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Mr. Schlansky

Date _____
Geometry

Transformations Review Sheet

1. If $\triangle A'B'C'$ is the image of $\triangle ABC$, under which transformation will the triangles *not* be congruent?
1) reflection over the x-axis
2) translation to the left 5 and down 4
3) dilation centered at the origin with scale factor 2
4) rotation of 270° counterclockwise about the origin

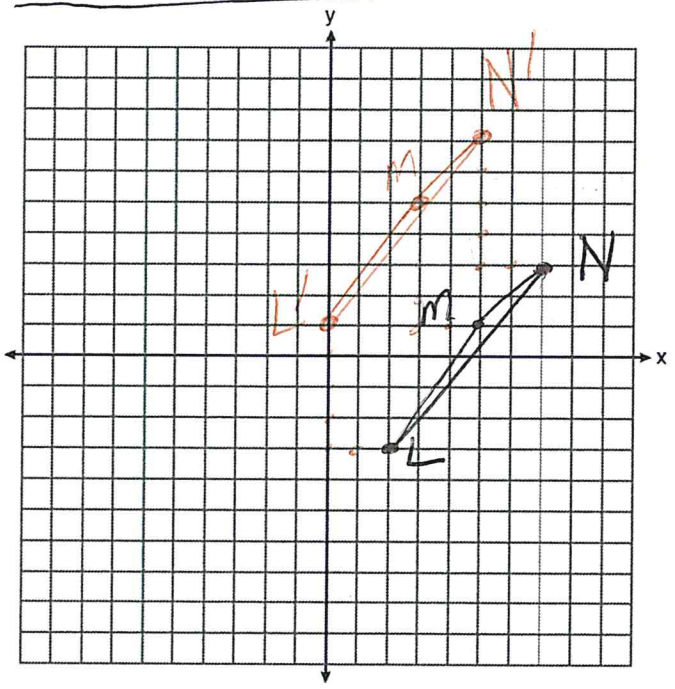
must be a dilation

2. Under which transformation would $\triangle A'B'C'$, the image of $\triangle ABC$, *not* be congruent to $\triangle ABC$?
1) reflection through the point (2,-1)
2) rotation of 90° clockwise about the origin
3) translation of 3 units right and 2 units down
4) dilation with a scale factor of 2 centered at the origin

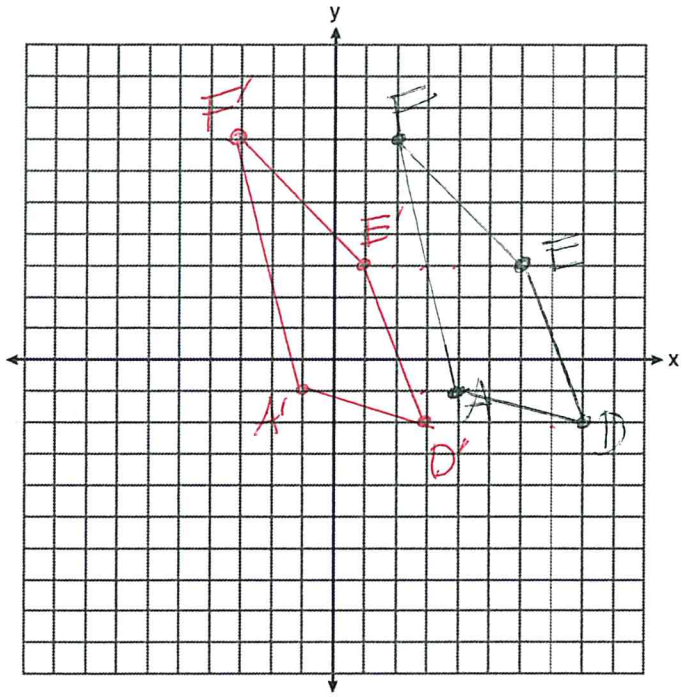
must be a dilation

3. What is the image of ΔLMN with vertices $L(2,-3)$, $M(5,1)$ and $N(7,3)$ after a translation 2 units to the left and 4 units up?

