5.6 Homework   Name:___Key___
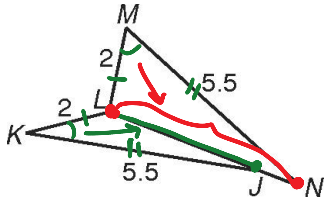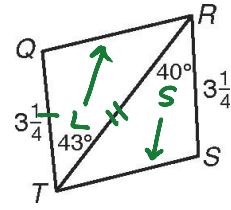
Directions: Write an inequality to compare the given measures.

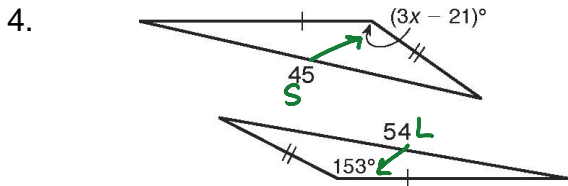1. $m\angle K$ and $m\angle M$

$$m\angle K < m\angle M$$
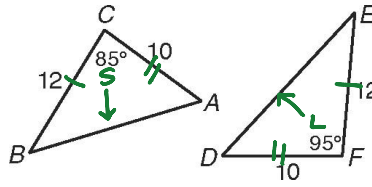
2. AB and DE

$$AB < DE$$

3. QR and ST

$$ST < QR$$

Directions: Find the range of values for x.

4.

5.

#1 $3x-21<153$
     $3x<174$
     $x<58$

#3 $3x-21<180$
     $3x<201$
     $x<67$

#2 $3x-21>0$
     $3x>21$
     $x>7$

$\boxed{7<x<58}$
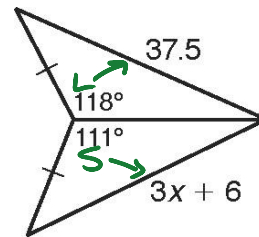
#1 $3x+6<37.5$
     $3x<31.5$
     $x<10.5$

$\boxed{-2<x<10.5}$

#2 $3x+6>0$
     $3x>-6$
     $x>-2$

6. Small Challenge! You can do it ☺

$60°$ $3x-3$

$70°$ $4x-7$

$\boxed{x>4}$
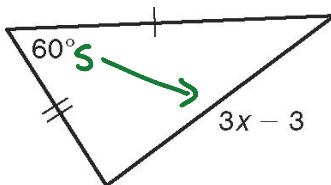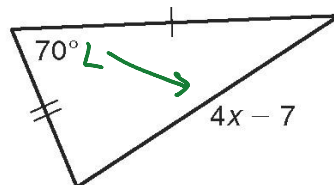
#1 $3x-3<4x-7$
     $-x<-4$
     $x>4$

#2 $3x-3>0$
     $3x>3$
     $x>1$

#3 $4x-7>0$
     $4x>7$
     $x>7/4$ so $x>1.75$

7.   The solid lines in the figure show an airline's routes between four cities.

S

300 mi

182m

300 mi

J

H

118

N
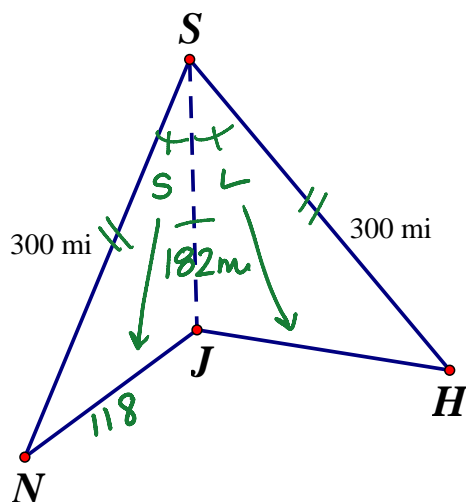
a) A traveler wants to fly from Jackson (J) to Shelby (S), but there is no direct flight between these cities. Given m∠NSJ < m∠HSJ, should the traveler first fly to Newton Springs (N) or to Hollis (H) if he wants to minimize the number of miles flown? Why?

The traveler should 1st fly to Newton Springs to minimize the number of miles flown, because using the Hinge Thm, the shortest distance is opposite the smallest angle.

b) The distance from Shelby (S) to Jackson (J) is 182 miles. What is the minimum number of miles the traveler will have to fly?

$$2\overset{9\,1}{\cancel{3}\cancel{0}\cancel{0}}$$
$$-182$$
$$\overline{118}$$

The traveler will have to travel 300 mi from Shelby to Newton Springs and at least 118 miles between Newton Springs and Jackson ∴ the traveler will have to fly at least 418 miles to get from Shelby to Jackson.

8.   Given the diagrams below, can you use the Hinge Theorem to draw a conclusion? Explain.

A

48°

C

N

L

52°

D

E
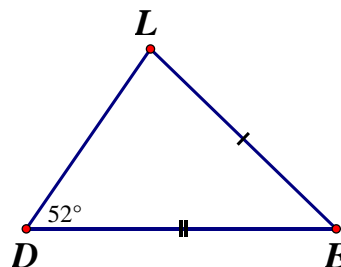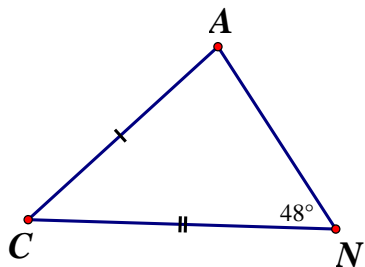
Even though we know 2 sides of 1 △ are ≅ to 2 sides of another △, we were not given the included angle between the 2 sides. Therefore, we cannot draw a conclusion about the length of $\overline{AN}$ compared to $\overline{DL}$