Name:_____   Date:_____
Period:_____   Ms. Simon

Aim: What is a median, altitude, angle bisector, and perpendicular bisector?
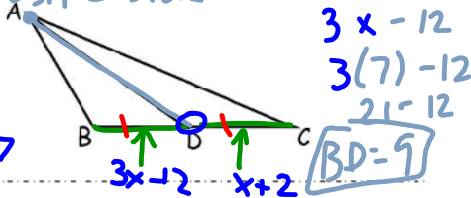Do Now: (create a math divider and unit 3 subject in notability)

SPECIAL SEGMENTS in TRIANGLES

Median – a segment joining any vertex of a triangle to the midpoint of the opposite side

1. Median AD is drawn in $\triangle ABC$. If BD = 3x - 12 and
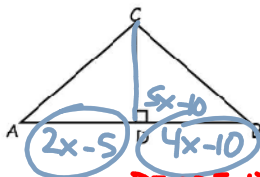DC = x + 2, what is the length of BD?

$$3x - 12 = x + 2$$
$$\underline{-x} \quad \underline{-x}$$
$$2x - 12 = 2 \qquad 2x = 14 \quad x = 7$$
$$\underline{+12} \quad \underline{+12}$$

$3x - 12$
$3(7) - 12$
$21 - 12$
$\boxed{BD = 9}$

$3x-12 \qquad x+2$

Altitude – a segment from any vertex perpendicular to the line containing the opposite side

2. In $\triangle ABC$, altitude CD is drawn. If AD=2x-5, DB=4x-10 and $\angle CDB = 5x-10$, what is the value of x?

$$5x - 10 = 90$$
$$+10 \quad +10$$
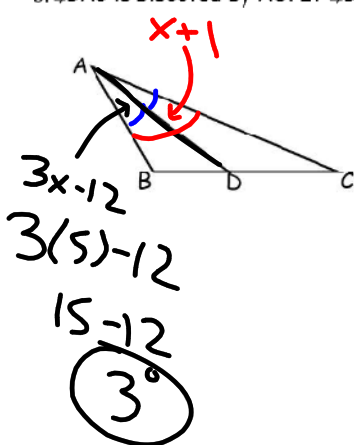$$5x = 100$$
$$x = 20$$

$5x-10$
$(2x-5)$ $(4x-10)$

PERPENDICULAR BISECTOR

a line that is perpendicular to a side of the triangle AND ALSO bisects that side of the triangle by intersecting the side at its midpoint

Angle Bisector - a segment drawn from a vertex that bisects (cuts in half) that vertex angle.

3. $\angle BAC$ is bisected by AD. If $\angle BAD = 3x - 12$ and $\angle BAC = x + 1$, what is the measure of $\angle BAD$?
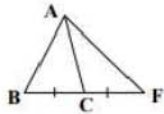
$x + 1$

$3x-12$
$3(5)-12$
$15-12$
$\boxed{3^\circ}$

$$2(3x - 12) = x + 1$$
$$6x - 24 = x + 1$$
$$\underline{-x} \qquad \underline{-x}$$
$$5x - 24 = 1$$
$$+24 \quad +24$$
$$5x = 25$$
$$\boxed{x = 5}$$
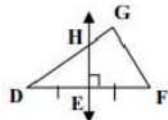
1

HW: EVENS, #11

Partner Practice

Name the special segment for 1-4
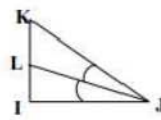
1) $\overline{AC}$
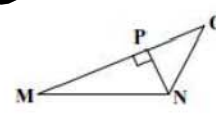
median

2) $\overline{HE}$

perp. bisector
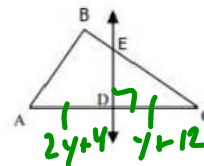
3) $\overline{JL}$

angle bisector

4) $\overline{PN}$

altitude

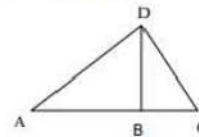5) Sketch a triangle in which the median is also the altitude.

6) In $\triangle ABC$, $\overrightarrow{DE}$ is perpendicular bisector of $\overline{AC}$ with D on $\overline{AC}$. If $AD = 2y + 4$, $CD = y + 12$, and $m\angle EDC = 5(x-12)°$. Find the value of x and y. Find length of AD, DC, and, AC.
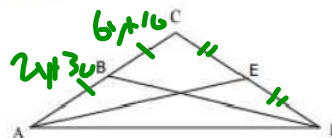
$2y + 4 = y + 12$

$y = 8$

$2y+4$ $y+12$

7) $\overline{DB}$ is an altitude of $\triangle ADC$, and $m\angle DBC = (n^2 + 81)°$. Find the value of n.

8) $\overline{DB}$ and $\overline{AE}$ are medians. If $BC = 6y + 10$, $AB = 2y+30$, $CE = 6x + 12$, $ED = 2x + 60$, then find the value of x and y, and the length of the segments.

$6x+16$

$2y+30$

9) $\overline{YB}$ is an altitude of $\triangle XYZ$, and $m\angle YBZ = (6x - 6)°$. Find the value of x. What is the measure of $\angle YBZ$?