Can't

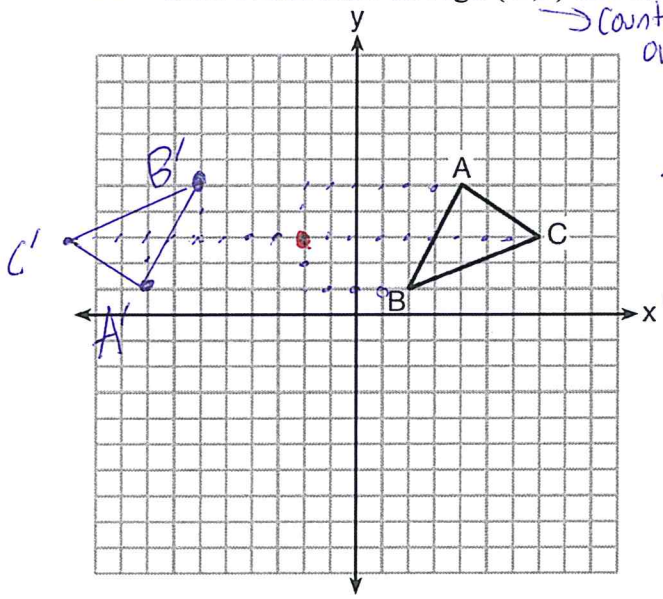


4. Graph the image of quadrilateral ADEF with vertices $A(4,-1)$, $D(8,-2)$, $E(6,3)$, and $F(2,7)$ after a translation 5 units to the left?



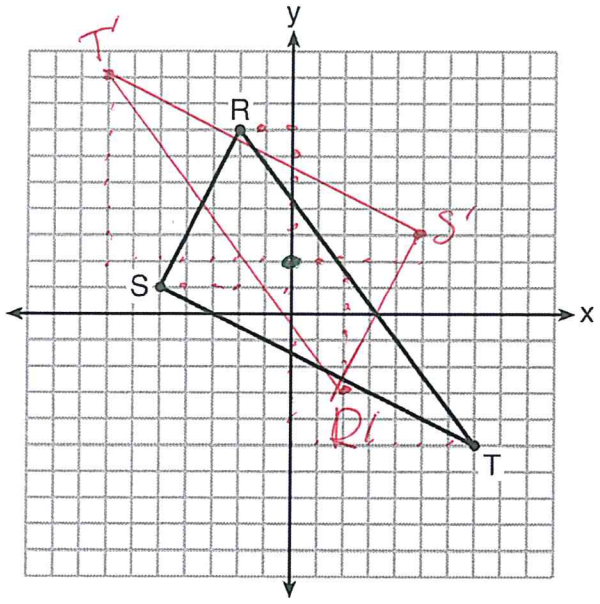
5. In the diagram below, $\triangle ABC$ is graphed. Graph and state the coordinates of the image of $\triangle ABC$ after a reflection through (-2,3) and label it $\Delta A'B'C'$.

