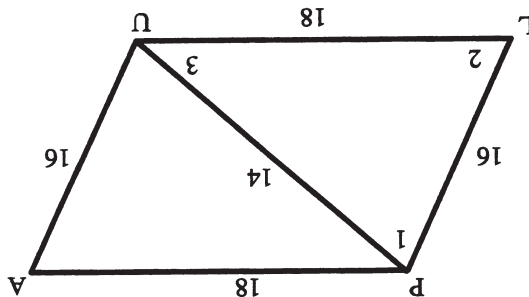
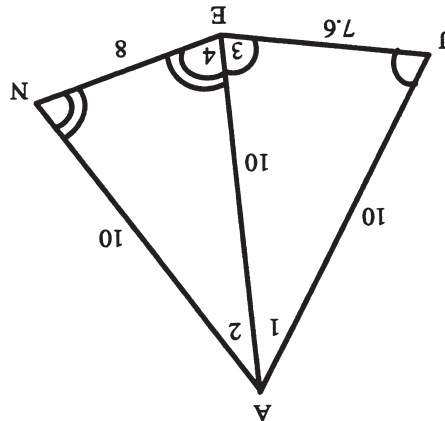


11. \overline{EM} (T16-8)
10. $\angle 3$ (T16-9, T11-1, T7-1)
9. $\angle 4$ (T16-9, T11-1, T7-1)
8. $\angle 3$ (T16-9, T11-1, T7-1)
7. $\angle 2$ (T16-9, T11-1, T7-1)
6. $\angle 1$ (T13-1, T16-3)
5. $\angle A$ (T16-7)
4. $\angle S$
3. \overline{AC}
2. 7.37 (T16-7)
1. \overline{BC} (T16-3)



GEOMETRY

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Lesson Sixteen

Inequalities In Geometry

KA8476

Worksheet

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I. VIDEOTAPE FOLLOW-UP QUESTIONS

Inequalities in geometry

I. Introduction.

II. Properties of inequality.

- A. Trichotomy property
- B. Transitive property
- C. Addition property
- D. Subtraction property
- E. Multiplication property
 1. f multiplier is positive
 2. f multiplier is negative
- F. Division
 1. f divisor is positive
 2. f divisor is negative

III. Inequalities in one triangle theorems.

- A. Exterior Angle Inequality Theorem: The measure of an exterior angle of a triangle is greater than the measure of either of its remote interior angles. (T16-1)
- B. If one side of a triangle is longer than another side, then the measure of the angle opposite the longer side is greater than the measure of the angle opposite the shorter side. (T16-2)
- C. If one angle of a triangle has a greater measure than a second angle, then the side opposite the greater angle is longer than the side opposite the smaller angle. (T16-3)
- D. In a scalene triangle, the longest side is opposite the largest angle and the largest angle is opposite the longest side. (T16-4)
- E. The perpendicular segment from a point to a line is the shortest segment from the point to the line. (T16-5)
- F. The perpendicular segment from a point to a plane is the shortest segment from the point to the plane. (T16-6)
- G. The Triangle Inequality Theorem: The sum of the lengths of any two sides of a triangle is greater than the length of the third side. (T16-7)

IV. Inequalities in two triangles theorems.

- A. **SAS Inequality Theorem:** If two sides of one triangle are congruent, respectively, to two sides of a second triangle, and the included angle of the first triangle has a greater measure than the included angle of the second triangle, then the third side of the first triangle is longer than the third side of the second triangle. (T16-8)

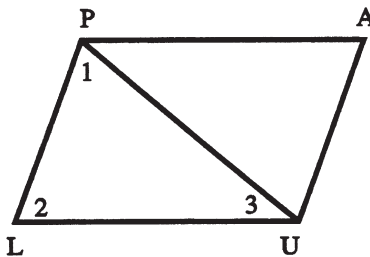
- B. **SSS Inequality Theorem:** If two sides of one triangle are congruent, respectively, to two sides of a second triangle, and the length of the third side of the first triangle is greater than the length of the third side of the second triangle, then the angle opposite the third side of the first triangle has a greater measure than the angle opposite the third side of the second triangle. (T16-9)

V. Related problems

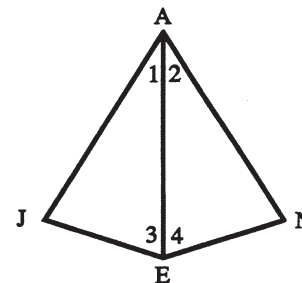
II. SUPPLEMENTARY EXERCISES

1. If $m\angle A > m\angle B$ and $m\angle B > m\angle C$, then the largest side of triangle ABC is _____
2. If the lengths of two sides of a triangle are 15 and 22, then the length of the third side must be greater than _____ but less than _____
3. In triangle ABC, $\angle A = 54^\circ$, $\angle B = 67^\circ$. Which side of the triangle is the longest?
4. In triangle PHS, $PH = 8$, $PS = 10$, $HS = 11$. Which angle of the triangle is the smallest?
5. Which sets of given lengths could not be those of a triangle?

a) 5, 7, 14	b) 6, 11, 12
c) 7, 7, 7	d) 16, 16, 1
6. In parallelogram PAUL, $PA = 18$, $AU = 16$, $PU = 14$. Which numbered angle is the largest?



- 7-10 Given quadrilateral JANE with diagonal \overline{AE} . $JA = EA = NA = 10$, $JE = 7.6$, $EN = 8$. Which angle is bigger?:



7. $\angle 1$ or $\angle 2$
8. $\angle 3$ or $\angle 4$
9. $\angle 2$ or $\angle 4$
10. $\angle 1$ or $\angle 3$

11. Given concave polygon JAMES with diagonals \overline{AS} and \overline{MS} . $\angle SAM = 50^\circ$, $\angle SMA = 50^\circ$, $\angle JSA = 80^\circ$, $\angle ESM = 82^\circ$, $JS = ES = 7$. Which side is longer, \overline{JA} or \overline{EM} ?

