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Chapter 11B: Coordinate Geometry Triangle Proofs
Topic 1: Classifying Triangles

Recall the classifications of triangles:

By Sides:

- **Scalene** Triangle: All three sides of the triangle have different lengths.
- **Isosceles** Triangle: Two of the three sides of the triangle have the same length.
- **Equilateral** Triangle: All three sides of the triangle have the same length.

To classify any triangle by its SIDES use: _____

By Angles:

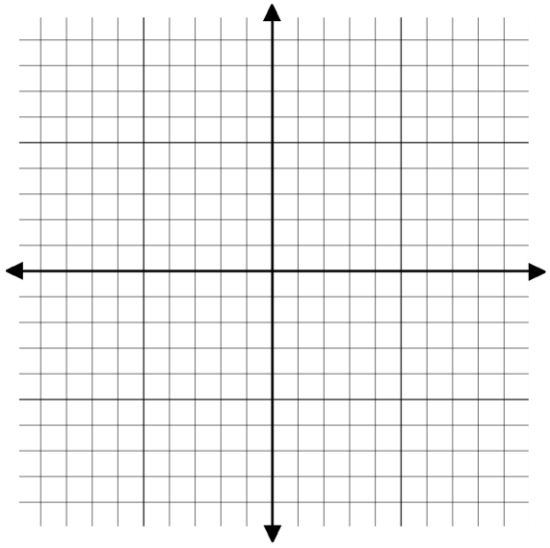
- **Right** Triangle: One right angle
- Acute Triangle: All acute angles
- Obtuse Triangle: One obtuse angle

To classify a RIGHT triangle use: _____

Then _____

Practice Examples:

1) The coordinates of the vertices of ΔABC are $A(-5,3)$, $B\ (-1,-2)$ and $C(2,3)$. Show that ΔABC is scalene.



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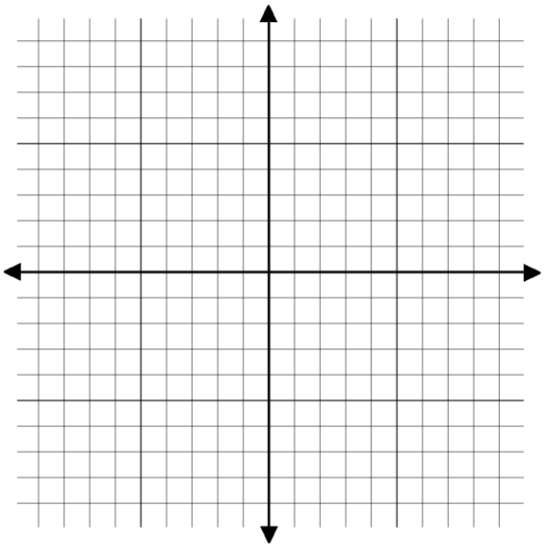
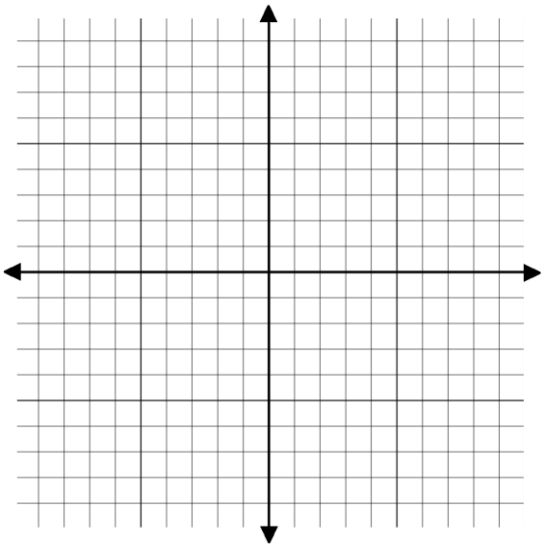
2) Given ΔHIJ with $H(5,2)$, I $(6,1)$ and $J(8,4)$. Using coordinate geometry prove that ΔHIJ is an isosceles triangle.



3) If the vertices of ΔPQR are $P(-6,-5)$, Q $(4,-5)$ and $R(4,-1)$, show that it is a right triangle.