→ count to what you're reflecting over in two directions

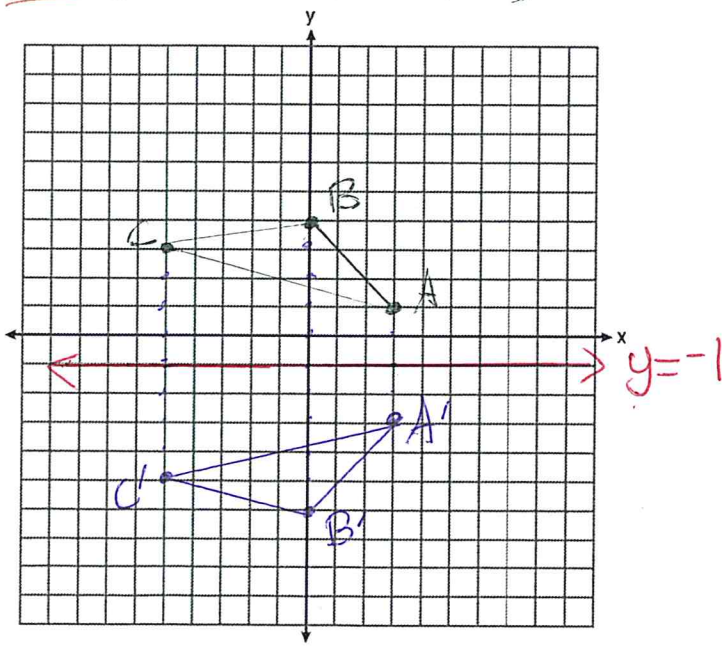


$A'(-8,1)$
$B'(-6,5)$
$C'(-11,3)$

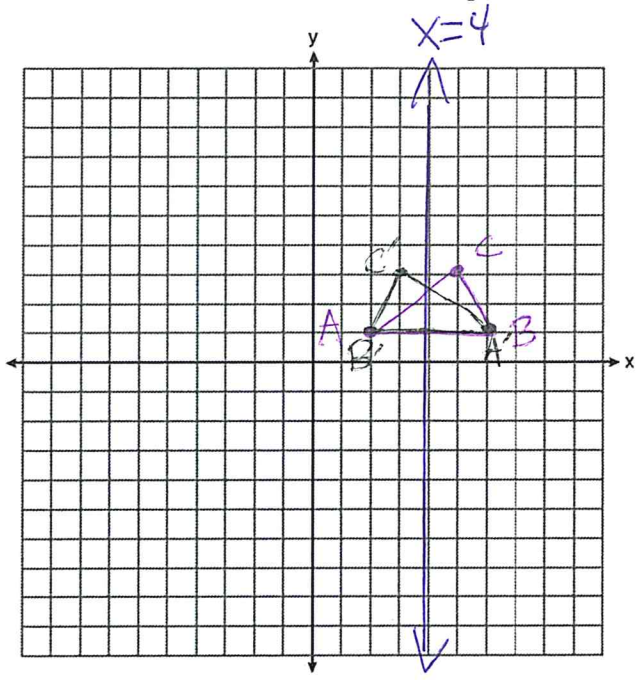
6. Triangle RST is graphed on the set of axes below. Graph the image of ΔRST after a point reflection through (0,2) and label it $\Delta R'S'T'$.



7. On the grid below, graph and label triangle ABC with vertices $A(3,1)$, $B(0,4)$, and $C(-5,3)$. On the same grid, graph and label triangle $A'B'C'$, the image of ABC after a reflection over $y=-1$. Count to what you're reflecting over in one direction.



8. Triangle ABC has coordinates $A(2,1)$, $B(6,1)$, $C(5,3)$. What is the image of this triangle after a reflection over the line $x=4$. Graph both the image and the pre image.



9. Triangle $A'B'C'$ is the image of triangle ABC after a translation of 2 units to the right and 3 units up. Is triangle ABC congruent to triangle $A'B'C'$? Explain why.

Yes! A translation is a rigid motion. A rigid motion preserves size and angle measure producing a congruent figure.

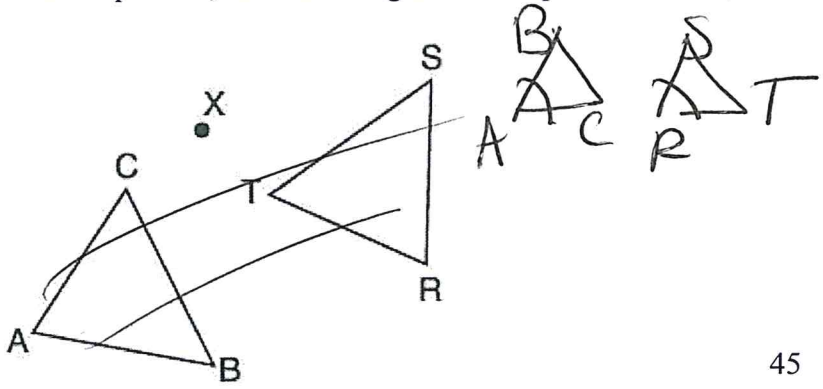
10. After a reflection over a line, $\Delta A'B'C'$ is the image of ΔABC. Explain why triangle ABC is congruent to triangle $\Delta A'B'C'$.

A reflection is a rigid motion. A rigid motion preserves size and angle measure producing a congruent figure

11. After a counterclockwise rotation about point X, scalene triangle ABC maps onto $\triangle RST$, as shown in the diagram below.

Which statement must be true?

1) $\angle A \cong \angle R$
2) $\angle A \cong \angle S$
3) $\overline{CB} \cong \overline{TR}$
4) $\overline{CA} \cong \overline{TS}$

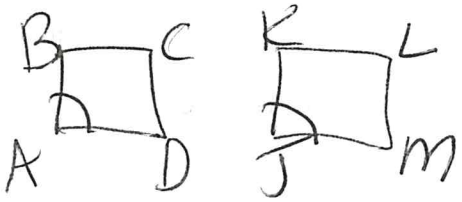


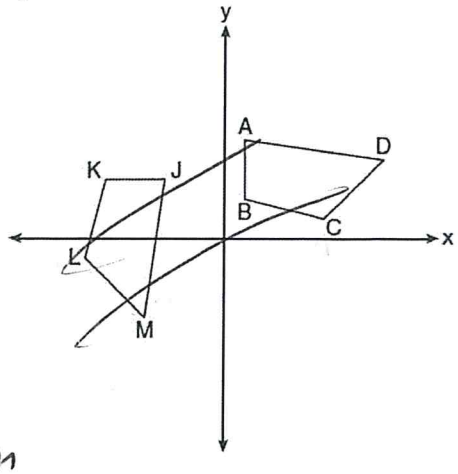
12. In the diagram below, a sequence of rigid motions maps *ABCD* onto *JKLM*.

