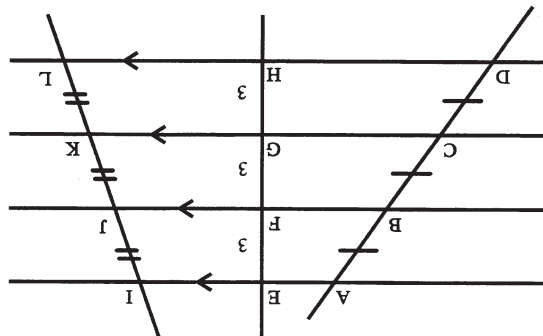
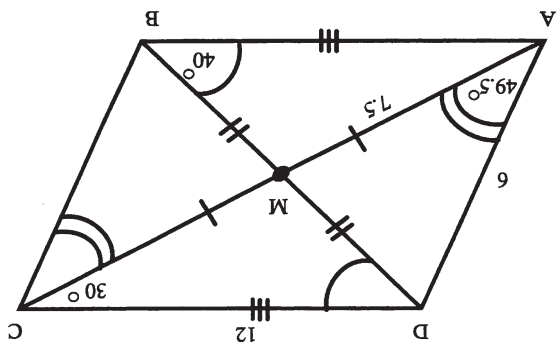


- 1.  $40^\circ$
- 2.  $110^\circ$
- 3.  $70^\circ$
- 4.  $60.5^\circ$
- 5.  $49.5^\circ$
- 6. 12
- 7. 15



- 8. 5.7
- 9. 8.4
- 10. 17.1
- 11.  $60^\circ$
- 12. 120
- 13.  $50^\circ$
- 14. 10
- 15. 4 (T13-14)

# GEOMETRY

## The Complete Course

### Lesson Thirteen

## Parallelograms

KA8473

## Worksheet

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# I. VIDEOTAPE FOLLOW-UP QUESTIONS

## Parallelograms

### I. Introduction.

- Definition of quadrilateral
- Family tree of quadrilaterals

### II. Definition of a parallelogram and related parts.

- Parallelogram
- Opposite angles
- Adjacent angles
- Opposite sides
- Diagonals

### III. Theorems related to parallelograms

- Opposite sides of the parallelogram are congruent. (T13-1)
- Opposite angles of a parallelogram are congruent. (T13-2)
- The diagonals of a parallelogram bisect each other. (T13-3)
- Consecutive angles in a parallelogram are supplementary. (T13-4)
- A diagonal of a parallelogram forms two congruent triangles. (T13-5)

### IV. Ways to prove that quadrilaterals are parallelograms.

- Prove that both pairs of opposite sides are parallel. (Definition)
- If both pairs of opposite sides of a quadrilateral are congruent, then the quadrilateral is a parallelogram. (T13-6)
- If one pair of opposite sides of a quadrilateral is both congruent and parallel, then the quadrilateral is a parallelogram. (T13-7)
- If both pairs of opposite angles of a quadrilateral are congruent, then the quadrilateral is a parallelogram. (T13-8)
- If the consecutive angles in a quadrilateral are supplementary, then the quadrilateral is a parallelogram. (T13-9)
- If the diagonals of a quadrilateral bisect each other, then the quadrilateral is a parallelogram. (T13-10)

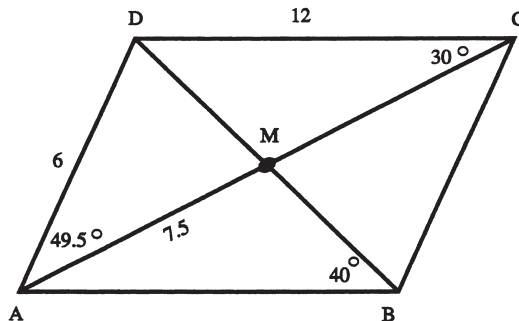
### V. Other theorems involving parallel lines.

- If two lines are parallel, then all points on one line are equidistant from the other line. (T13-11)
- If three or more parallel lines cut off congruent segments on one transversal, then they cut off congruent segments on every transversal. (T13-12)

- If a segment is parallel to one side of a triangle and contains the midpoint of a second side, then this segment bisects the third side. (T13-13)
- Midsegment Theorem: The segment joining the midpoints of two sides of a triangle is parallel to the third side, and its length is half the length of the third side. (T13-14)

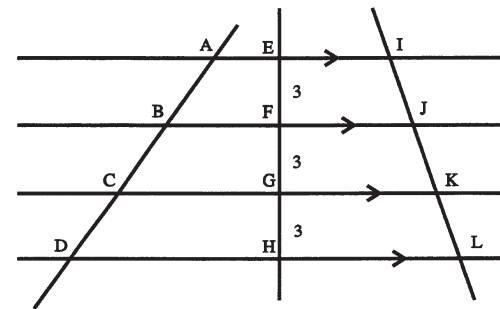
## II. SUPPLEMENTARY EXERCISES

1-7 Given parallelogram ABCD as shown with diagonals AC and BD. Find the measures of the following:



- $m\angle CDB = \underline{\hspace{2cm}}$
- $m\angle CMD = \underline{\hspace{2cm}}$
- $m\angle DMA = \underline{\hspace{2cm}}$
- $m\angle DBC = \underline{\hspace{2cm}}$
- $m\angle BCA = \underline{\hspace{2cm}}$
- $m AB = \underline{\hspace{2cm}}$
- $m AC = \underline{\hspace{2cm}}$

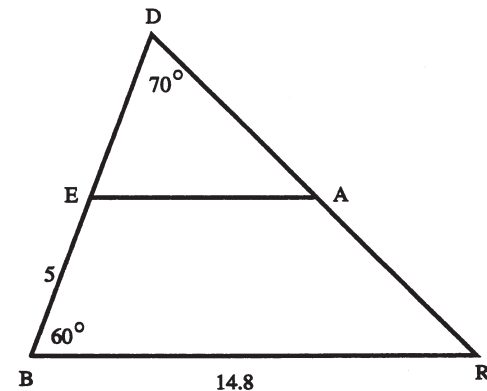
8-10 Given:  $\overleftrightarrow{AI} \parallel \overleftrightarrow{BJ} \parallel \overleftrightarrow{CK} \parallel \overleftrightarrow{DL}$  and transversals.  $\overleftrightarrow{AD}$ ,  $\overleftrightarrow{EH}$ ,  $\overleftrightarrow{IL}$ ,  $EF = FG = GH = 3$ ,  $BC = 5.7$ ,  $KL = 4.2$ .



Find the measure of the following:

- $AB = \underline{\hspace{2cm}}$
- $IK = \underline{\hspace{2cm}}$
- $AD = \underline{\hspace{2cm}}$

11-15 Given  $\triangle DBR$  with midpoints E and A. Find the measures of the following:



- $m\angle DEA = \underline{\hspace{2cm}}$
- $m\angle BEA = \underline{\hspace{2cm}}$
- $m\angle DAE = \underline{\hspace{2cm}}$
- $DB = \underline{\hspace{2cm}}$
- $EA = \underline{\hspace{2cm}}$