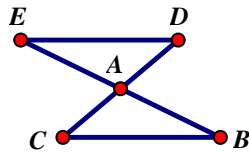


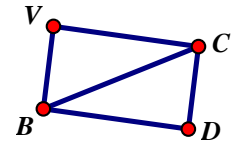
1. Prove the following relationships using SSS, SAS, ASA or AAS.

a) GIVEN:
 $\angle B \cong \angle E$ & $\overline{CB} \cong \overline{DE}$
 PROVE:
 $\triangle EAD \cong \triangle BAC$



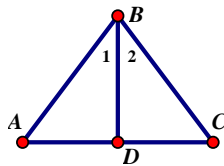
STATEMENT	REASON
1) $\angle B \cong \angle E$ & $\overline{CB} \cong \overline{DE}$	1) Given
2) $\angle EAD \cong \angle BAC$	2) Vert. \angle 's \cong
3) $\triangle EAD \cong \triangle BAC$	3) AAS

b) GIVEN:
 $\overline{VC} \cong \overline{DB}$ & $\overline{VB} \cong \overline{DC}$
 PROVE:
 $\triangle BVC \cong \triangle CDB$



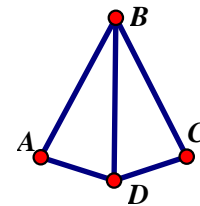
STATEMENT	REASON
1) $\overline{VC} \cong \overline{DB}$ & $\overline{VB} \cong \overline{DC}$	1) Given
2) $\overline{BC} \cong \overline{BC}$	2) Reflex. Prop.
3) $\triangle BVC \cong \triangle CDB$	3) SSS

c) GIVEN:
 $\angle 1 \cong \angle 2$ & $\overline{BA} \cong \overline{BC}$
 PROVE:
 $\triangle ABD \cong \triangle CBD$



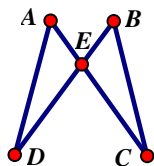
STATEMENT	REASON
1) $\angle 1 \cong \angle 2$ & $\overline{BA} \cong \overline{BC}$	1) Given
2) $\overline{BD} \cong \overline{BD}$	2) Reflex. Prop.
3) $\triangle ABD \cong \triangle CBD$	3) SAS

k) GIVEN:
 \overline{BD} bisects $\angle ADC$
 \overline{BD} bisects $\angle ABC$
 PROVE:
 $\triangle DAB \cong \triangle DCB$



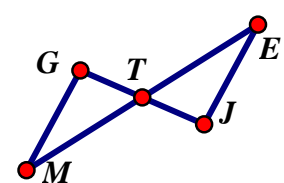
STATEMENT	REASON
1) \overline{BD} bisects $\angle ADC$	1) Given
2) $\angle ABD \cong \angle CBD$	2) Def. \angle Bisector
3) $\overline{BD} \cong \overline{BD}$	3) Reflex. Prop.
4) $\triangle DAB \cong \triangle DCB$	4) ASA

e) GIVEN:
 $\overline{AE} \cong \overline{BE}$ & $\overline{DE} \cong \overline{CE}$
 PROVE:
 $\triangle AED \cong \triangle BEC$



STATEMENT	REASON
1) $\overline{AE} \cong \overline{BE}$ & $\overline{DE} \cong \overline{CE}$	1) Given
2) $\angle AED \cong \angle BEC$	2) Vert. \angle 's \cong
3) $\triangle AED \cong \triangle BEC$	3) SAS

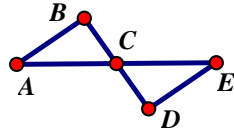
f) GIVEN:
 T is midpt of \overline{ME} & \overline{GJ}
 PROVE:
 $\triangle MGT \cong \triangle EJT$



STATEMENT	REASON
1) T is midpt of \overline{ME} & \overline{GJ}	1) Given
2) $\overline{MT} \cong \overline{TE}$ & $\overline{GT} \cong \overline{TJ}$	2) Def. midpt.
3) $\angle MTG \cong \angle ETJ$	3) Vert. \angle 's \cong
4) $\triangle MGT \cong \triangle EJT$	4) SAS

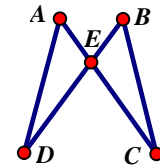
2. Prove the following relationships using CPCTC

a) GIVEN:
 $\overline{BC} \cong \overline{DC}$ & $\overline{AC} \cong \overline{EC}$
 PROVE:
 $\angle A \cong \angle E$



