Geometry   Name_____ Section _____ Date_____
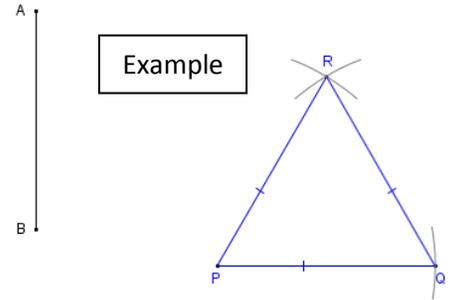
**4-11R Constructions Notes and Problem Set**

Use your compass and straightedge to construct each of the following. You may use your universal angle maker to check the accuracy of your constructions.

1. Construct equilateral ΔTRY using the given side length:
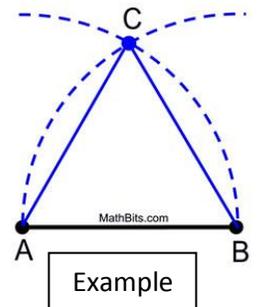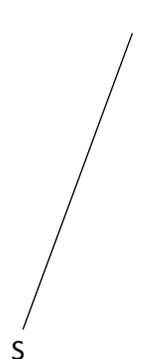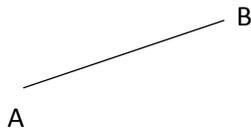

Example

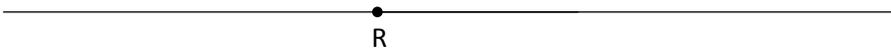Was your construction accurate? _____ How do you know? _____

2. Construct an isosceles triangle whose base angles measure 30° on the given base $\overline{HA}$.

H

A
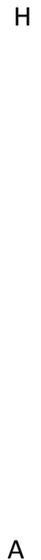
3. Construct isosceles triangle ISO on the given base $\overline{IS}$ whose legs are congruent to $\overline{AB}$

B

A

I

S

C

MathBits.com

A   B

Example

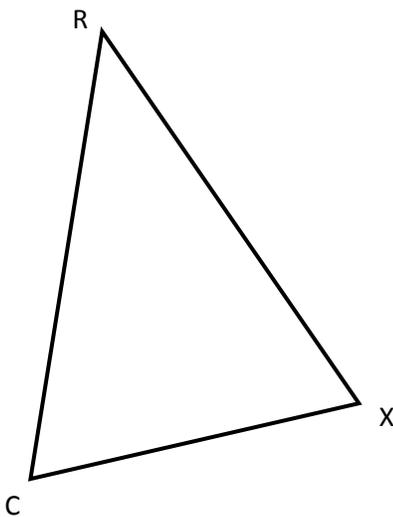4. Construct right triangle RGT whose right angle vertex is R.   What is the base skill you need? _____

R

Compare with your neighbor's. Are they congruent? _____
What other information would you need in order to guarantee the triangles are congruent by:

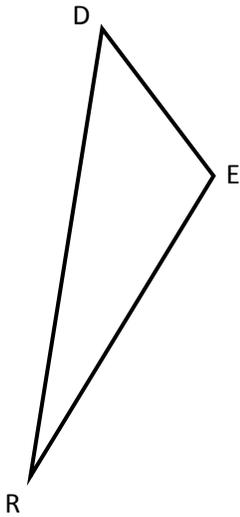- SAS≅ _____

- RHL≅ _____

- ASA≅ _____

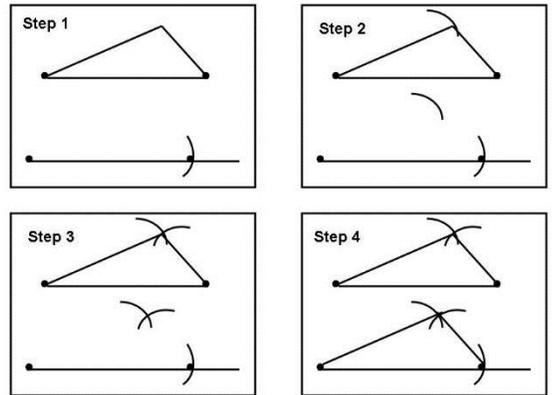5. Construct triangle MTH congruent to triangle RCX using the congruency criteria SAS.

