

5-1

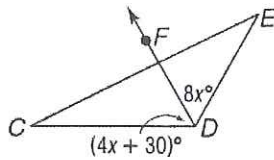
Write whether each sentence is true or false. If false, replace the underlined word or number to make a true statement.

- The altitude of a triangle is a segment whose endpoints are a vertex of a triangle and the midpoint of the side opposite the vertex. *median*
- The centroid of a triangle is the point where the altitudes of the triangle intersect. *orthocenter*
- The point of concurrency of the perpendicular bisectors of a triangle is called the circumcenter.
- The center of a triangle is the intersection of the medians of the triangle. *centroid*
- The orthocenter of a triangle is the intersection of the angle bisectors of the triangle. *incenter*
- The perpendicular bisector of a triangle is a line, segment, or ray that passes through the midpoint of a side and is perpendicular to that side.
- The point of concurrency is the point where three or more lines intersect.
- Every triangle has only 1 altitude. *3*

- false
- false
- true
- false
- false
- true
- true
- false

Find the value of each variable.

9.



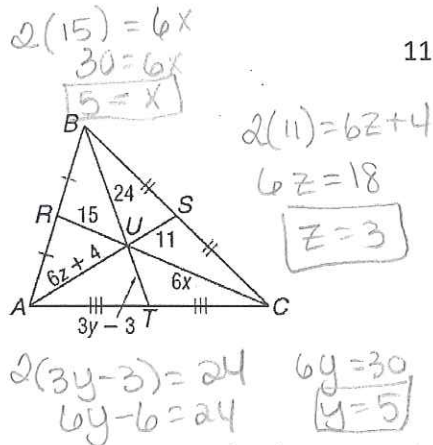
\overline{DF} bisects $\angle CDE$.

$8x = 4x + 30$

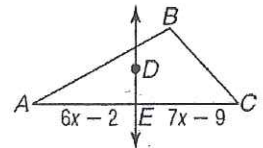
$4x = 30$

$x = 7.5$

10.



11.



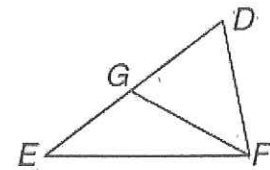
\overline{DE} is the perpendicular bisector of \overline{AC} .

$6x - 2 = 7x - 9$

$7 = x$

For 13-15 Use the figure to determine which is a true statement for the given information.

- \overline{FG} is an altitude.
 - A. $\angle DGF$ is a right angle.
 - B. $DF = EF$
 - C. $DG = GE$
 - D. $\angle DFG \cong \angle EFG$
- \overline{FG} is a median.
 - A. $\angle DGF$ is a right angle.
 - B. $DF = EF$
 - C. $DG = GE$
 - D. $\angle DFG \cong \angle EFG$
- \overline{FG} is an angle bisector.
 - A. $\angle DGF$ is a right angle.
 - B. $DF = EF$
 - C. $DG = GE$
 - D. $\angle DFG \cong \angle EFG$



In the figure, \overline{CP} is an altitude, \overline{CQ} is the angle bisector of $\angle ACB$, and R is the midpoint of \overline{AB} .

16. Find $m\angle ACQ$ if $m\angle ACB = 123 - x$ and $m\angle QCB = 42 + x$.

$$123 - x = 2(42 + x)$$

$$123 - x = 84 + 2x$$

$$39 = 3x$$

$$x = 13$$

$$42 + 13 = 55$$

17. Find AB if $AR = 3x + 6$ and $RB = 5x - 14$.

$$3x + 6 = 5x - 14$$

$$20 = 2x$$

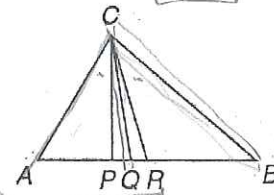
$$x = 10$$

18. Find x if $m\angle APC = 72 + x$.

$$72 + x = 90$$

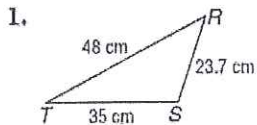
$$x = 18$$

$$2(3(10) + 6) = 72$$

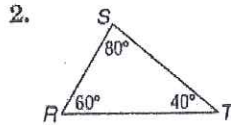


5-2

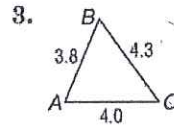
List the angles or sides in order from least to greatest measure.



$$\angle T < \angle R < \angle S$$



$$RS < ST < RT$$



$$\angle C < \angle B < \angle A$$

Determine the relationship between the measures of the given angles.

4. $\angle R, \angle RUS$

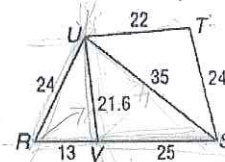
$$35 < 13 + 25 = 38$$

5. $\angle T, \angle UST$

$$35 > 22$$

6. $\angle UVS, \angle R$

$$38 > 21.6$$



UVS

Determine the relationship between the lengths of the given sides.

7. $\overline{AC}, \overline{BC}$

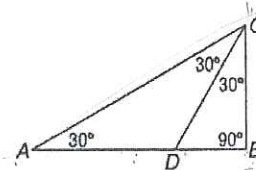
$$90 > 30$$

8. $\overline{BC}, \overline{DB}$

$$30 = 30$$

9. $\overline{AC}, \overline{DB}$

$$90 > 30$$



List all the angles that satisfy the stated conditions.

10. All angles whose measures are less than $m\angle 1$. \rightarrow EXT

$$\angle 5 \text{ \& } \angle 6$$

11. All angles whose measures are greater than $m\angle 2$. \rightarrow int

$$\angle 4$$

12. All angles whose measures are greater than $m\angle 5$. \rightarrow int

$$\angle 1 \text{ \& } \angle 7$$

13. All angles whose measures are less than $m\angle 4$. \rightarrow EX

$$\angle 2 \text{ \& } \angle 3$$

