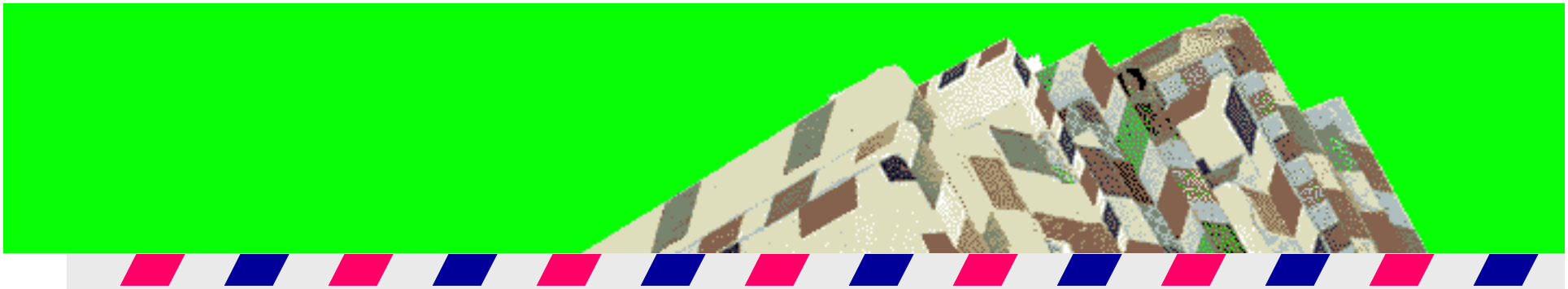
Notes for Lesson 1-3



Segments, Rays, and Distance

Line Segment

- Part of a line that consists of two points, called endpoints, and all the points on the line that are between the endpoints

(named segment AB, segment BA, $\overline{AB}$, or $\overline{BA}$ with endpoints A and B)

Ray

- Part of a line that consists of a point, called an end point, and all points on the line that extend in one direction from the endpoint

(named ray AB or $\overrightarrow{AB}$ with endpoint A)

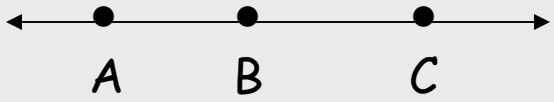
Opposite Rays

- Two rays that point in opposite directions and share a common endpoint

If point Y lies on line XZ then $\overrightarrow{YX}$ and $\overrightarrow{YZ}$ are opposite rays

Length

- The distance between two points on a line (length refers to the size of a line segment)



The length of $\overline{BC}$, denoted by BC, is the distance between point B and point C

Postulate

- A rule that is accepted without proof.
- Also called an axiom.

Ruler Postulate

- The points on a line can be paired with the real numbers in such a way that any two points can have coordinates 0 and 1
- Once a coordinate system has been chosen in this way, the distance between any two points equals the absolute value of the difference of their coordinates

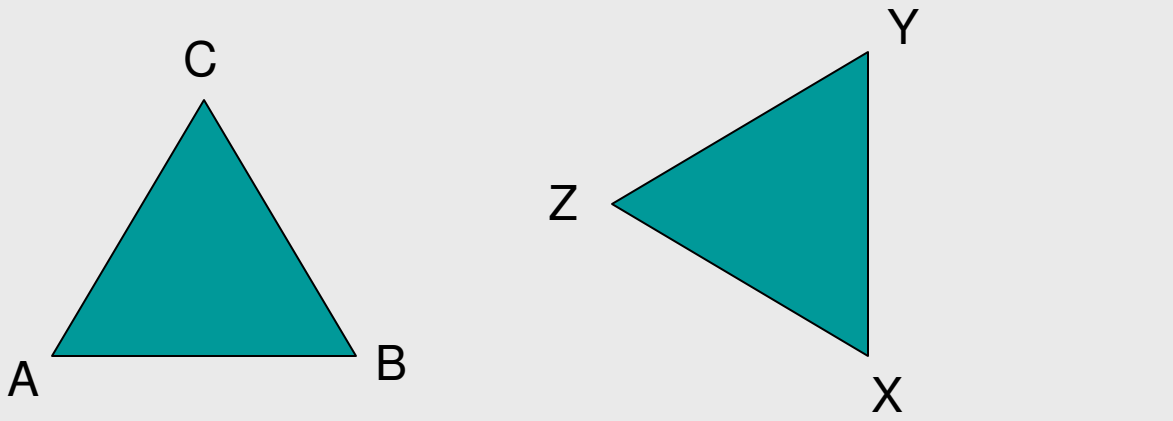
Segment Addition Postulate

- If B is between A and C, then

$$AB + BC = AC$$

Congruent

- Two objects that have the same size and shape

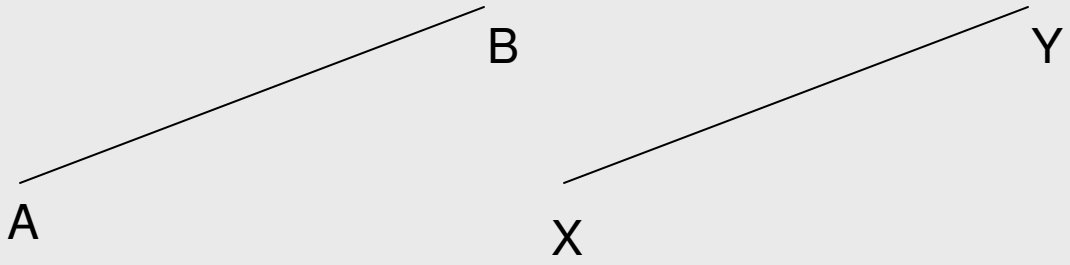


Since ΔABC and ΔXYZ are the same size and shape
we can say that $\Delta ABC \cong \Delta XYZ$

$\cong$ means congruent to

Congruent Segments

- Two or more segments with the same length



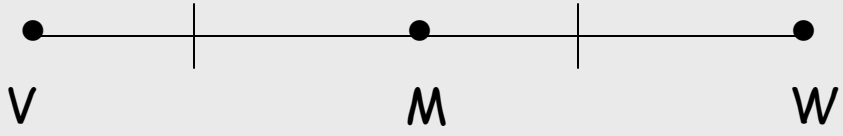
To indicate that $\overline{AB}$ and $\overline{XY}$ have equal lengths you write

$$AB = XY$$

Note: line segments are congruent, lengths are equal

Midpoint of a Segment

- A point that divides, or bisects, a segment into two congruent segments



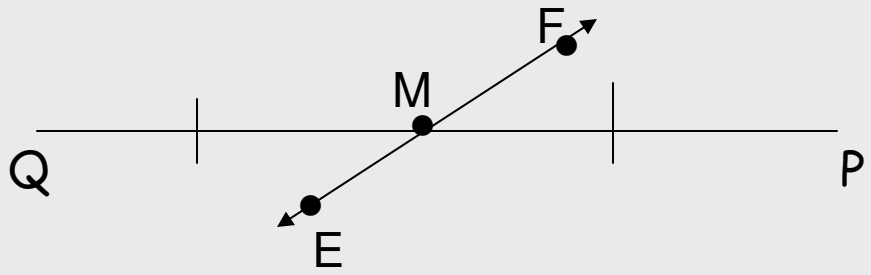
M is the midpoint of line segment VW which assures two facts:

$$VM = MW$$

$\overline{VM}$ is congruent to $\overline{MW}$

Bisector of a Segment

- A point, line, ray, segment, or plane that intersects a line segment at its midpoint



Line EF bisects segment QP at point M

QM = MP