

Unit 4 - Constructions

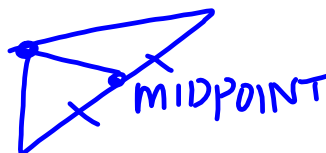
Get Tool Kit

AGENDA:

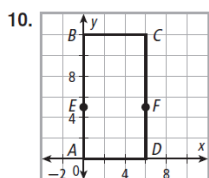
- Triangle Constructions & Guided Practice

Homework:

- **Finish Packet - Problem Set**
- **Complete Lesson Summaries**
- **Test Monday (Orange/Blue/Purple) or Tuesday (Green LAB)**



- p 270: 10, 13 (not LAB), 24 ***NEED GRAPH PAPER***



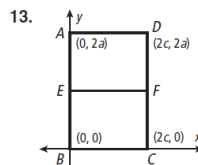
$$E = \left(\frac{0+0}{2}, \frac{0+10}{2} \right) = (0, 5)$$

$$F = \left(\frac{6+6}{2}, \frac{0+10}{2} \right) = (6, 5)$$

$$BC = \sqrt{(6-0)^2 + (10-10)^2} = 6 \text{ units}$$

$$EF = \sqrt{(6-0)^2 + (5-5)^2} = 6 \text{ units.}$$

So $EF = BC$.



By the Mdpt. Formula, the coords. of E are $(0, a)$ and the coords of F are $(2c, a)$.

By the Dist. Formula,

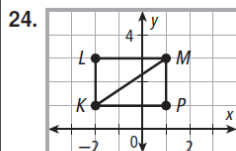
$$AD = \sqrt{(2c-0)^2 + (2a-2a)^2}$$

$$= \sqrt{(2c)^2} = 2c \text{ units.}$$

Similarly,

$$EF = \sqrt{(2c-0)^2 + (a-a)^2}$$

$$= \sqrt{(2c)^2} = 2c \text{ units.}$$



Proof: By Dist. Formula,

$$KL = \sqrt{(-2+2)^2 + (1-3)^2} = \sqrt{0+4} = 2$$

$$MP = \sqrt{(1-1)^2 + (3-1)^2} = \sqrt{0+4} = 2$$

$$LM = \sqrt{(-2-1)^2 + (3-3)^2} = \sqrt{9+0} = 3$$

$$PK = \sqrt{(1+2)^2 + (1-1)^2} = \sqrt{9+0} = 3$$

Thus $KL = MP$ and $LM = PK$ by Trans. Prop. of \cong .

$\overline{KL} \cong \overline{MP}$ and $\overline{LM} \cong \overline{PK}$ by def. of \cong , and $\overline{KM} \cong \overline{MK}$

by Reflex. Prop. of \cong . Thus $\triangle KLM \cong \triangle MPK$ by

SSS.

- p 263: 12 (LAB), p.265: 35-37 ***NEED GRAPH PAPER***

Multi-Step Use the given set of points to prove each congruence statement.

12. $R(0, 0), S(2, 4), T(-1, 3), U(-1, 0), V(-3, -4), W(-4, -1); \angle RST \cong \angle UVW$

12. $ST = VW = RT$
 $= UW = \sqrt{10}$.
 $RS = UV = 2\sqrt{5}$.
 So $\triangle RST \cong \triangle UVW$
 by SSS. $\angle RST \cong$
 $\angle UVW$ by CPCTC.

35. reflection
 across the x -axis

36. translation
 $(x, y) \rightarrow$
 $(x - 3, y - 4)$

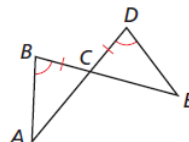
37. Yes; it is given
 that $\angle B \cong \angle D$
 and $BC \cong DC$. By
 the Vert. \angle Thm.,
 $\angle BCA \cong \angle DCE$.
 Therefore $\triangle ABC \cong$
 $\triangle EDC$ by ASA.

A figure has vertices at $(1, 3), (2, 2), (3, 2),$ and $(4, 3)$. Identify the transformation of the figure that produces an image with each set of vertices. (Lesson 1-7)

35. $(1, -3), (2, -2), (3, -2), (4, -3)$

36. $(-2, -1), (-1, -2), (0, -2), (1, -1)$

37. Determine if you can use ASA to prove $\triangle ACB \cong \triangle ECD$. Explain. (Lesson 4-5)

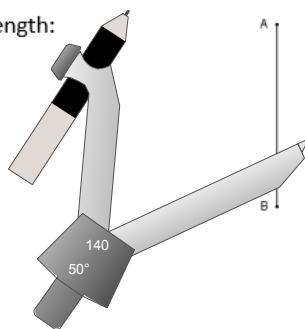
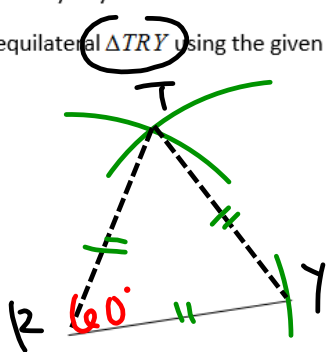


Geometry Name _____ Section _____ Date _____

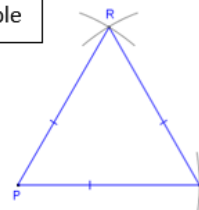
4-11R Constructions Notes and Problem Set

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.