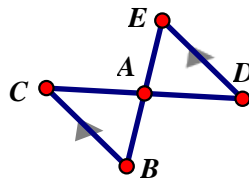
STATEMENT	REASON
1) $\overline{BC} \cong \overline{DC}$ & $\overline{AC} \cong \overline{EC}$	1) Given
2) $\angle ACB \cong \angle ECD$	2) Vert. \angle 's \cong
3) $\triangle ACB \cong \triangle ECD$	3) SAS
4) $\angle A \cong \angle E$	4) CPCTC

b) GIVEN:
 $\angle D \cong \angle C$ & $\overline{DE} \cong \overline{CE}$
 PROVE:
 $\overline{AD} \cong \overline{BC}$



STATEMENT	REASON
1) $\angle D \cong \angle C$ & $\overline{DE} \cong \overline{CE}$	1) Given
2) $\angle AED \cong \angle BEC$	2) Vert. \angle 's \cong
3) $\triangle AED \cong \triangle BEC$	3) ASA
4) $\overline{AD} \cong \overline{BC}$	4) CPCTC

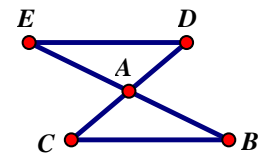
f) GIVEN:
 $\overline{CB} \parallel \overline{ED}$ & $\overline{CA} \cong \overline{DA}$
 PROVE:
 $\overline{BA} \cong \overline{EA}$



STATEMENT	REASON
1) $\overline{CB} \parallel \overline{ED}$ & $\overline{CA} \cong \overline{DA}$	1) Given
2) $\angle C \cong \angle D$	2) Alt. Int. \angle 's
3) $\angle CAB \cong \angle DAE$	3) Vert. \angle 's \cong
4) $\triangle CAB \cong \triangle DAE$	4) ASA
5) $\overline{BA} \cong \overline{EA}$	5) CPCTC

(Could use AAS)

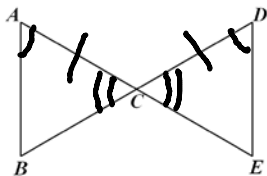
d) GIVEN:
 $\angle D \cong \angle C$ & $\overline{CA} \cong \overline{DA}$
 PROVE:
 $\overline{EA} \cong \overline{BA}$



STATEMENT	REASON
1) $\angle D \cong \angle C$ & $\overline{CA} \cong \overline{DA}$	1) Given
2) $\angle EAD \cong \angle BAC$	2) Vert. \angle 's \cong
3) $\triangle EAD \cong \triangle BAC$	3) ASA
4) $\overline{EA} \cong \overline{BA}$	4) CPCTC

For the following problems, mark the given information to determine if the triangles are congruent.

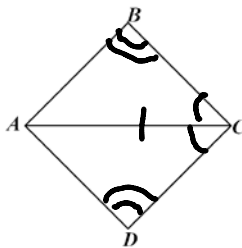
3. $\overline{AC} \cong \overline{DC}$, $\angle A \cong \angle D$



$\triangle CAB \cong \triangle CDE$

By ASA

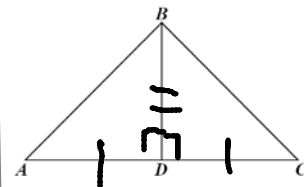
4. \overline{AC} bisects $\angle BCD$ and $\angle B \cong \angle D$



$\triangle CAB \cong \triangle CAD$

By AAS

5. D is midpoint of \overline{AC}
 $\angle ADB$ and $\angle CDB$ are right angle

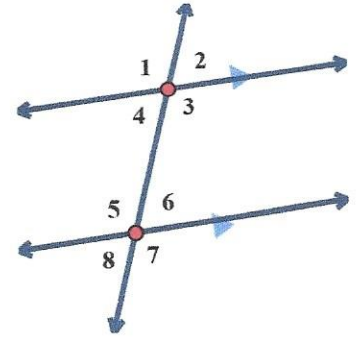


$\triangle ABD \cong \triangle CBD$

By SAS

6. Solve the following.

- a) if $m\angle 7 = 100^\circ$, find $m\angle 3 = \underline{100}$ b) if $m\angle 7 = 95^\circ$, find $m\angle 6 = \underline{85}$
 c) if $m\angle 1 = 120^\circ$, find $m\angle 5 = \underline{120}$ d) if $m\angle 4 = 20^\circ$, find $m\angle 7 = \underline{160}$
 e) if $m\angle 3 = 140^\circ$, find $m\angle 5 = \underline{140}$ f) if $m\angle 4 = 30^\circ$, find $m\angle 1 = \underline{150}$
 g) if $m\angle 4 = 40^\circ$, find $m\angle 2 = \underline{40}$ h) if $m\angle 3 = 125^\circ$, find $m\angle 8 = \underline{55}$

