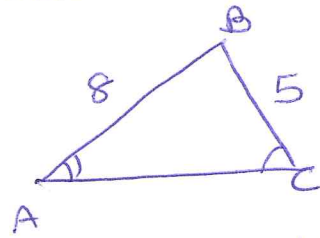
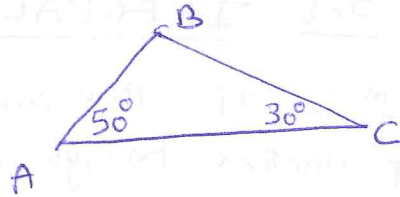


② IF ONE SIDE OF A TRIANGLE IS LONGER THAN ANOTHER SIDE, then the angle opposite the longer side is larger than the angle opposite the shorter side.



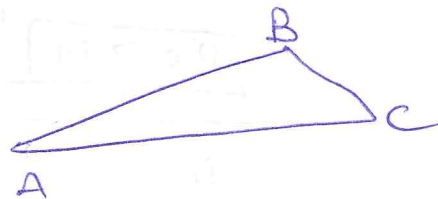
IF $AB > BC$, then $\angle C > \angle A$

③ IF ONE ANGLE OF A TRIANGLE IS LARGER THAN ANOTHER ANGLE, then the side opposite the larger angle is longer than the side opposite the smaller angle.



$\angle A > \angle C$, then $BC > AB$

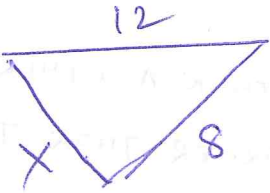
④ TRIANGLE INEQUALITY THEOREM THE SUM OF THE LENGTHS OF ANY TWO SIDES OF A TRIANGLE IS greater than the length of the third side.



$AB + BC > AC$; $AC + BC > AB$; $AB + AC > BC$

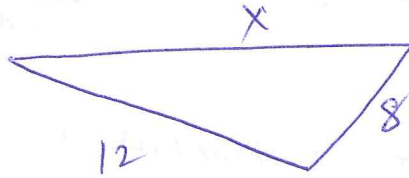
Ex:

A TRIANGLE HAS ONE SIDE LENGTH OF 12 AND ANOTHER OF LENGTH 8. DESCRIBE THE LENGTH OF THE THIRD-SIDE:



$$X + 8 > 12$$

$$X > 4$$



$$8 + 12 > X$$

$$20 > X$$

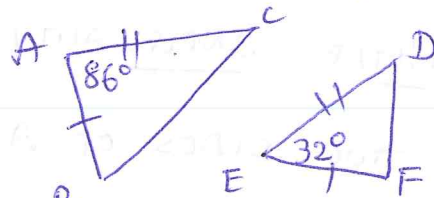
$$X < 20$$

THE LENGTH OF THE THIRD SIDE MUST BE GREATER THAN 4 AND LESS THAN 20.

5.6 INEQUALITIES IN TWO TRIANGLES:-

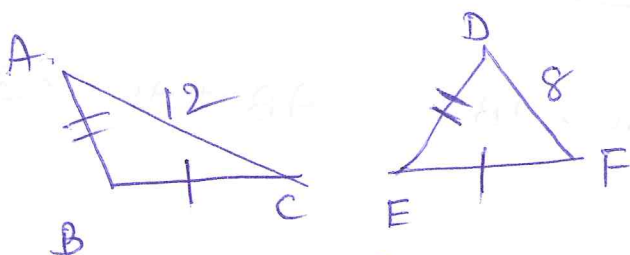
①

HINGE THEOREM:- IF TWO SIDES OF ONE TRIANGLE ARE CONGRUENT TO TWO SIDES OF ANOTHER TRIANGLE, AND THE INCLUDED ANGLE OF THE FIRST IS LARGER THAN THE INCLUDED ANGLE OF THE SECOND, THEN THE THIRD SIDE OF THE FIRST IS LONGER THAN THE THIRD SIDE OF THE SECOND.



$$BC > EF$$

②



THEN $\angle B > \angle E$

CONVERSE OF HINGE THM:-

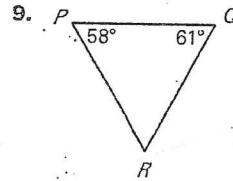
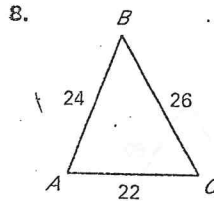
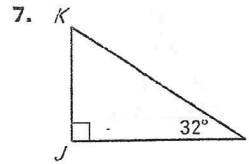
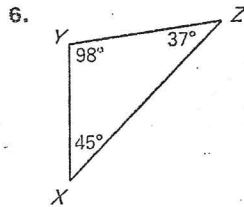
THE THEOREM IS TRUE FOR ANGLES ALSO.

Name _____

Date _____

LESSON 5.5 Practice
For use with pages 328–334

List the sides and the angles in order from smallest to largest.



Sketch and label the triangle described.

10. Side lengths: 14, 17, and 19, with longest side on the bottom
Angle measures: 45° , 60° , and 75° , with smallest angle at the right

11. Side lengths: 11, 18, and 24, with shortest side on the bottom
Angle measures: 25° , 44° , and 111° , with largest angle at the left

12. Side lengths: 32, 34, and 48, with shortest side arranged vertically at the right.
Angle measures: 42° , 45° , and 93° , with largest angle at the top.

Is it possible to construct a triangle with the given side lengths? If not, explain why not.

13. 3, 4, 5

14. 1, 4, 6

15. 17, 17, 33

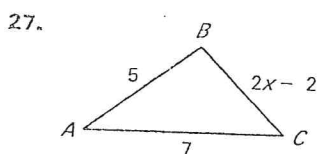
Describe the possible lengths of the third side of the triangle given the lengths of the other two sides.

19. 6 in., 9 in.

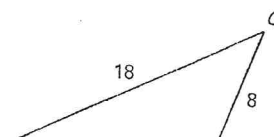
20. 4 ft, 12 ft

21. 9 m, 18 m

Describe the possible values of x .



28.



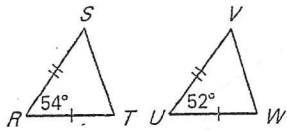
Name _____

Date _____

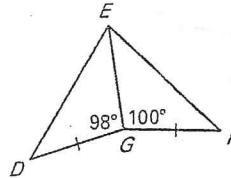
LESSON 5.6 Practice
For use with pages 335–341

Complete with $<$, $>$, or $=$. Explain.

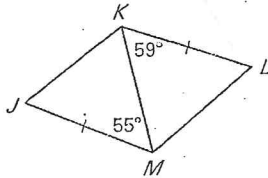
1. ST ? VW



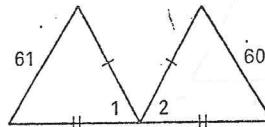
2. DE ? EF



3. JK ? LM

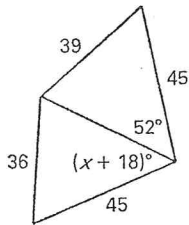


4. $m\angle 1$? $m\angle 2$



Use the Hinge Theorem or its converse and properties of triangles to write and solve an inequality to describe a restriction on the value of x .

9.



10.