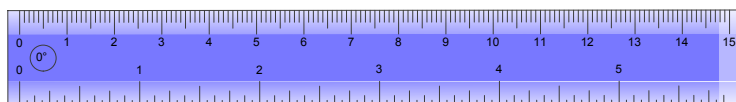
1. Construct equilateral $\triangle TRY$ using the given side length:



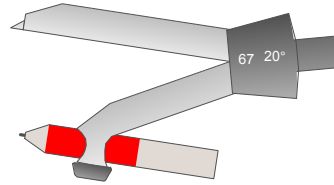
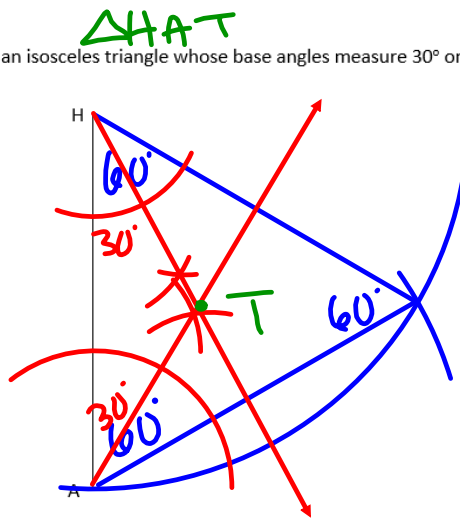
Example



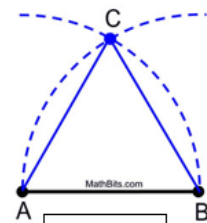
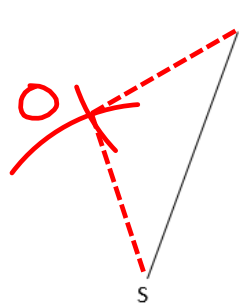
Was your construction accurate? YES How do you know? EACH $\angle = 60^\circ$



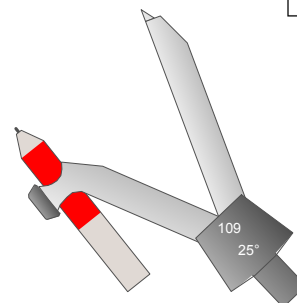
2. Construct an isosceles triangle whose base angles measure 30° on the given base \overline{HA} .



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



Example



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

Compare with your neighbor's. Are they congruent? NO-Doesn't specify enough info

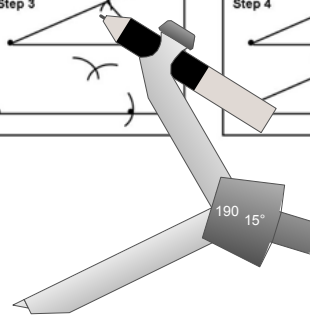
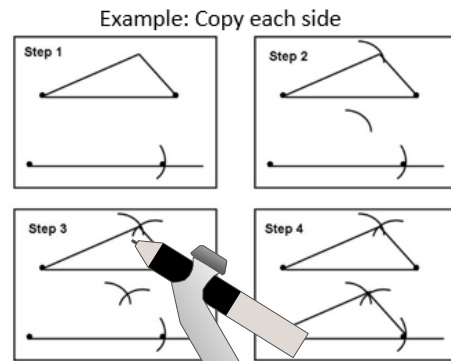
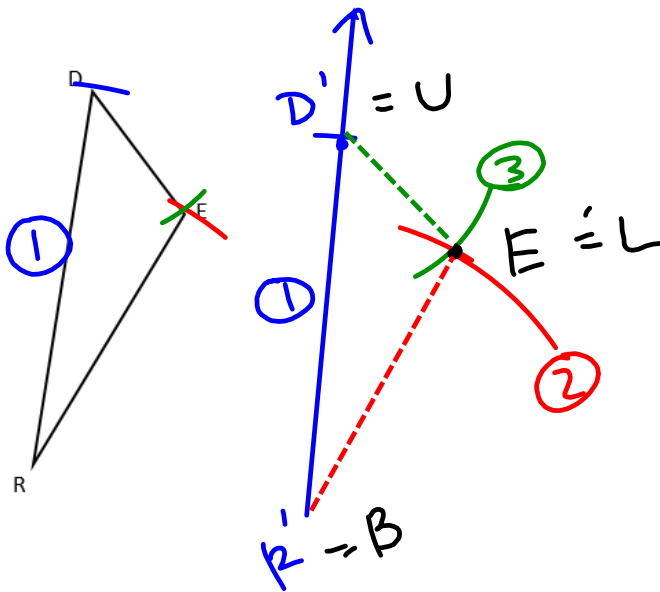
What other information would you need in order to guarantee the triangles are congruent by:

- SAS \cong LEG LENGTHS (BOTH)
- RHL \cong 1 LEG LENGTH + HYP LENGTH
- ASA \cong 1 ACUTE \angle MEASURE + INCLUDED LEG LENGTH

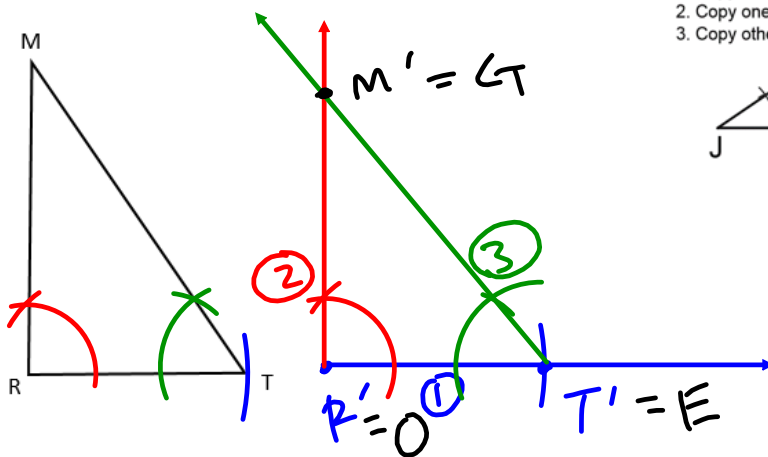
5. Construct triangle MTH congruent to triangle RCX using the congruency criteria SAS.

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

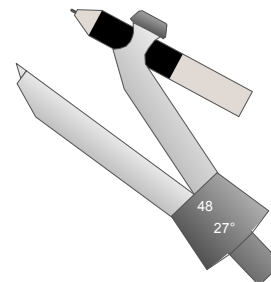
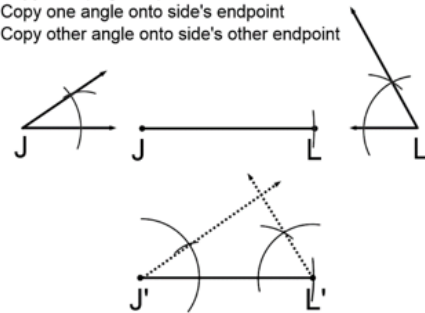
6. Construct triangle BLU which is congruent to triangle RED using the congruency criteria SSS.



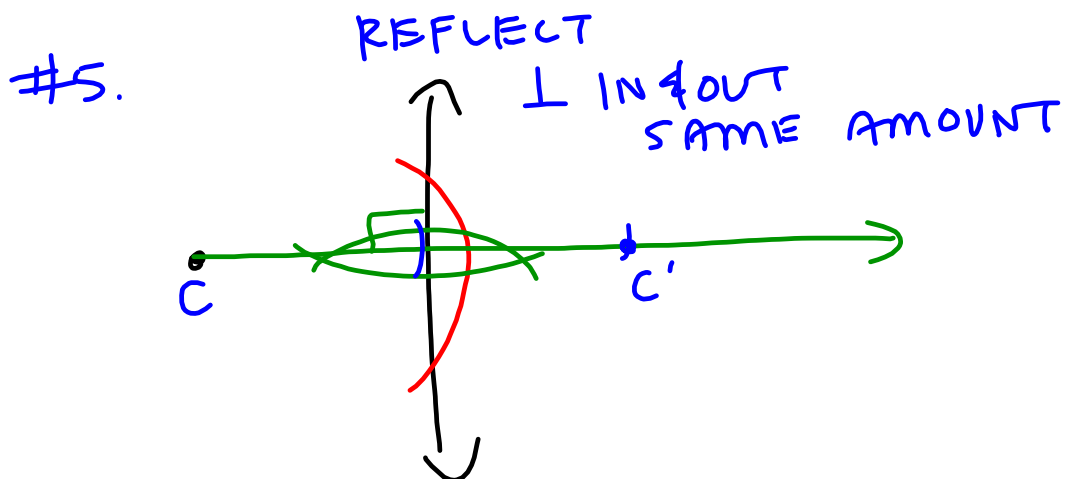
7. Construct triangle GEO congruent to triangle MTR using the congruency criteria ASA.



1. Copy side (segment)
2. Copy one angle onto side's endpoint
3. Copy other angle onto side's other endpoint



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 .