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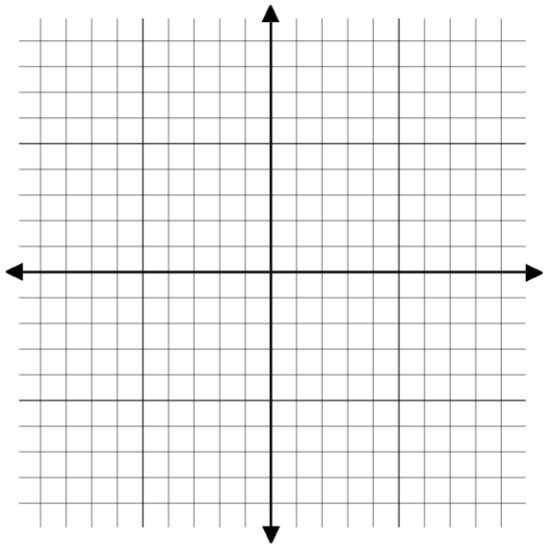
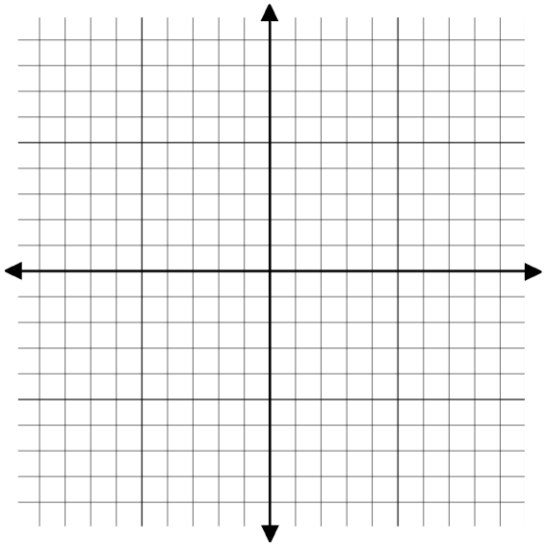
4) If the vertices of ΔPQR are $P(0,0)$, $Q\ (2,0)$ and $R(1,3)$, classify the triangle.



5) The coordinates of the vertices of ΔHIJ are $H(-3,3)$, $I\ (1,-3)$ and $J(3,7)$. Using coordinate geometry prove that ΔHIJ is an isosceles right triangle.



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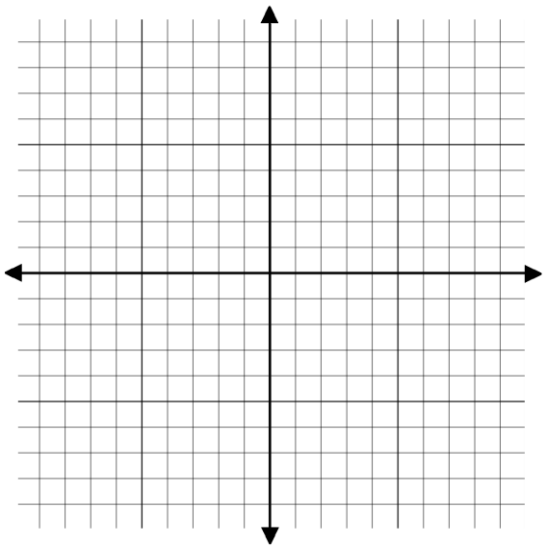
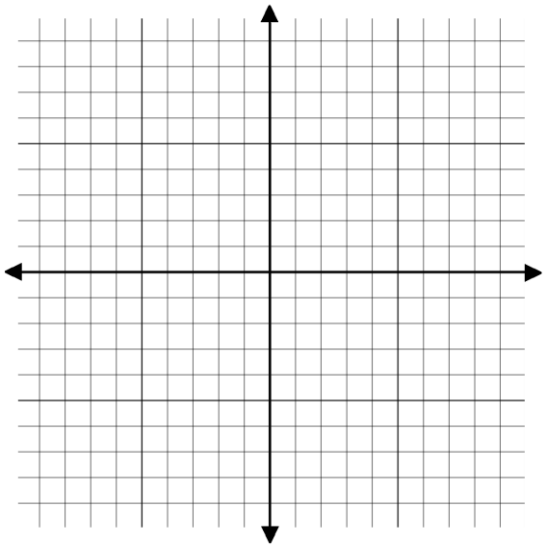
Chapter 11B: Coordinate Geometry Triangle Proofs
Topic 1 Homework

1) The coordinates of the vertices of ΔABC are $A(-3,-1)$, $B\ (-1,7)$ and $C(2,1)$. Show that ΔABC is a scalene triangle.



2) If the vertices of ΔDEF are $D(-6,3), E(-2,3)$ and $F(0,1)$, show that ΔDEF is not an isosceles triangle.



