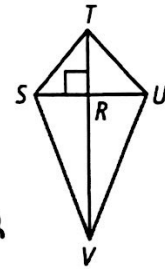Name _____ Key

5-1 Additional Practice

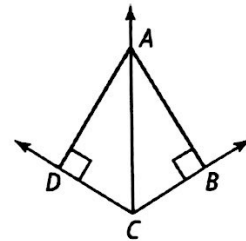Perpendicular and Angle Bisectors

Use the figure at the right for Exercises 1–3.

1. If $RU = 16$, $UT = 20$, and $SR = 16$, what is the perimeter of $\triangle SUT$?   72

2. If $SV = 38$, $SU = 26$, and the perimeter of $\triangle SUV$ is 102, what is the value of RU?   13

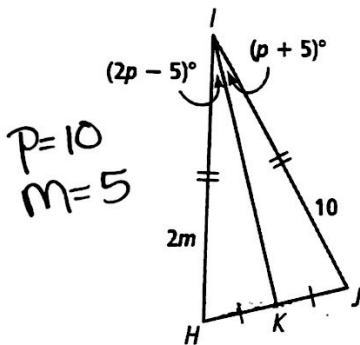3. If $\overline{SV} \cong \overline{UV}$, $SR = 4x - 1$, and $RU = x + 8$, what is the value of SU?   22

Use the figure at the right for Exercises 4 and 5.

4. If $m\angle BAC = 33°$, $BC = 18$, and $CD = 18$, what is $m\angle DAB$?   66

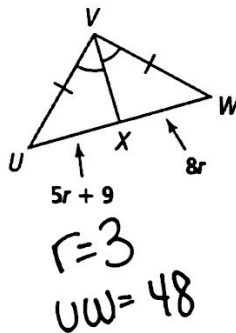5. If $m\angle DAB = 74°$, $m\angle CAD = 37°$, and $BC = 9.2$, what is the value of CD?   9.2
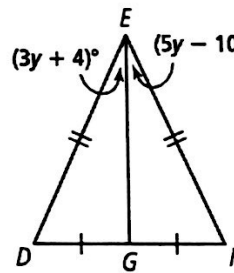
For Exercises 6–8, find the values.

6. m, p

$P = 10$
$m = 5$

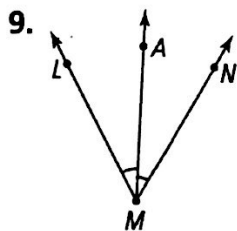$(2p - 5)°$ $(p + 5)°$
$2m$ 10

7. r, UW

$5r + 9$ $8r$
$r = 3$
$UW = 48$

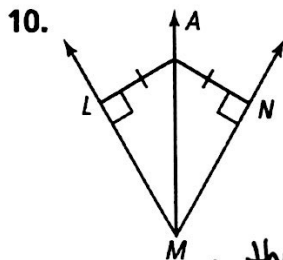8. y, $m\angle DEF$

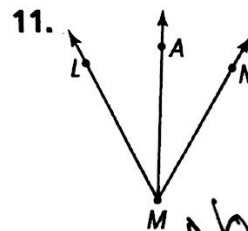$(3y + 4)°$ $(5y - 10)°$
$y = 7$
$m\angle DEF = 50$

For Exercises 9–11, determine whether point A must be on the bisector of $\angle LMN$. Explain.

9.

yes, the ∡ is cut in half

10.

yes, the point is equidistant to the sides

11.

No-not enough info

5-4 Reteaching
Inequalities in One Triangle

1. Match each triangle on the left with the correct statement on the right.

$\overline{DE}$ is the shortest side, so $\angle F$ is the smallest angle.

$\angle F$ is the largest angle, so $\overline{DE}$ is the longest side.

$m\angle D < m\angle F < m\angle E$, so $EF < DE < DF$.

2. Zachary says a triangle can have sides with lengths 11 in., 7 in., and 3 in. because $3 + 11 > 7$ and $7 + 11 > 3$. Explain Zachary's error.

no b/c $7+3$ is not greater than 11

$10 > 11$
No

3. Two sides of a triangle are 11 ft and 12 ft long. What are the possible lengths of the third side of the triangle?

Let x represent the length of the third side. Use the Triangle Inequality Theorem to write three inequalities. Then solve each inequality for x.

$x + 11 > 12$ $x + 12 > $ _____   _____ $+$ _____ $> $ _____

$x > 1$ $x > $ _____   _____ $> $ _____

The side length can be any value between __1__ ft and __23__ ft long.

5-3 Additional Practice
Medians and Altitudes

For each triangle, identify whether $\overline{AB}$ is an altitude, a median, or neither.

1.

median

2.

altitude

3.

altitude

4.

nothing

5-3 Reteaching
Medians and Altitudes

1. Match the indicated part of each triangle to the term that best describes it.

point P	$\overline{AB}$	point D	$\overline{AB}$
orthocenter	median	centroid	altitude

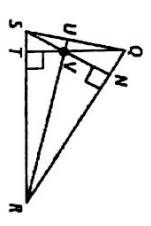median   centroid   altitude   orthocenter

2. Jacy said point V is the circumcenter of △QRS. What error did Jacy likely make? What is point V actually called?
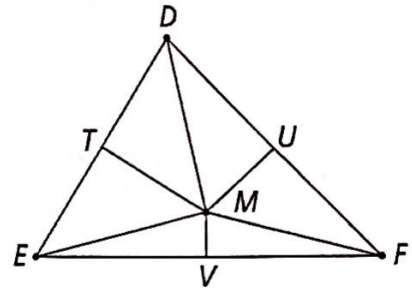

V is an orthocenter b/c its where the altitudes meet

5-2 Additional Practice

Bisectors in Triangles

Exercises 1–3. The perpendicular bisectors of △DEF are $\overline{TM}$, $\overline{UM}$, and $\overline{VM}$.