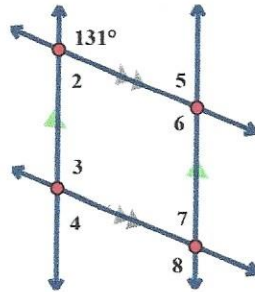


7. Using the image above, state the name of the angle relationship:

- a) $\angle 4$ & $\angle 6$ b) $\angle 7$ & $\angle 3$ c) $\angle 5$ & $\angle 4$ d) $\angle 8$ & $\angle 2$
 Alt Int Corresp. S-S Int Alt. Ext
 e) $\angle 1$ & $\angle 5$ f) $\angle 1$ & $\angle 4$ g) $\angle 8$ & $\angle 6$ h) $\angle 3$ & $\angle 6$
 Corresp. Linear Pair Vert. S-S Int

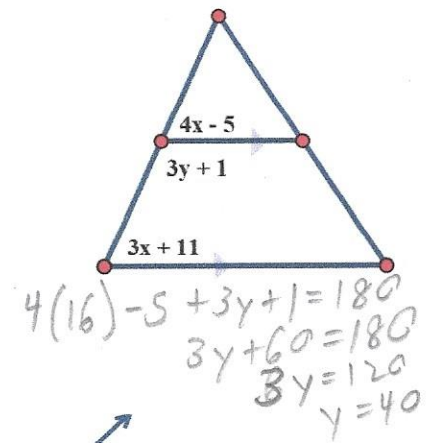
8. Solve

- a) $m\angle 6 = \underline{131}$
 b) $m\angle 7 = \underline{49}$
 c) $m\angle 4 = \underline{49}$
 d) $m\angle 2 = \underline{49}$
 e) $m\angle 5 = \underline{49}$
 f) $m\angle 8 = \underline{131}$



9. Solve for x & y

$x = \underline{16}$
 $y = \underline{40}$
 $4x - 5 = 3x + 11$
 $x = 16$



10. Solve for x and state the name of the angle relationship

- a) Linear Pair $x + 3x - 8 = 180$
 $4x - 8 = 180$
 $4x = 188$
 $x = 47$

- b) Vert. \angle 's $2x = 3x - 35$
 $-x = -35$
 $x = 35$

11. Find the slope of each line

- a) Line A contains the points (-4, -1) and (2, 2). $\frac{-1 - 2}{-4 - 2} = \frac{-3}{-6} = \frac{1}{2}$
 b) Line B contains the points (0, -3) and (3, -1). $\frac{-3 - (-1)}{0 - 3} = \frac{-2}{-3} = \frac{2}{3}$
 c) Line C contains the points (-3, 3) and (0, -3). $\frac{-3 - 3}{0 - (-3)} = \frac{-6}{3} = -2$
 d) Line D contains the points (0, 1) and (2, 2). $\frac{2 - 1}{2 - 0} = \frac{1}{2}$
 e) Are Lines A and B parallel? Give a reason for your answer. no, different slopes
 f) Are Lines C and D perpendicular? Give a reason for your answer. yes, slopes are neg recip.

12. Identify the slope of each line:

a) $\frac{2y}{2} = \frac{8x}{2} + \frac{10}{2}$ slope = 4
 $y = 4x + 5$

b) $y + 2 = -3x$ slope = -3
 $y = -3x - 2$

c) $4x - 5y = 3$ slope = $\frac{4}{5}$
 $-4x - 5y = 3 \rightarrow y = \frac{4}{5}x - \frac{3}{5}$

13. Give the slope of each line described:

a) Parallel to $y = 3x + 2$: $m = 3$

b) Perpendicular to $y = -5x - 1$: $m = \frac{1}{5}$

c) Perpendicular to $4x + 2y = 1$: $m = \frac{1}{2}$

$-4x - 2y = 1$
 $\frac{2y}{2} = \frac{-4x}{2} + \frac{1}{2}$
 $y = -2x + \frac{1}{2}$

