Construction #1

Aim: How do we construct a line segment congruent (equal in length) to a given line segment.

A ●————————————————● B
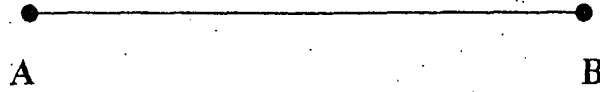
Given: line segment $\overline{AB}$

**Construct:** a line segment $\overline{XY}$, congruent to $\overline{AB}$.

How to proceed:

1) With a straightedge, draw a line of any length, and mark a point X on it.

2) On $\overline{AB}$, place the compass so that the point is at A and the pencil is on B.

3) Keeping the setting on your compass, place the point at X and draw an arc Intersecting the line.

4) Label the point of intersection Y,

5) The new line segment $\overline{XY}$ is congruent to AB

✳ Videos can be found on youtube ✳

Construction #2

Aim: How do we bisect a ~~iven~~ line segment (⊥ bisector)

A   B
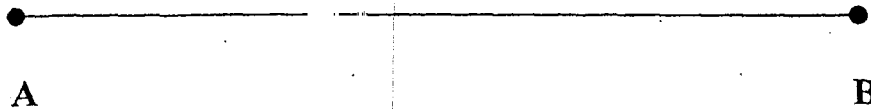
**Given:** line segment $\overline{AB}$

Construct: A bisector of $\overline{AB}$.

How to proceed:

1) Open the compass so t ~~it~~ he distance between the point and the pencil point is more than half of the l ~~igth~~ of $\overline{AB}$.

2) Using the point A as a ~~enter,~~ draw one arc above $\overline{AB}$ and one arc below $\overline{AB}$.

3) Keeping the setting o~~r~~ ~~our~~ compass, use point B as a center; draw another pair of arcs, one above $\overline{AB}$ a~~r~~ the other below $\overline{AB}$.

4) Be sure that the pair c ~~arcs~~ constructed in step 3 intersects the first pair of arcs constructed.

5) Label the intersecting ~~rcs~~ C and D.

6) Use a straightedge to ~~raw~~ $\overline{CD}$, intersecting $\overline{AB}$ at E.

Construction #3

Aim: How do we construct an angle congruent to a given angle.
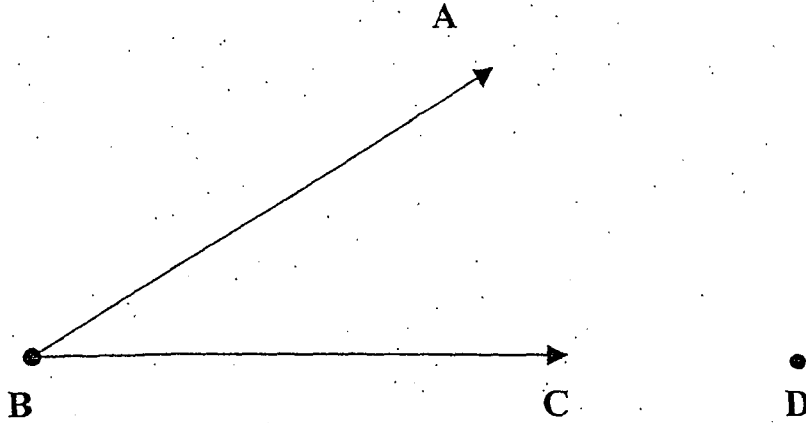

Given: <ABC and a point D.

Construct: At point D, an angle congruent to <ABC

How to proceed:

1) Through point D, draw any line $\overleftrightarrow{RS}$.

2) With B as a center and any convenient radius, draw an arc that intersects $\overrightarrow{BC}$ at E and $\overrightarrow{BA}$ at F.

3) Keeping the setting on your compass, use D as the center; draw an arc that intersects $\overrightarrow{DS}$ at G. *Label this arc GJ.*

4) With the compass, measure the distance $\overline{EF}$. Keeping the setting on your compass, use point G as the center and draw an arc that intersects $\overparen{GJ}$ at H.

