NAME:_____

1. Can a right triangle contain an obtuse angle? Explain.

2. If the sum of two angles is equal to the third angle, then the triangle is a right triangle. Justify this algebraically.

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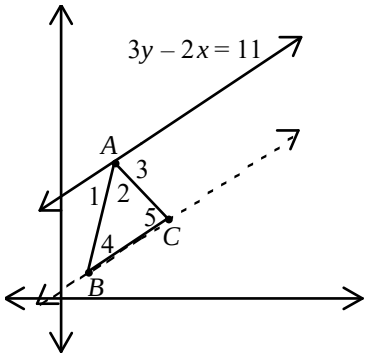
3. Graph $3y - 2x = 11$ and the points $A(2, 5)$, $B(1, 1)$, and $C(4, 3)$ on the same coordinate plane. Use the triangle and the line to show that the sum of the angles in a triangle is 180°.

4. Find at least three examples of triangles used in the world around you and classify the triangles.

5. (a) Define *scalene triangle*. (b) Define *acute triangle*.

[1] No, because one angle is a right angle, the other two angles have a sum of $90°$; therefore both must be less than $90°$.

[2]
$$\begin{aligned} a+b&=c \\ a+b+c&=180 \\ c+c&=180 \\ 2c&=180 \\ c&=90 \end{aligned}$$



[3] $\overleftrightarrow{BC}$ and $3y-2x=11$ are parallel because they both have a slope of $\frac{2}{3}$. $m\angle 1+m\angle 2+m\angle 3=180$ since they form a straight $\angle$. $\angle 1\cong 4$ and $\angle 5\cong 3$ by the Alternate Interior Angles Postulate. By substitution, $m\angle 4+m\angle 2+m\angle 5=180$. Therefore the sum of the angles of ΔABC is 180.

[4] Answers may vary. Check students' work.

[5] (a) A(n) scalene triangle is a triangle that contains three sides of unequal length.
(b) A(n) acute triangle is a triangle that contains three acute angles.