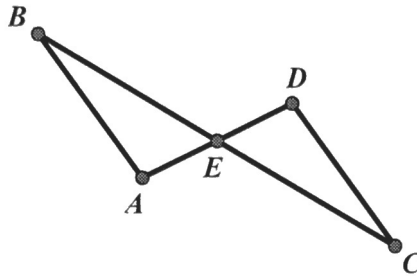


5

Given: E is the midpoint of \overline{BC} and $\angle A \cong \angle D$

Prove: E is the midpoint of \overline{AD}

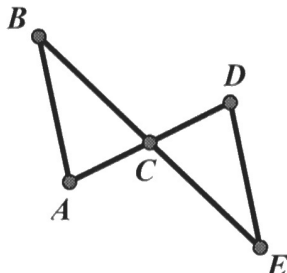


Complete all of the reasons.

STATEMENTS	REASONS
1. E is the midpoint of \overline{BC}	1. <i>Given</i>
2. $\overline{BE} \cong \overline{CE}$	2. <i>Definition of midpoint</i>
3. $\angle BEA \cong \angle CED$	3. <i>Vertical \angle's are congruent</i>
4. $\angle A \cong \angle D$	4. <i>Given</i>
5. $\triangle ABE \cong \triangle DCE$	5. <i>AAS</i>
6. $\overline{AE} \cong \overline{ED}$	6. <i>CPCTC</i>
7. E is the midpoint of \overline{AD}	7. <i>Definition of midpoint</i>

6 This is a three-part question.

Use the given diagram to complete the following.



PART 1

What information would help prove $\triangle ABC \cong \triangle DEC$ by ASA? Choose **all** that apply.

- A. Vertical angles are congruent
- B. C is the midpoint of \overline{BE}
- C. $\angle A \cong \angle D$
- D. $\angle B \cong \angle E$

PART 2

What information would help prove $\triangle ABC \cong \triangle DEC$ by SAS? Choose **all** that apply.

- A. C is the midpoint of \overline{AD}
- B. $\overline{BC} \cong \overline{EC}$
- C. $\angle B \cong \angle E$
- D. Vertical angles are congruent

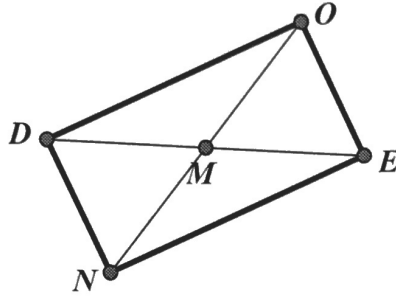
PART 3

Given $\overline{AB} \cong \overline{DE}$ and $\overline{AB} \parallel \overline{DE}$, which triangle congruence can be used to show $\triangle ABC \cong \triangle DEC$? Choose **all** that apply.

- A. SAS
- B. AAS
- C. ASA
- D. HL
- E. None

7

This is a two-part question.

Given: $NDOE$ is a parallelogram.

PART 1

Choose **all** that apply to prove that parallelogram $NDOE$ is a rectangle.

- (A) $\overline{NO} \cong \overline{DE}$
- (B) $\overline{DN} \perp \overline{NE}$
- (C) $\angle DNE \cong \angle NDO$
- D. $\overline{NO} \perp \overline{DE}$
- E. $\angle MNE \cong \angle NOE$
- F. $\overline{DO} \cong \overline{OE}$
- G. $\overline{DM} \cong \overline{ME}$ and $\overline{NM} \cong \overline{MO}$

This item continues on the next page.

PART 2

Given: Quadrilateral $NDOE$ is a parallelogram.

$$m\angle NEO = m\angle END$$

Prove: Quadrilateral $NDOE$ is a rectangle.

REASONS	STATEMENTS
1) Given	1) Quadrilateral $NDOE$ is a parallelogram.
2) Given	2) $m\angle NEO = m\angle END$
3) Adjacent angles of a parallelogram are supplementary	3) $\angle NEO$ and $\angle END$
4) Definition of supplementary	4) $m\angle NEO + m\angle END = 180^\circ$
5) Substitution	5) $m\angle NEO + m\angle NEO = 180^\circ$
6) Combine Like Terms (Simplify)	6) $2(m\angle NEO) = 180^\circ$
7) Multiplication/Division Property of Equality	7) $m\angle NEO = 90^\circ$
8) Definition of right angle	8) $\angle NEO$ is a right angle
9) A parallelogram with one right angle is a rectangle.	9) Quadrilateral $NDOE$ is a rectangle.

(two-column, paragraph, or flow proofs acceptable)

8

\overline{RT} and \overline{SU} are the diagonals of quadrilateral $RSTU$. The diagonals intersect at point M , so that $\overline{RM} \cong \overline{TM}$ and \overline{RS} is parallel to \overline{TU} .

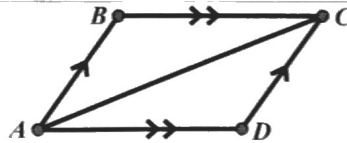
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Is $RSTU$ a parallelogram? Justify your reasoning.

Yes, you could prove $\triangle RMS \cong \triangle TMU$ by ASA. Then by CPCTC you could prove $\overline{RS} \cong \overline{TU}$. Finally, if one side of a quadrilateral is \cong and \parallel , then it is a parallelogram.

- 12 Provide the missing reasons in the proof.



Given: $\overline{BC} \parallel \overline{AD}$ and $\overline{AB} \parallel \overline{CD}$

Prove: $\triangle ABC \cong \triangle CDA$

STATEMENT	REASON
1. $\overline{BC} \parallel \overline{AD}$	1. Given
2. $\angle BCA \cong \angle DAC$	2. <u>Alternate Interior \angle's \cong with \parallel</u>
3. $\overline{AB} \parallel \overline{CD}$	3. Given
4. $\angle BAC \cong \angle DCA$	4. <u>Alternate Interior \angle's \cong with \parallel</u>
5. $\overline{AC} \cong \overline{AC}$	5. <u>Reflexive Property</u>
6. $\triangle ABC \cong \triangle CDA$	6. <u>ASA</u>

Scoring Notes

1 point = each correct answer

4 points total