1. What is the circumcenter of △DEF? Explain your reasoning.

   M b/c its the intersection of ⊥ bisectors

2. What do you know about MD, ME, and MF? Explain your reasoning.

   equidistant b/c its the circumcenter

3. Name three isosceles triangles.

   △EMF △DME △DMF

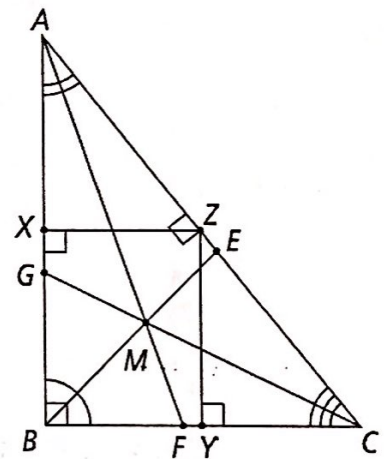**Exercises 4–5. Points X, Y, and Z are the midpoints of the sides of △ABC.**

4. What point is the center of the circle that contains A, B, and C? Explain your reasoning.
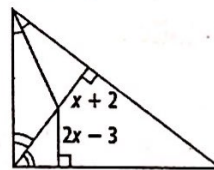
   Z b/c its the point of concurrency of ⊥ bisectors

5. What point is the center of the circle that intersects each side of △ABC at exactly one point? Explain your reasoning.

   M b/c its the incenter

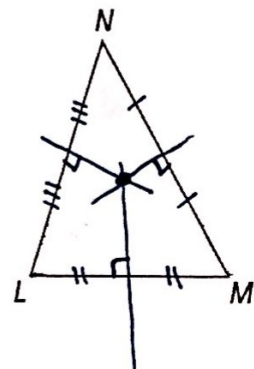6. **Understand** What is the diameter of the inscribed circle of the triangle?

   14

   $x + 2$
   $2x - 3$

7. **Apply** A farmer wants to place a hay bale so that it is the same distance from Gates L, M, and N. Construct the location P for the bale of hay.

   use ⊥ bisectors

5-2 Reteaching

Bisectors in Triangles

**1.** Write the letter of each figure beside its definition.

C The **circumcenter** is the point of concurrency of the perpendicular bisectors of a triangle.

A The **circumscribed circle** is centered at the circumcenter and contains the vertices of a triangle.
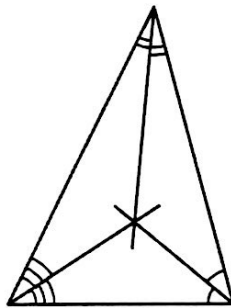
B The **incenter** is the point of concurrency of the angle bisectors of a triangle.

D The **inscribed** circle is centered at the incenter, and the sides of the triangle touch the circle.
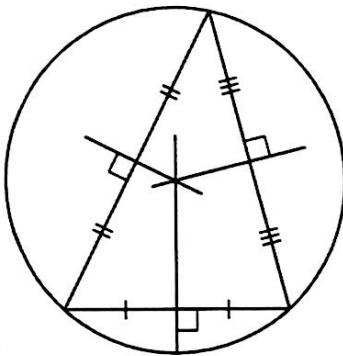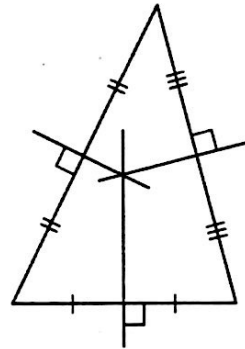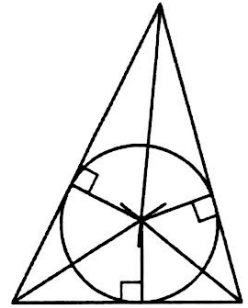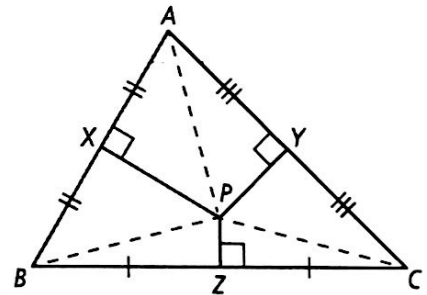
A. B. C. D.

2. Timothy says $PX = PY = PZ$.

a. What mistake did Timothy likely make?

He believed P was the intersection of altitudes

b. From what points is P equidistant? Explain your reasoning.

P is equidistant to each of the vertices

3. Complete the sentences below to find the value of x.

$\overline{AP}, \overline{BP},$ and $\overline{CP}$ are the ___∠ bisectors___ of $\triangle ABC$.

So P is the ___incenter___ of $\triangle ABC$.

The incenter is equidistant from the ___sides___ of $\triangle ABC$, so $PS = $ ___9___ ($b/c = PT$)

Therefore, $x = $ ___9___.