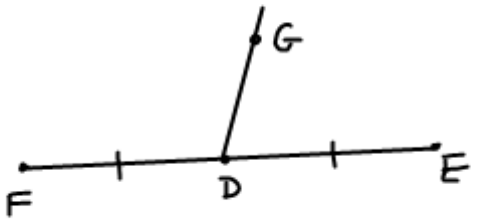
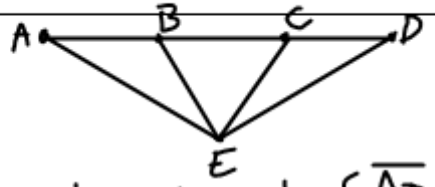
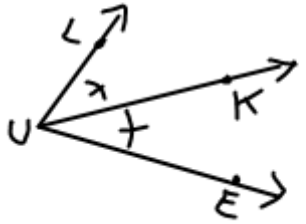
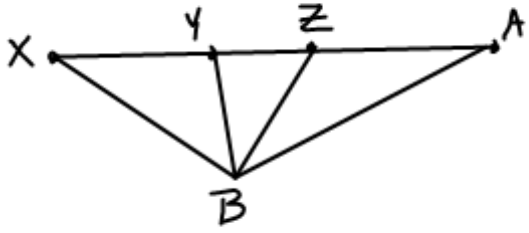
1.5. Honors Geometry

DATE: 9/12

Target 1C. Use and apply concepts and skills of algebra to find segment lengths and angle measures.

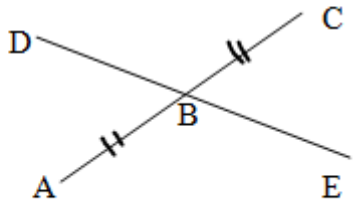
Vocabulary Word/Concept	Definition	Visual Description
Midpoint & Bisectors of Segments	• Pt., segment, ray or line that divides a segment into 2 ≅ segments. • Bisection pt. is the midpt. of the seg.	 D midpt of $\overline{FE} \Rightarrow \overline{FD} \cong \overline{DE}$ D bisection pt. of $\overline{FE}$, $\overrightarrow{DG}$ bisects $\overline{FE}$.
Trisection Points and Trisecting a Segment	• Two pts (segments, rays, or lines) that divide seg. into 3 ≅ segments. • Two pts. at which the seg. is divided are tri. pts.	 B, C trisection pts of $\overline{AD} \Rightarrow$ $\overline{AB} \cong \overline{BC} \cong \overline{CD}$, $\overline{EB}$, $\overline{EC}$ trisect $\overline{AD}$.

Angle Bisectors	• Ray that divides an ∠ into 2 ≅ ∠s. • Dividing ray is called a bisector.	 ∠LUK ≅ ∠KUE ⇒ $\overrightarrow{UK}$ bisects ∠LUE
Angle Trisectors	• Two rays that divide an ∠ into 3 ≅ ∠s. • Two dividing rays are called trisectors.	 $\overrightarrow{BY}$, $\overrightarrow{BZ}$ trisect ∠XBA ⇒ ∠XBY ≅ ∠YBZ ≅ ∠ZBA.

Examples

1) Given: $\overline{DE}$ bisects $\overline{AC}$

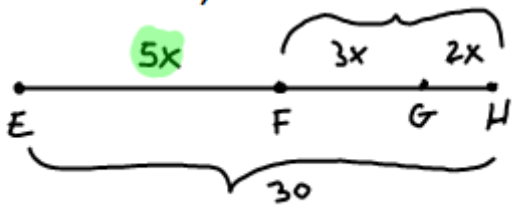
Prove: $\overline{AB} \cong \overline{BC}$



Statement	Reason
(1) $\overline{DE}$ bis $\overline{AC}$	(1) Given
(2) $\overline{AB} \cong \overline{BC}$	(2) If a seg bisects another seg, then it divides into 2 $\cong$ segments.

2) $\overline{EH}$ is divided by F and G in the ratio of 5:3:2 from left to right.

If EH=30, find FG and name the midpoint of $\overline{EH}$.



$5x + 3x + 2x = 30$

$10x = 30$

$x = 3$

$FG = 3x = 3(3) = 9$

F is midpt of $\overline{EH}$.

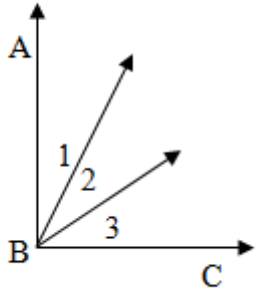
3) Given: $\angle ABC$ is a rt. $\angle$

$m\angle 1 = 2x+10$

$m\angle 2 = x+20$

$m\angle 3 = 3x$

Has $\angle ABC$ been trisected?



$\angle 1 + \angle 2 + \angle 3 = \angle ABC$ $\angle$ addition postulate

$2x+10 + x+20 + 3x = 90$

$6x + 30 = 90$

$6x = 60$

$x = 10$

$\angle 1 = 2x+10 = 2(10)+10 = 30^\circ$

$\angle 2 = x+20 = 10+20 = 30^\circ$

$\angle 3 = 3(10) = 30^\circ$

$\angle 1 \cong \angle 2 \cong \angle 3 \Rightarrow$ $\angle ABC$ is trisected.