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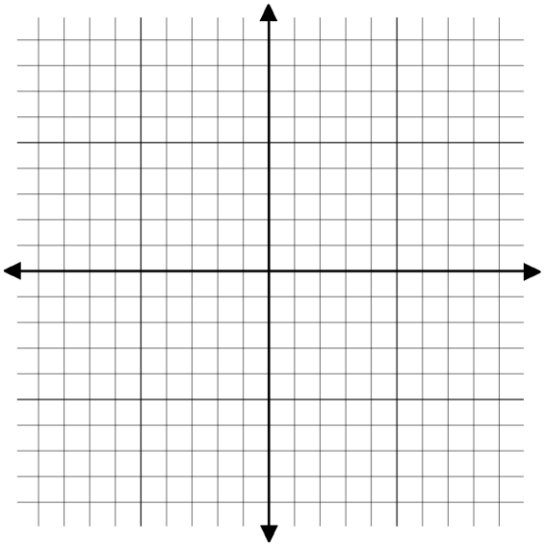
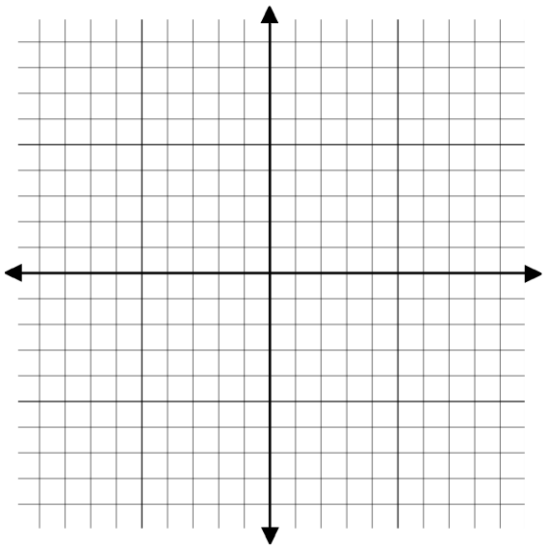
3) If the coordinates of the vertices of ΔPQR are $P(6,4)$, $Q\ (-2,9)$ and $R(3,7)$. Using coordinate geometry classify the triangle.



4.) The coordinates of the vertices of ΔVAC are $V(-9,-2)$, $A\ (-3,4)$ and $C(3,-2)$. Using coordinate geometry prove that ΔVAC is an isosceles right triangle.



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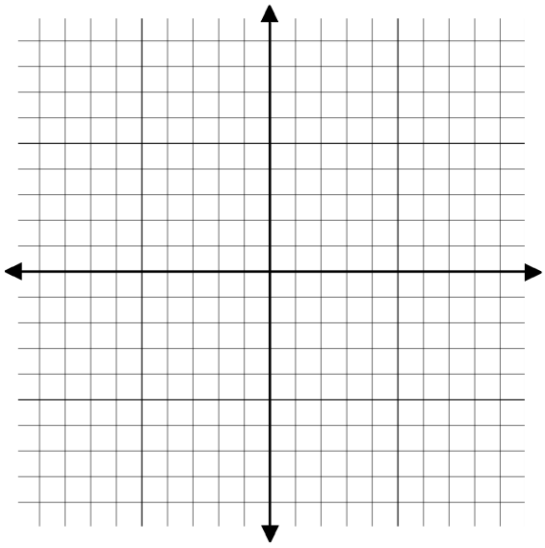
5.) If the coordinates of the vertices of ΔHIJ are $H(0,-2)$, $I\ (5,-2)$ and $J(0,10)$. Classify the triangle by side and angle.



Extra examples if you need more practice

1) The coordinates of the vertices of ΔABC are $A(5,4)$ $B(2,7)$ and $C(-3,6)$. Show that ΔABC is a scalene triangle.

2) If the coordinates of the vertices of ΔDEF are $D(8,-2)$ $E(-4,6)$ and $F(1,5)$. Using coordinate geometry classify the triangle.

3) If the coordinates of the vertices of ΔDEF are $D(2,3)$ $E(0,0)$ and $F(4,0)$. Show that ΔDEF is an isosceles triangle.

4) If the coordinates of the vertices of ΔSTU are $S(-4,3)$ $T(4,3)$and $U(0,8)$. Using coordinate geometry classify the triangle.

5) If ΔWXY has the vertices $W(3,4)$ $X(3,8)$ and $Y(6,4)$, classify the triangle.

6) If the vertices of ΔLMN are $L(4,-1)$ $M(5,6)$ and $N(1,3)$ show that ΔLMN is an isosceles right triangle.

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Coordinate Geometry Triangle Proofs (HW)

1) $AB = \sqrt{68}$
$BC = \sqrt{45}$
$AC = \sqrt{29}$

2) $DE = \sqrt{16}$
$EF = \sqrt{8}$
$DF = \sqrt{40}$

3) $PQ = \sqrt{89}$
$QR = \sqrt{29}$
$PR = \sqrt{18}$
$\therefore$ ***scalene***

4.) $VA = \sqrt{72}$
$AC = \sqrt{72}$
$VC = \sqrt{144}$

5.) $HI = \sqrt{25}$
$IJ = \sqrt{169}$
$HJ = \sqrt{144}$
$\therefore$ *Scalene Right*
$\therefore$ *not Isosceles Right*

1) $AB = \sqrt{18}$
$BC = \sqrt{26}$
$AC = \sqrt{68}$

2) $DE = \sqrt{208}$
$EF = \sqrt{26}$
$DF = \sqrt{98}$

3) $DE = \sqrt{13}$
$EF = \sqrt{16}$
$DF = \sqrt{13}$

4) $ST = \sqrt{64}$
$TU = \sqrt{41}$
$SU = \sqrt{41}$

5) $WX = \sqrt{16}$
$XY = \sqrt{25}$
$WY = \sqrt{9}$

6) $LM = \sqrt{50}$
$MN = \sqrt{25}$
$LN = \sqrt{25}$