14. Write the equation of the line described:

a) Parallel to $y = 5x + 2$ that passes through (3, 13)

equation: $y - 13 = 5(x - 3)$
 $y = 5x - 2$

c) Perpendicular to $y = -\frac{3}{2}x - 12$ that passes through (-6, 1)

equation: $y - 1 = \frac{2}{3}(x + 6)$
 $y = \frac{2}{3}x + 5$

15. Complete the Algebraic Proofs:

a) GIVEN: $3x - 2 = x + 6$
 PROVE: $x = 4$

STATEMENT	REASON
1) $3x - 2 = x + 6$	1) Given
2) $2x - 2 = 6$	2) Subtr. Prop.
3) $2x = 8$	3) Add. Prop.
4) $x = 4$	4) Div. Prop.

b) Perpendicular to $y = 4x + 1$ that passes through (-8, 6)

equation: $y - 6 = -\frac{1}{4}(x + 8)$
 $y = -\frac{1}{4}x + 4$

d) Parallel to $y = \frac{1}{2}x$ that passes through (5, 2)

equation: $y - 2 = \frac{1}{2}(x - 5)$
 $y = \frac{1}{2}x - \frac{1}{2}$

b) GIVEN: $2(5 - x) = 5x + 3$
 PROVE: $x = 1$

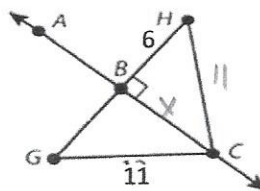
STATEMENT	REASON
1) $2(5 - x) = 5x + 3$	1) Given
2) $10 - 2x = 5x + 3$	2) Dist. Prop.
3) $10 - 7x = 3$	3) Subtr. Prop.
4) $-7x = -7$	4) Subtr. Prop.
5) $x = 1$	5) Div. Prop.

16. Use the diagram below in which \overline{AC} is a perpendicular bisector of \overline{GH} . Find the unknown value. Round to 1 decimal place when appropriate.

a) $GH = 12$

b) $CH = 11$

c) $BC = \sqrt{84}$

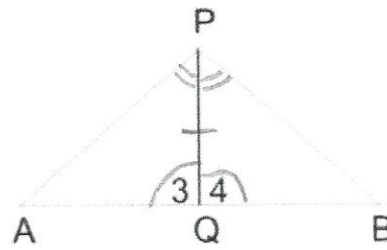


$6^2 + x^2 = 11^2$
 $36 + x^2 = 121$
 $x^2 = 85$
 $x = \sqrt{85} = 9.2$

17. Fill in the blanks to complete the proof

a)

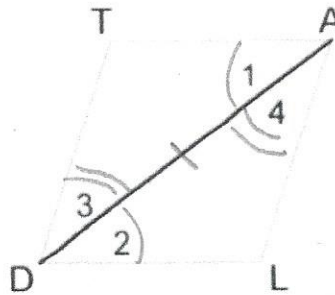
GIVEN: $\angle 3 \cong \angle 4$, \overline{PQ} bisects $\angle APB$
PROVE: $\triangle APQ \cong \triangle BPQ$



STATEMENT	REASON
1. $\angle 3 \cong \angle 4$, \overline{PQ} bisects $\angle APB$	1. Given
2. $\angle APQ \cong \angle BPQ$	2. Def. \angle Bisector
3. $\overline{PQ} \cong \overline{PQ}$	3. Reflex.
4. $\triangle APQ \cong \triangle BPQ$	4. ASA

b)

GIVEN: $\overline{TA} \parallel \overline{LD}$, $\overline{TD} \parallel \overline{LA}$
PROVE: $\overline{TA} \cong \overline{LD}$



STATEMENT	REASON
1. $\overline{TA} \parallel \overline{LD}$, $\overline{TD} \parallel \overline{LA}$	1. Given
2. $\angle 1 \cong \angle 2$, $\angle 3 \cong \angle 4$	2. Alt. Int. \angle 's
3. $\overline{AD} \cong \overline{AD}$	3. Reflex.
4. $\triangle ATD \cong \triangle DLA$	4. ASA
5. $\overline{TA} \cong \overline{LD}$	5. CPCTC