R

X

C

1. Copy angle - draw long side rays
2. Copy one segment to determine length of side from angle vertex
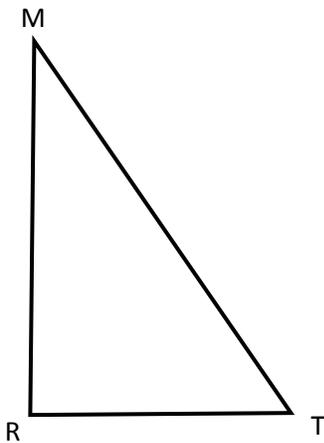3. Repeat with other segment from angle vertex

J   K

J

J   L

K'

J'   L'
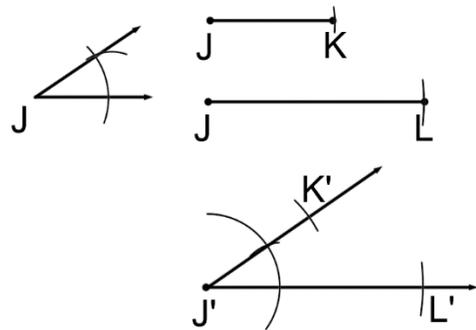
6. Construct triangle BLU which is congruent to triangle RED using the congruency criteria SSS.

D
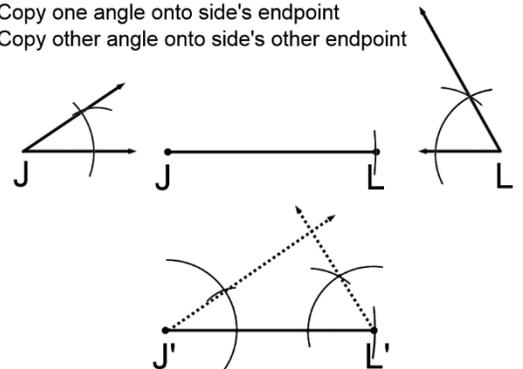
E

R

Example: Copy each side

Step 1

Step 2

Step 3

Step 4

7. Construct triangle GEO congruent to triangle MTR using the congruency criteria ASA.

M

R   T
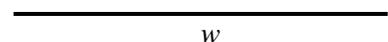
1. Copy side (segment)
2. Copy one angle onto side's endpoint
3. Copy other angle onto side's other endpoint

J   J   L   L

J'   L'

8. Which congruency criteria was personally easiest for you?

PROBLEM SET 4-11R

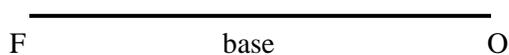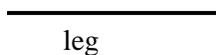1. Construct equilateral triangle YOU with a side length equal to w.

w

2. Construct isosceles triangle LUV with legs congruent to $\overline{GE}$ and a base congruent to $\overline{OM}$.

O

M

G

E

3. Can you construct isosceles triangle FOX with the given base and leg lengths?

leg

F   base   O

What does this make you think about certain combinations of side lengths in triangles?

4. Complete the rotation in which $\overline{RO}$ has already been rotated to $\overline{RO'}$ such that $\triangle ROT$ maps to $\triangle RO'T'$.
    Hint: what do rotations preserve?

O'

T

R   O
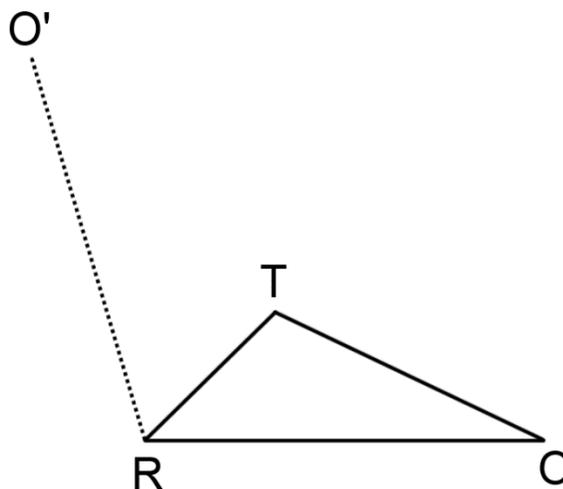
What criteria did you use in order to construct $\triangle RO'T'$? _____ Which other criteria would have also worked?

