

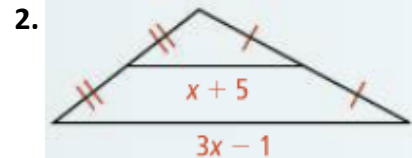
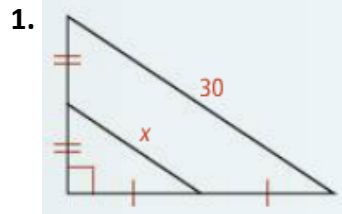
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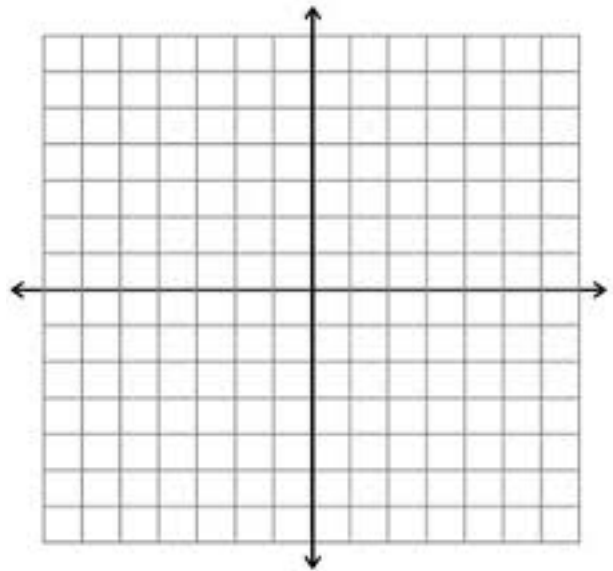
Unit 5: Relationships within Triangles Study Guide

LT#1: Use properties of midsegments to solve problems.

Find the value of x .



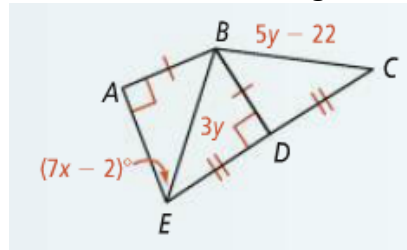
3. $\triangle ABC$ has vertices $A(0,0)$, $B(2,2)$, and $C(5, -1)$. Find the coordinates of L , the midpoint of \overline{AC} , and M , the midpoint of \overline{BC} . Verify that $\overline{LM} \parallel \overline{AB}$ and $LM = \frac{1}{2}AB$.



LT#2: Use properties of perpendicular bisectors and angle bisectors.

4. Describe how to find all the points on a baseball field that are equidistant from second base and third base.

In the figure, $m\angle DBE = 50$. Find each of the following.



5. $m\angle BED$

6. $m\angle BEA$

7. x

8. y

9. BE

10. BC

LT#3: Identify properties of perpendicular bisectors and angle bisectors.

Find the coordinates of the circumcenter of $\triangle DEF$.

11. $D(6,0), E(0,6), F(-6,0)$

12. $D(0,0), E(6,0), F(0,4)$

13. $D(5, -1), E(-1,3), F(3, -1)$

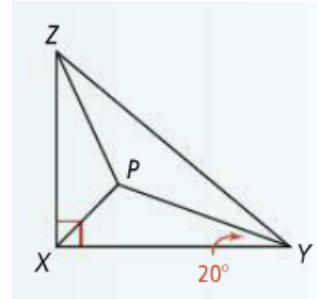
14. $D(2,3), E(8,3), F(8, -1)$

P is the incenter of $\triangle XYZ$. Find the indicated angle measure.

15. $m\angle PXY$

16. $m\angle XYZ$

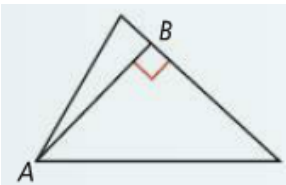
17. $m\angle PZX$



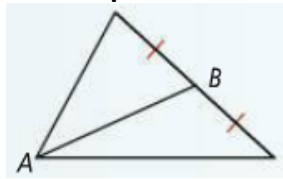
LT#4: Identify properties of medians and altitudes of a triangle.

Determine whether \overline{AB} is a *median*, an *altitude*, or *neither*. Explain.

18.



19.



20. $\triangle PQR$ has medians \overline{QM} and \overline{PN} that intersect at Z . If $ZM = 4$, find QZ and QM .

$\triangle ABC$ has vertices $A(2, 3)$, $B(-4, -3)$, and $C(2, -3)$. Find the coordinates of each point of concurrency.

21. centroid

22. orthocenter

LT#5: Use inequalities involving angles and sides of triangles..

23. In $\triangle RST$, $m\angle R = 70$ and $m\angle S = 80$. List the sides of $\triangle RST$ in order from shortest to longest.

Is it possible for a triangle to have sides with the given lengths? Explain.

24. 5in. , 8in. , 15in.

25. 10 cm, 12 cm, 20 cm

26. The lengths of two sides of a triangle are 12 ft and 13 ft. Find the range of possible lengths of the third side.

Use the figure below. Complete each statement with $>$, $<$, or $=$.

27. $m\angle BAD$ ■ $m\angle ABD$

28. $m\angle CBD$ ■ $m\angle BCD$

29. $m\angle ABD$ ■ $m\angle CBD$

