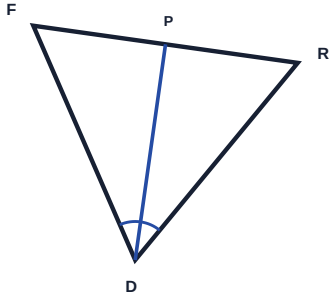


Triangle Angle Bisectors

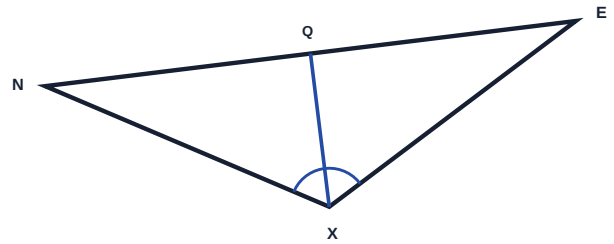
Use equal angle halves, perpendicular incenter distances, and right-triangle relationships to find each missing measure.

1. angle FDR = 63 deg. Find angle FDP.



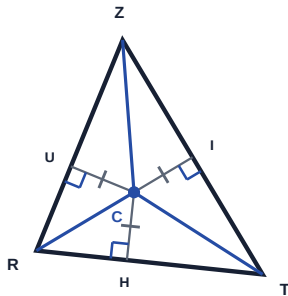
angle FDP = _____

2. angle NXQ = 60 deg. Find angle NXE.



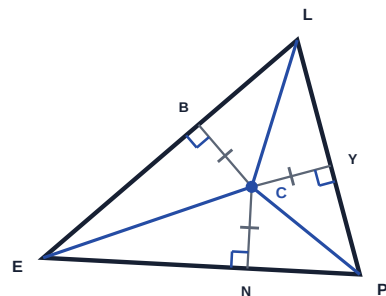
angle NXE = _____

3. CH = 6 and RC = 10. Find RH.



RH = _____

4. CN = 8 and EN = 20. Find EC.

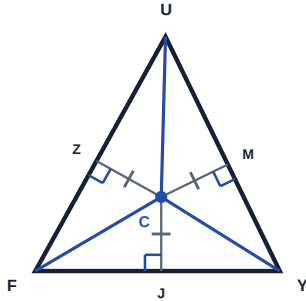


EC = _____

Triangle Angle Bisectors

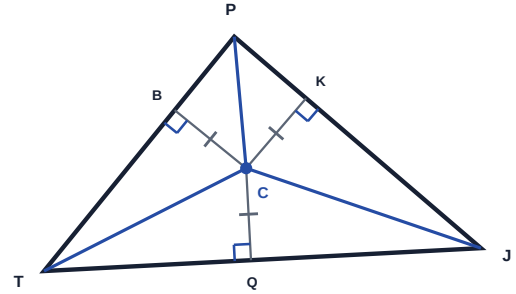
Use equal angle halves, perpendicular incenter distances, and right-triangle relationships to find each missing measure.

5. $CJ = 10$ and $FJ = 17$. Find FC .



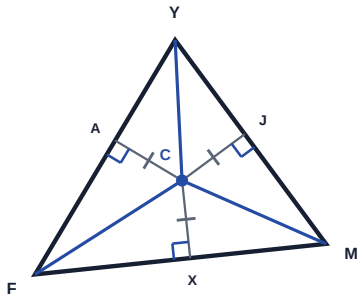
$FC =$ _____

6. $CQ = 4$ and $TQ = 9$. Find TC .



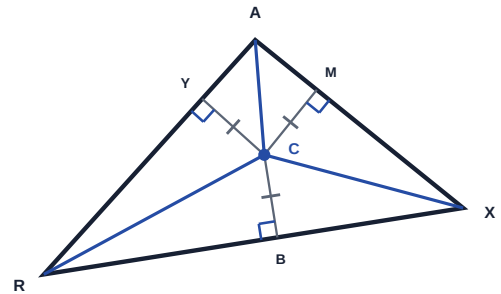
$TC =$ _____

7. $CX = 12$. Find CJ .



$CJ =$ _____

8. $CB = 4$ and $RC = 12$. Find RB .



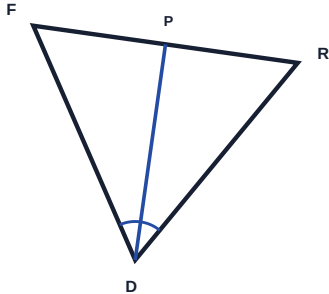
$RB =$ _____

Triangle Angle Bisectors

Worked Answer Key

Use equal angle halves, perpendicular incenter distances, and right-triangle relationships to find each missing measure.

