11+11 > 11$
- E. 20, 30, 11 $20+11 > 30$

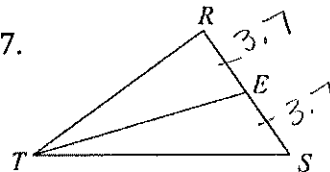
26) \overline{WZ} is the perpendicular bisector of \overline{XY} . Find the value of n .

$5n - 2 = 2n + 7$
 $-2n \quad -2n$
 $3n - 2 = 7$
 $+2 \quad +2$
 $3n = 9$
 $\frac{3n}{3} = \frac{9}{3}$
 $n = 3$



27) \overline{TE} is a median. Find the length of \overline{SR} if $\overline{ER} = 3.7$.

middle $3.7 + 3.7 = 7.4$



28) Given that \overline{BD} is an altitude, find the value of each variable.

$\frac{2x}{2} = \frac{90^\circ}{2}$ $x = 45$

$3^2 + 4^2 = c^2$
 $9 + 16 = c^2$
 $\sqrt{25} = \sqrt{c^2}$ $c = 5$

