

20. 98.8°

19. 36.9°

18. 61.9°

17. 16

16. 54

15. 17

14. 12

13. 20 (T13-14)

12. 8 (T13-14)

11. 110.8°

10. 64°

9. 28

8. 70

7. 107°

6. 19

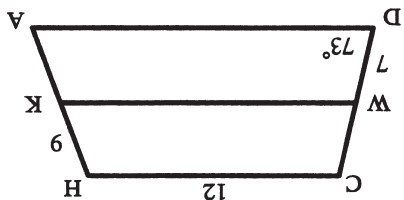
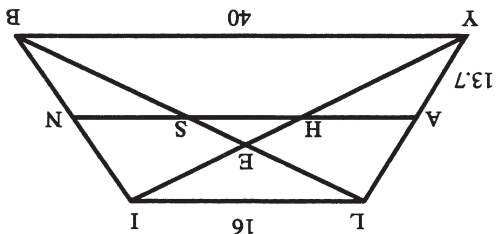
5. A

4. D

3. C

2. B

1. C



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GEOMETRY

The Complete Course

Lesson Fifteen

Trapezoids, Isosceles Trapezoids and kites

KA8475

Worksheet

Instructors may duplicate the worksheets as needed

I. VIDEOTAPE FOLLOW-UP QUESTIONS

- I. Introduction.
 - A. From family of most common polygon
 - B. Review family tree of quadrilaterals
 - C. Review quadrilateral properties
2. Trapezoids.
 - A. Definition
 - B. Parts of the trapezoid
 1. Bases
 2. Legs
 3. Base angles
 4. Median
 - C. Applied properties from quadrilateral
 - D. Theorems related to trapezoids
 1. All altitudes of a trapezoid are congruent. (T15-1)
 2. The median of a trapezoid is parallel to its bases. It's length is one-half the sum of the lengths of the two bases. (T15-2)

III. Isosceles trapezoids.

- A. Definition
- B. Applied parts and properties from a trapezoid
- C. Theorems, related to isosceles trapezoids
 1. The base angles of an isosceles trapezoid are congruent. (T15-3)
 2. If the base angles of a trapezoid are congruent, then the trapezoid is isosceles. (T15-4)
 3. The diagonals of an isosceles trapezoid are congruent. (T15-5)
 4. If the diagonals of a trapezoid are congruent, then the trapezoid is isosceles. (T15-6)

IV. Kites.

- A. Definition
- B. Properties
- C. Theorems related to kites
 1. The longer diagonal of a kite divides the kite into two congruent triangles. (T15-7)
 2. The longer diagonal of a kite bisects two angles of the kite. (T15-8)
 3. The shorter diagonal of a kite divides the kite into two distinct isosceles triangles. (T15-9)
 4. The diagonals of a kite are perpendicular. (T 15-10)
 5. The longer diagonal of a kite bisects the shorter diagonal. (T15-11)

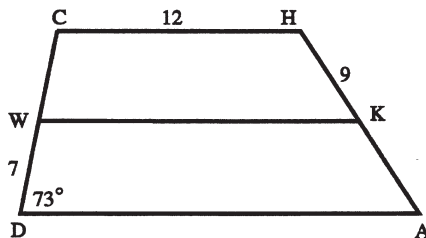
V. Quadrilateral congruence theorems.

- A. **SASAS Theorem:** Two quadrilaterals are congruent if any three sides and the included angles of one are congruent, respectively, to the corresponding three sides and the included angles of the other. (T15-12)
- B. **ASASA Theorem:** Two quadrilaterals are congruent if any three angles and the included sides of one are congruent, respectively, to the three corresponding angles and the included sides of the other. (T15-13)

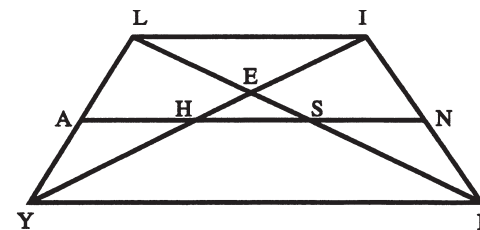
II. SUPPLEMENTARY EXERCISES

1. All sides are congruent in a:
 - a) Parallelogram
 - b) Rectangle
 - c) Rhombus
 - d) Trapezoid
2. All angles are right angles in a:
 - a) Parallelogram
 - b) Rectangle
 - c) Rhombus
 - d) Trapezoid
3. Diagonals are perpendicular in a:
 - a) Parallelogram
 - b) Rectangle
 - c) Rhombus
 - d) Trapezoid
4. The quadrilateral which is regular is a:
 - a) Parallelogram
 - b) Rectangle
 - c) Rhombus
 - d) Square
5. An isosceles trapezoid is a special kind of:
 - a) Quadrilateral
 - b) Parallelogram
 - c) Rhombus
 - d) Trapezoid

6-8 Given trapezoid CHAD with $CH = 12$, $HK = 9$, $WD = 7$, $m\angle D = 73^\circ$ median \overline{WK} . Find the measures of the following:

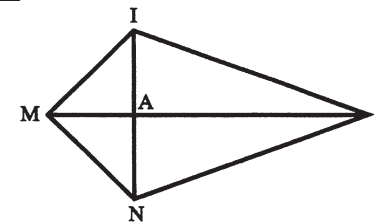


6. $WK =$ ____
7. $m\angle DCH =$ ____
8. Perimeter of CHAD = ____



9-14 Given isosceles trapezoid LIBY with median \overline{AN} , $LI = 16$, $YA = 13.7$, $YB = 40$, $m\angle LYB = 64^\circ$. Find the measures of the following:

9. $AH =$ ____
10. $m\angle INA =$ ____
11. Perimeter of LIBY = ____
12. $AH =$ ____
13. $AS =$ ____
14. $HS =$ ____



15-20 Given kite MIRN with diagonals intersecting at A, $MI = 10$, $IR = 17$, $IA = 8$, $m\angle AMI = 53.1^\circ$, $m\angle MIR = 98.8^\circ$. Find the measure of the following:

15. $NR =$ ____
16. Perimeter of MIRN = ____
17. $IN =$ ____
18. $m\angle AIR =$ ____
19. $m\angle MIA =$ ____
20. $m\angle MNR =$ ____