Name: _____   Date: _____

T-R-I-A-N-G-L-E-S LAB

STATION	RESPONSE	TEACHER
T	KI = TE =	
R	IT = KE =	
I	m_{KT} = m_{IE} = mp_{KT} = mp_{IE} =	
A	Δ _____ ≅ Δ_____ because _____ Δ _____ ≅ Δ_____ because _____	
N		
G		
L		
E	a. Y / N _____ b. Y / N _____ c. Y/N _____	
S	_____ _____ _____ _____ _____ _____ S1 S2 S3 S4 S5 S6	

STATION T

On a piece of graph paper, plot points:
K (1, 4), I (6, 9), T (7, 2), and E (0, - 9)
Label each of the points.

Determine the lengths of
segments KI and TE.
Show your calculations on the graph paper.

STATION R

(Continuation)
If you have not yet done so,
on a piece of graph paper, plot points:

K (1, 4), I (6, 9), T (7, 2), and E (0, - 9)

Label each of the points.

Determine the lengths
of segments IT and KE.
Show your calculations on the graph paper.

STATION I

(Continuation)
If you have not yet done so,
on a piece of graph paper, plot points:

K (1, 4), I (6, 9), T (7, 2), and E (0, - 9)

Label each of the points.

*A **DIAGONAL** is a segment*
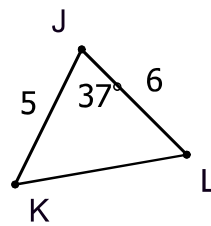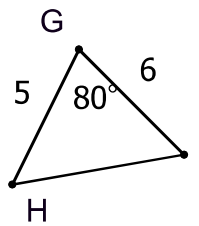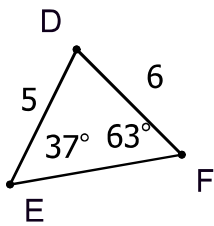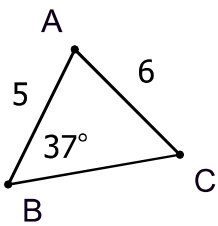*that extends between opposite vertices.*

Determine the **slope** and **midpoint**
of both diagonals.

Use the Midpoint Formula for the midpoint.
Show your work on the graph paper.

STATION A ☺

In this problem you will determine which of the triangles shown below must be congruent and why.
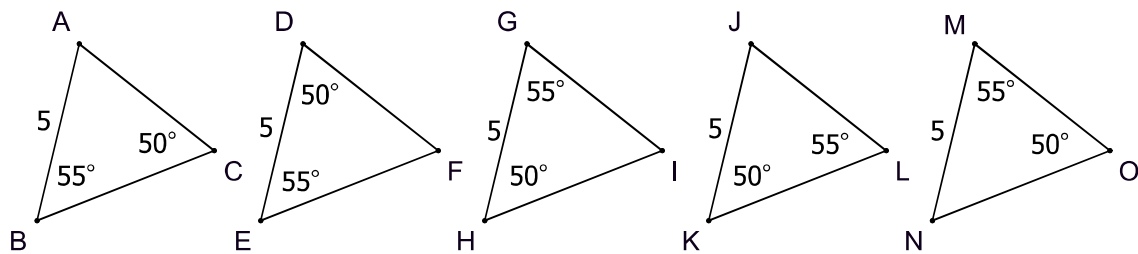
Write the triangle congruence statement(s), and state the rule (s).
(e.g. SSS, SAS, ASA or etc.)
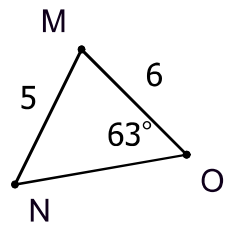
STATION A

In this problem you will determine which of the triangles shown below must be congruent and why.

Write the triangle congruence statement(s), and state the rule(s).
(e.g. SSS, SAS, ASA or etc.)

Hint: redraw the figures on your paper if you need to.
Hint: Determine the measure of the missing angle.

STATION N

Given triangle ABC and the mid-segments forming its medial triangle LMN, such that:

    L is the midpoint of segment AB,
    M is the midpoint of segment BC, and
    N is the midpoint of segment AC,

If AC = 14,
BC = 13 + x, and
LN = x + 2,

Find x.
Find BN.

Hint: Draw the figure

STATION N ☺

Given triangle ABC and the mid-segments forming its medial triangle LMN, such that:

L is the midpoint of segment AB,
M is the midpoint of segment BC, and
N is the midpoint of segment AC,

If AB = 14 and BC = 12, find MN.

Here's one tha's a little more challenging. Try it if you have time.

If AC = 16 and MN = 4, find LB + 3(MN)

Hint: Draw the figure

STATION G

In a triangle,
the longest side is opposite the largest angle;
the shortest side is opposite the smallest angle.

Given the angle measures below,
Find x, and list the **side lengths**
in order from smallest to largest.

ΔABC: $m \angle A = 2x + 21$
          $m \angle B = 5x + 15$
          $m \angle C = 4x + 12$

(For $m \angle C$ we say, "The measure of angle C.")

Hint: Draw and label the triangle.
Hint: Determine the value of x, and the angle measures.