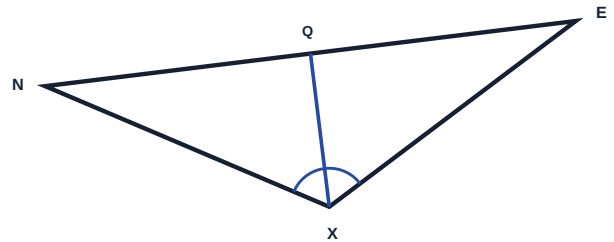
1. angle FDR = 63 deg. Find angle FDP.



An angle bisector divides an angle into two equal angles.
 $63 / 2 = 63/2$ deg.

Answer: $63/2$ deg

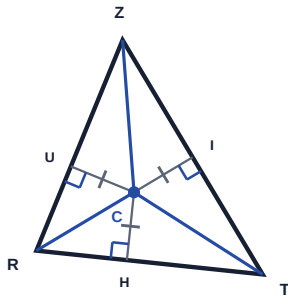
2. angle NXQ = 60 deg. Find angle NXE.



The two angle halves are equal.
 $60 + 60 = 120$ deg.

Answer: 120 deg

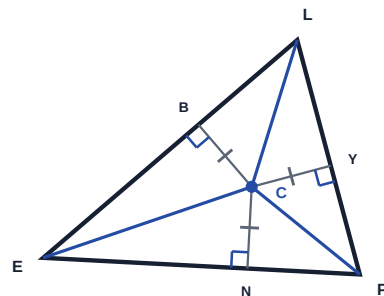
3. CH = 6 and RC = 10. Find RH.



The incenter radius is perpendicular to the side, so this is a right triangle.
 $RH^2 = 10^2 - 6^2 = 64$.
 $RH = 8$ (approximately 8.00).

Answer: 8

4. CN = 8 and EN = 20. Find EC.



The incenter radius is perpendicular to the side, so this is a right triangle.
 $EC^2 = 8^2 + 20^2 = 464$.
 $EC = 4\sqrt{29}$ (approximately 21.54).

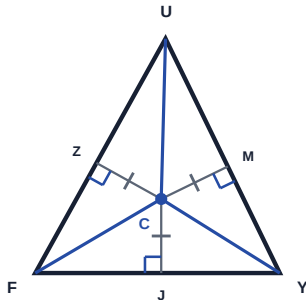
Answer: $4\sqrt{29}$

Triangle Angle Bisectors

Worked Answer Key

Use equal angle halves, perpendicular incenter distances, and right-triangle relationships to find each missing measure.

5. $CJ = 10$ and $FJ = 17$. Find FC .



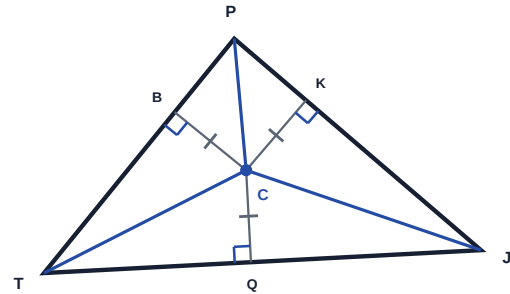
The incenter radius is perpendicular to the side, so this is a right triangle.

$$FC^2 = 10^2 + 17^2 = 389.$$

$$FC = \sqrt{389} \text{ (approximately 19.72).}$$

Answer: $\sqrt{389}$

6. $CQ = 4$ and $TQ = 9$. Find TC .



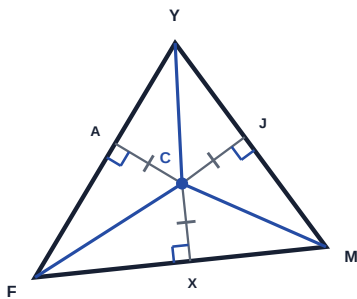
The incenter radius is perpendicular to the side, so this is a right triangle.

$$TC^2 = 4^2 + 9^2 = 97.$$

$$TC = \sqrt{97} \text{ (approximately 9.85).}$$

Answer: $\sqrt{97}$

7. $CX = 12$. Find CJ .

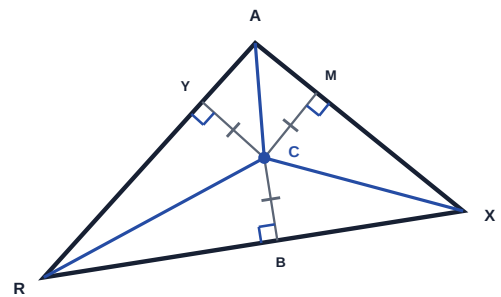


An incenter is equally distant from all three sides.

$$CX = CJ = 12.$$

Answer: 12

8. $CB = 4$ and $RC = 12$. Find RB .



The incenter radius is perpendicular to the side, so this is a right triangle.

$$RB^2 = 12^2 - 4^2 = 128.$$

$$RB = 8\sqrt{2} \text{ (approximately 11.31).}$$

Answer: $8\sqrt{2}$