5. Reflect $\triangle CAR$ into line n by constructing the congruent image $\triangle CA'R$.

    a. Which criteria did you use? _____ Which other criteria could you have used? _____

    b. Compare your results by constructing the reflection of A using your perpendicular in & out the same amount to locate A'. Is the location of A' the same? _____
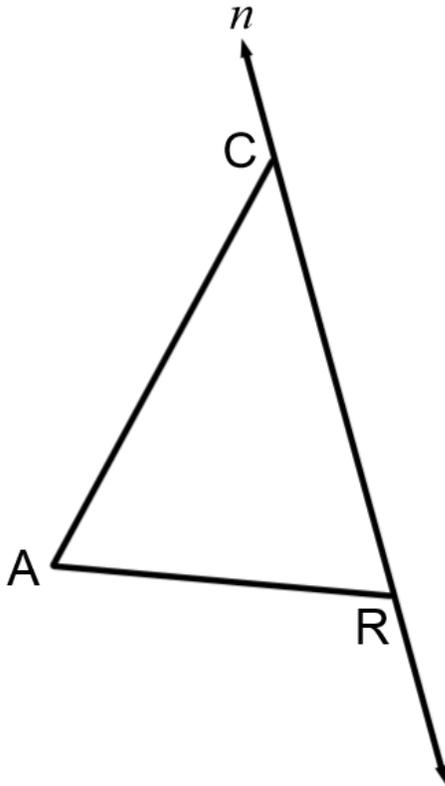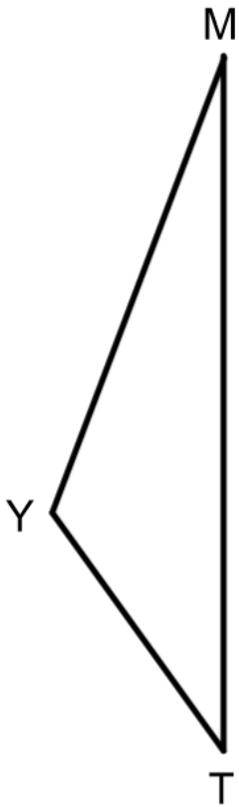

6. I constructed the image of $\triangle XYZ$ by reflecting $\triangle XYZ$ into point Z.
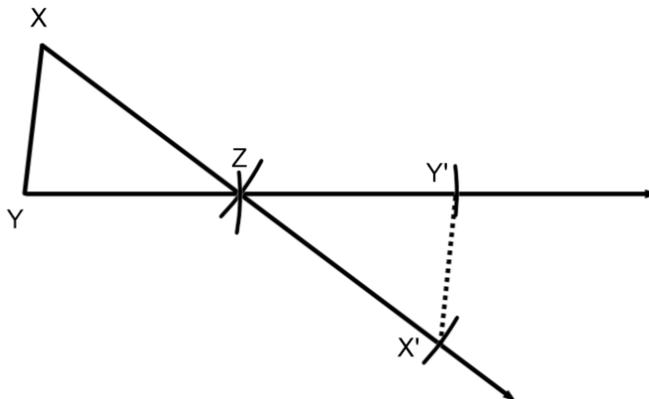
    a. We know that reflections into a point preserve _____ and _____ so $\triangle XYZ \cong \triangle X'Y'Z$.

    b. What triangle congruency criteria did I satisfy with my construction? _____

7. Construct and label the image of $\triangle MYT$ twice, using a different criteria each time.

M

Y

T

Criteria 1: _____

Criteria 2: _____

Extra Credit: Construct an isosceles right triangle using only angle measures.