STATION G ☺

In a triangle,
the longest side is opposite the largest angle;
the shortest side is opposite the smallest angle.

Given the two angle measures
of a triangle as shown below,
list the **side lengths** in order
from smallest to largest.

ΔJKL: ∠K = 30°   ∠L = 60°

ΔRST: ∠R = 57°   ∠T = 61°

Hint: Draw and label each triangle.
Hint: Determine the measure of the 3rd angle.

STATION L

In a triangle,
the longest side is opposite the largest angle;
the shortest side is opposite the smallest angle.

Given the side lengths below,
list the **angles** in order
from smallest to largest.

ΔWXY: WX = 26 + x   XY = 13 + x   WY = 14 + x

STATION L   ☺

In a triangle,
the longest side is opposite the largest angle;
the shortest side is opposite the smallest angle.

Given the side lengths below,
list the **angles** in order
from smallest to largest.

ΔMNO: MN = 32   NO = 51   MO = 46

Hint: Draw and label each triangle.

STATION E

In a triangle:
The longest side is shorter than the sum
of the measures of the other two sides.

For each set of 3 numbers tell whether
they could be the sides of a triangle.

If they *could* be, then tell whether the
triangle is right, obtuse, or acute.

Show your calculations
on the back of your graph paper.

a.   60   61   11

b.   51   27   24

c.   7   9   6

STATION E ☺

In a triangle:
The longest side is shorter than the sum
of the measures of the other two sides.

For each set of 3 numbers tell whether
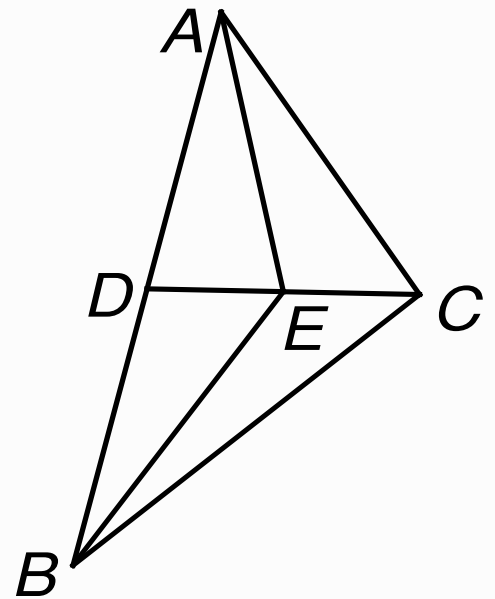they could be the sides of a triangle.

a.   10   50   30

b.   14   32   17

c.   6   6   9

STATION S

Given the figure shown, such that
AD = BD = AE, and DE = EC, prove AC = BE by
matching the clues with the statement and reason table.

Statement	Reason
1. AE = BD	1. Given
2. **S1**	2. Given
3. **S2**	3. **S3**
4. $\angle AEC \cong \angle BDE$	4. Suplements of congruent angles are congruent.
5. DE = EC	5. Given
6. **S4**	6. **S5**
7. AC = BE	7. **S6**

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a. AD = AE
b. Vertical Angles Theorem
c. Converse Alternate Interior Angles Theorem
d. $\triangle AEC \cong \triangle BDE$
e. SSS
f. SAS
g. ASA

h. AAS
i. HL
j. CPCTC
k. $\angle AEC \cong \angle BDE$
l. $\angle ADE \cong \angle AED$
m. Isosceles Triangles Theorem
n. Given
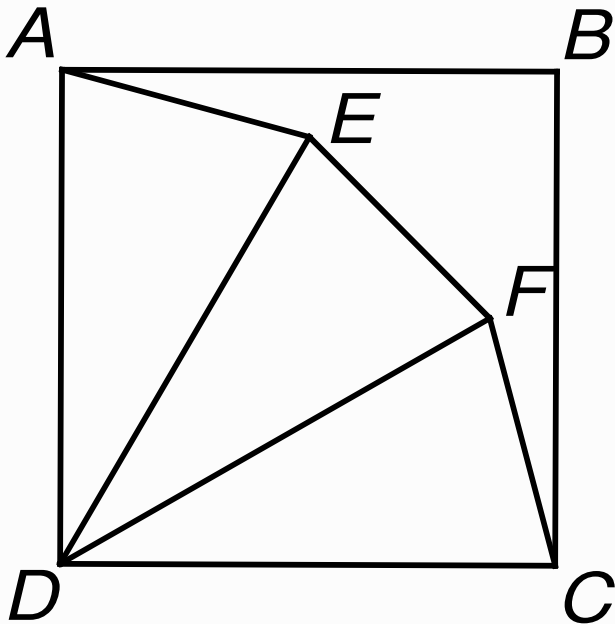o. Definition Isosceles
p. BC = AC

STATION "I think I'm Done"

Challenging:
Given Square ABCD,
Let E and F be points such that
DA = DE = DF = DC, and
∠ADE = ∠EDF = ∠FDC.

Prove triangle BEF is equilateral.

Hint 1:   You may need to draw auxillary lines.
Hint 2:   You may have to look closely at
          the actual angle measures.
Hint 3:   It is not enough to show EB = FB.
          You must show EB = FB = **EF**