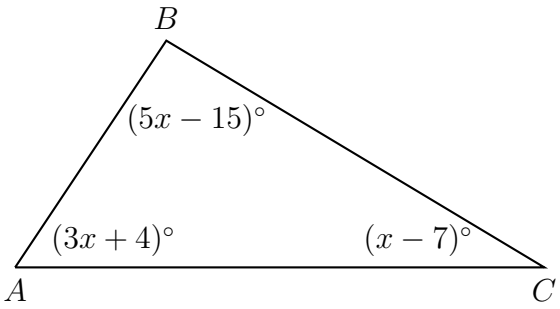
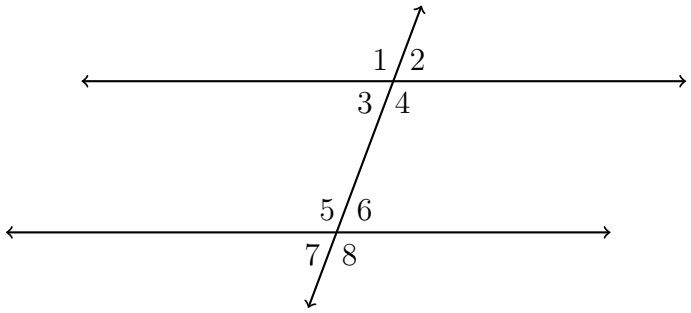
Homework: Triangles, transversals, proof

1. In $\triangle ABC$ shown below, $m\angle A = (3x+4)^\circ$, $m\angle B = (5x-15)^\circ$, and $m\angle C = (x-7)^\circ$. What is $m\angle A$?



2. Given two parallel lines and a transversal, as shown below.

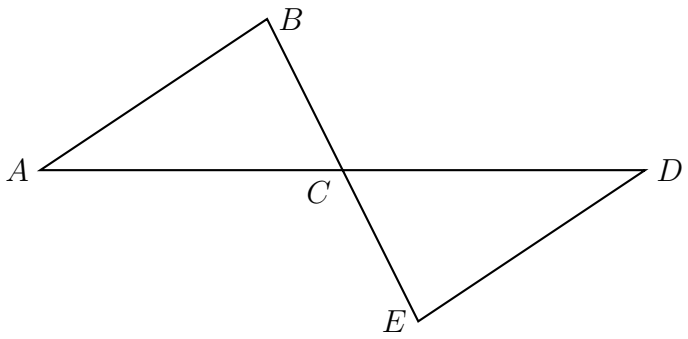


   (a) State the angle corresponding with $\angle 5$.

   (b) Given $m\angle 3 = 78^\circ$ and $m\angle 5 = 3x^\circ$. Find x.

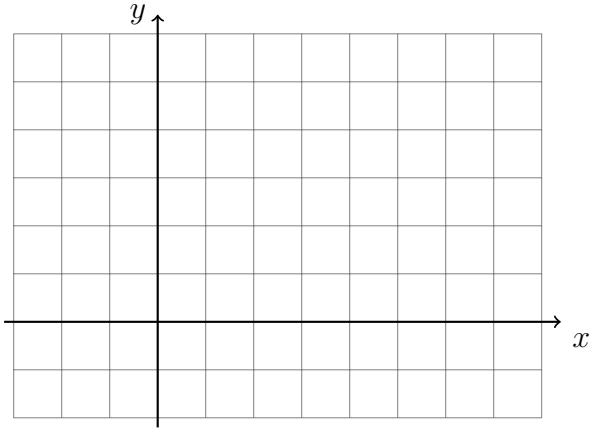
   (c) In a proof, what reason would justify $\angle 3 \cong \angle 6$? _____

3. Given $\triangle ABC$ and $\triangle DEC$ with $\angle B \cong \angle E$. C is the midpoint of $\overline{BE}$. Prove $\triangle ABC \cong \triangle DEC$.



Statement	Reason
1) _____	1) Given
2) _____	2) Given
3) _____	3) Given
4) $\angle BCA \cong \angle ECD$	4) _____
5) _____	5) Definition of a midpoint
6) $\triangle ABC \cong \triangle DEC$	6) _____

4. On the graph below, draw $\overline{AB}$, with $A(-2, 1)$ and $B(6, 3)$, labeling the end points. Determine and state the coordinates of the midpoint M of $\overline{AB}$ and mark and label it on the graph.



5. $A(3,1)$ is one endpoint of $\overline{AB}$. The segment's midpoint is $M(7,6)$. Find the other endpoint, B.

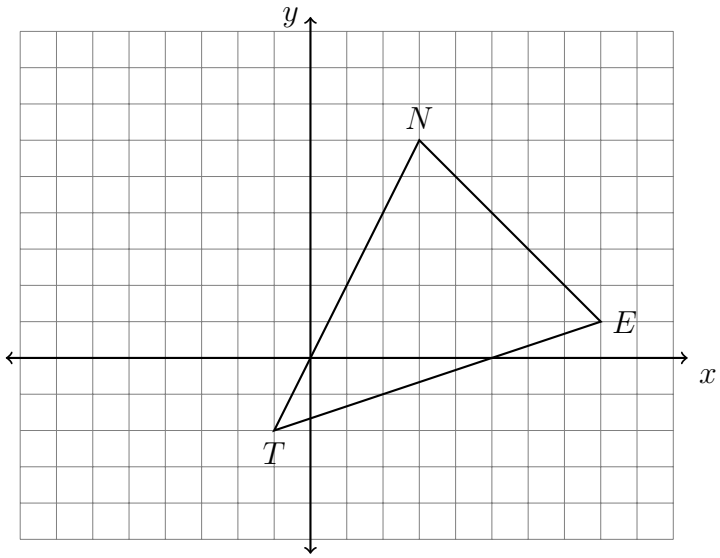
6. Apply the translation $(x,y) \to (x-2, y+4)$ to the point $A(2,-1)$.

7. What is the image of $B(2,7)$ under a reflection across the x-axis?

8. State the translation that would map $C(-3,1)$ onto $C'(4,0)$.

9. A translation maps $D(1,9) \to D'(4,3)$. What is the image of $E(6,-2)$ under the same translation?

10. Spicy: Triangle $\triangle TEN$ is graphed on the set of axes below. The vertices of $\triangle TEN$ have the coordinates $T(-1,-2)$, $E(8,1)$, and $N(3,6)$.



(a) Draw an altitude through point N perpendicular to $\overline{TE}$.

(b) What is the length of the altitude drawn through N?

(c) What is the length of the base, TE?

(d) Find the area of $\triangle TEN$.