5) Draw $\overline{DH}$

6) The measure of angle EBF is congruent to angle GDH

Construction #4

Aim: **How do we bisect given angle.**

A

B   C
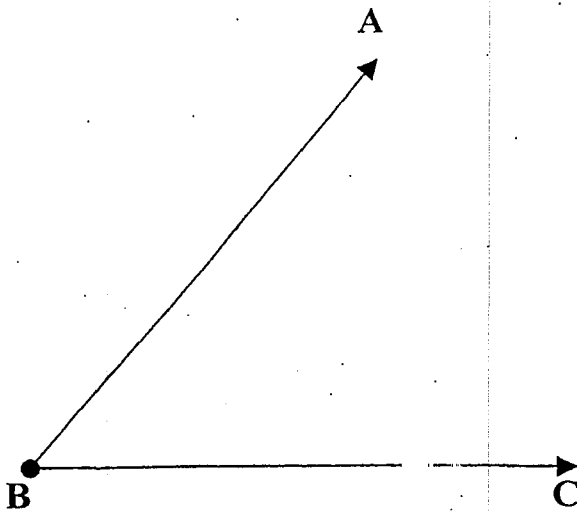
Given: <ABC

Construct: The bisector of < BC.

How to proceed:

1) With B as the center and any convenient radius. draw an arc that intersects $\overrightarrow{BA}$ at D and $\overrightarrow{BC}$ at E.

2) With D and E as centers, open the compass and swing at arc from each point.

3) Label the point where the arcs intersect, F.

4) Draw $\overrightarrow{BF}$

5) The measure of <DB is congruent to <FBE.

Construction #5

Aim: How do we construct a line perpendicular to a given line through a given point on the line.

A ●————————————————————————————————● B
                          P
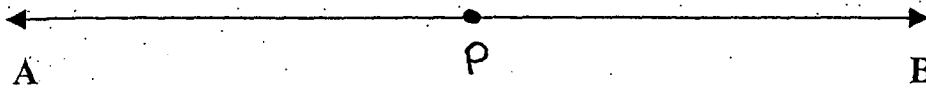
Given: Point P is on $\overleftrightarrow{AB}$

Construct: A line through point P perpendicular to $\overleftrightarrow{AB}$.

How to proceed:

1) With point P as center, open the compass and swing an arc that intersects $\overleftrightarrow{AB}$ at C and D.

2) With C and D as centers and with a radius greater in length than the one used in step 1, swing two more arcs.

3) Label the point the arcs intersect E.

4) Draw $\overleftrightarrow{EP}$.

5) Line $\overleftrightarrow{EP}$ is perpendicular to line $\overleftrightarrow{AB}$ at P.

Construction #6

Aim: How do we const uct a line perpendicular to a given line through a given point on the line

NOT

• P

←——————————————————————————→

A   B

Given: Point P is outside A

Construct: A line through int P perpendicular to $\overleftrightarrow{AB}$.

How to proceed:

1) With point P as cent , open the compass and swing an arc that intersects $\overleftrightarrow{AB}$ at C and D.

2) With C and D as ce ers and with a radius smaller than the one used in step 1, swing two more arc elow $\overleftrightarrow{AB}$. (or the same)

3) Label the point whe the arcs intersect, E.

4) Draw $\overline{EP}$.

5) Line $\overline{EP}$ is perpendi lar to line $\overline{AB}$.

Construction #7

<u>Aim</u>: How do we construct an isosceles triangle?

<u>Goal</u>: To construct an isosceles triangle whose legs and base are of the pre-determined lengths given. Construct the new triangle on the reference line.

<u>Given</u>: _____ (legs)

_____ (base)

_____

reference line

Now....trade papers with someone next to you and have them draw two completely different line segments for the base and legs of the new isosceles triangle to be

Construction #8

<u>Aim</u>: How do we construct n equilateral triangle?

<u>Goal</u>: To construct an equil eral triangle whose sides are of the length given.
Construct the new triangle c the reference line.

<u>Given</u>: _____ side)

_____

reference line

Now....trade papers with sc eone next to you and have them draw a different line
segment for the sides of the ew equilateral triangle to be constructed next.