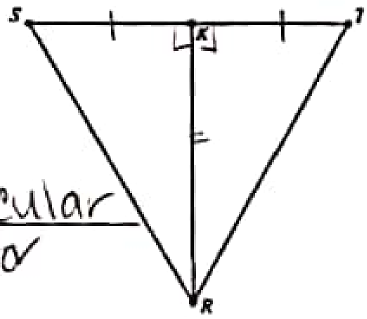
Key

Medians, Altitudes and Bisectors Practice Worksheet
Unit 5

Always, Sometimes or Never

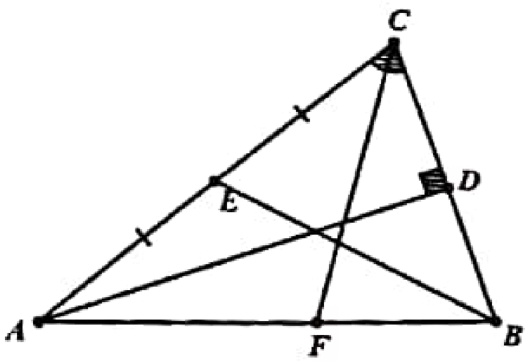
1. An altitude is Always perpendicular to the opposite side.
2. A median is Sometimes perpendicular to the opposite side.
3. An Altitude is Sometimes an angle bisector.
4. An angle bisector is Sometimes perpendicular to the opposite side.
5. A perpendicular bisector of a segment is Always equidistant from the endpoints of the segment.

Complete using the diagram to the right.



6. If K is the midpoint of $\overline{ST}$, then $\overline{RK}$ is called a(n) median of ΔRST.
7. If $\overline{RK} \perp \overline{ST}$, then $\overline{RK}$ is called a(n) Altitude of ΔRST.
8. If K is the midpoint of $\overline{ST}$ and $\overline{RK} \perp \overline{ST}$, then $\overline{RK}$ is called the perpendicular bisector of $\overline{ST}$.
9. If $\overline{RK}$ is both an altitude and a median of ΔRST, then
   a. $\Delta RSK \cong \Delta RTK$ by SAS b. ΔRST is a(n) isosceles triangle.
10. If R is on the perpendicular bisector of $\overline{ST}$, then R is equidistant from S and T. Thus SR = RT.

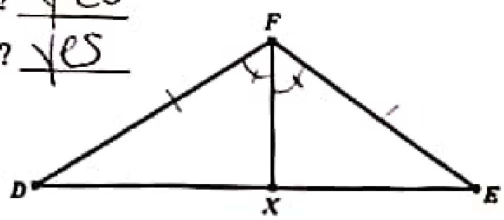
Refer to ΔABC and name the following.



11. a median of ΔABC BE
12. an altitude of ΔABC AD
13. a bisector of an angle of ΔABC CF

Given ΔDEF is isosceles with DF=EF; $\overline{FX}$ bisects $\angle$DFE

14. Would the median drawn from F to $\overline{DE}$ be the same segment $\overline{FX}$? yes
15. Would the altitude drawn from F to $\overline{DE}$ be the same segment $\overline{FX}$? yes

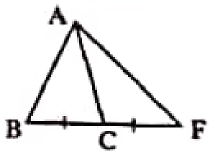


Worksheet Altitude, Median,
Angle bisector, perpendicular Bisector

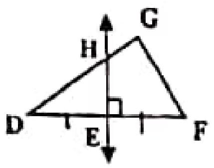
Name ______________________

Name the special segment for 1-4

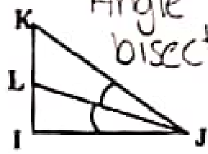
1) $\overline{AC}$ Median



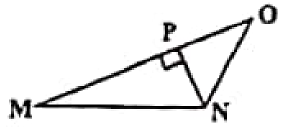
2) $\overline{HE}$ Perp. bisector



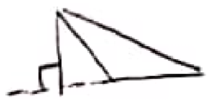
3) $\overline{JL}$ Angle bisector



4) $\overline{PN}$ Altitude



5) Draw a triangle with an altitude outside the triangle.



6) In $\triangle ABC$, $\overline{DE}$ 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.

AD = 20
DC = 20
AC = 40

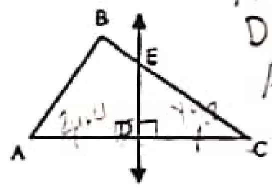
$5(x-12) = 90$
$\frac{5(x-12)}{5} = \frac{90}{5}$

$x - 12 = 18$

$\boxed{x = 30}$

$2y + 4 = y + 12$

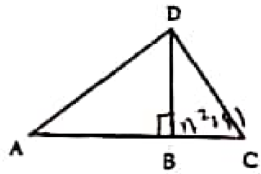
$\boxed{y = 8}$



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

$n^2 + 81 = 90$
$n^2 = 9$

$\boxed{n = \pm 3}$

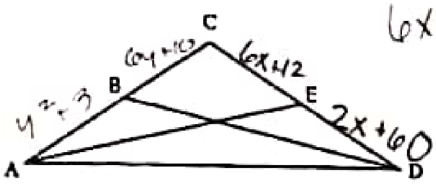


8) $\overline{DB}$ and $\overline{AE}$ are medians. If $BC = 6y + 10$, $AB = y^2 + 3y$, $CE = 6x + 12$, $ED = 2x + 60$, then find the value of x and y, and the length of the segments.

$y^2 + 3 = 6y + 10$
$y^2 - 6y - 7 = 0$

$(y-7)(y+1)$

$\boxed{\begin{matrix} y = 7 \\ y = -1 \end{matrix}}$



$6x + 12 = 2x + 60$
$4x = 48$
$\boxed{x = 12}$

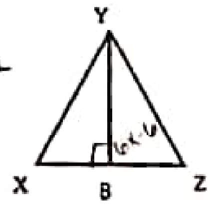
9) $\overline{YB}$ is an altitude of $\triangle XYZ$, and $m\angle YBZ = (6x - 6)°$. Find the value of x. What is the measure of $\angle YBZ$?

$\boxed{m\angle YBZ = 90}$

$6x - 6 = 90$

$6x = 96$

$x = 16$



10) In $\triangle DEG$ $\overline{FH}$ is a perpendicular bisector of $\overline{DG}$ with H on $\overline{DG}$. If $DH = 2y + 3$, $GH = 7y - 42$, and $m\angle FHG = (x^2 + 9)°$, then find the value of x and y. What is the measure of DG?

$\boxed{DG = 42}$

$2y + 3 = 7y - 42$
$45 = 5y$
$\boxed{y = 9}$

$x^2 + 9 = 90$
$x^2 = 81$
$\boxed{x = \pm 9}$