Which of the following statements must be true?

3) $\angle L \cong \angle B$ 3) $\overline{JK} \cong \overline{AC}$

4) $\angle A \cong \angle J$ 4) $\overline{JM} \cong \overline{AB}$





point reflection is not a line reflection

13. Which of the following sequences of rigid motions would map ΔGIA onto ΔJET?

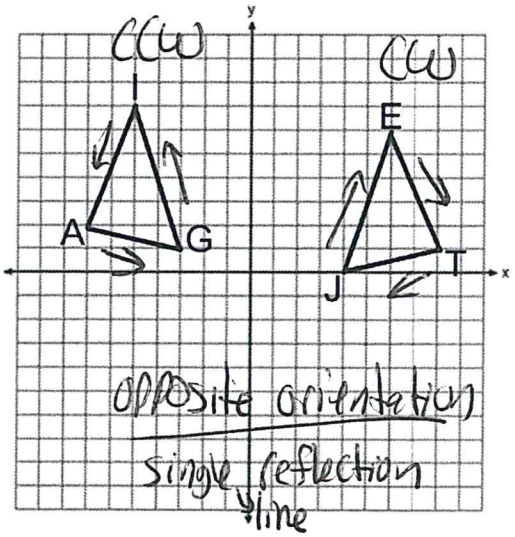
1) point reflection through (0.5,0.5) followed by a translation 11 right and 1 down

2) reflection over the y-axis followed by a translation right 1 and down 1

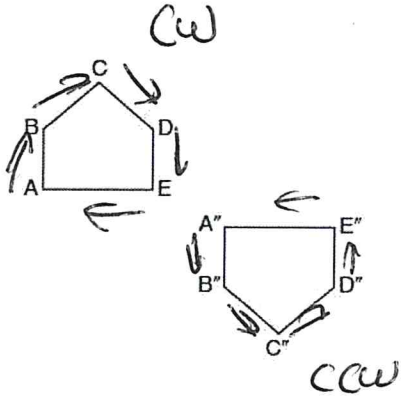
3) rotation of 90 degrees clockwise centered at the origin followed by a translation right 1 and up 1

4) reflection over $x=1$ followed by a reflection over the x-axis

double reflection



14. Identify which sequence of transformations could map pentagon *ABCDE* onto pentagon *A"B"C"D"E"*, as shown below.



opposite orientation

must be a single line reflection

1) dilation followed by a rotation

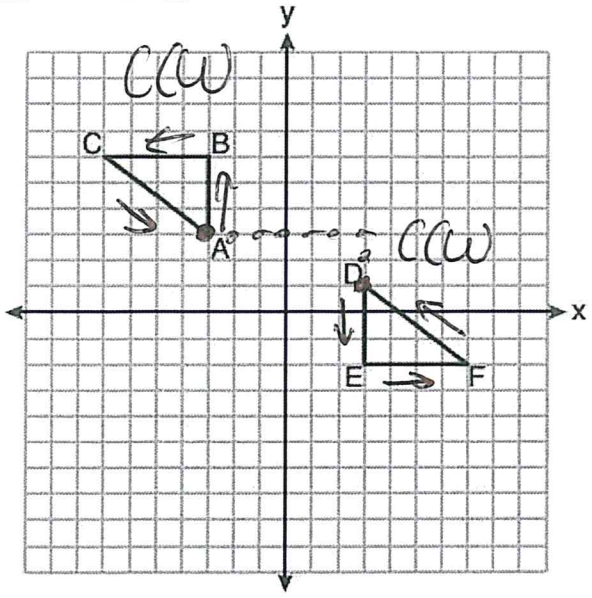
2) translation followed by a rotation

3) line reflection followed by a translation

4) line reflection followed by a line reflection

double reflection

15. On the set of axes below, $\triangle ABC \cong \triangle DEF$. Describe a sequence of rigid motions that maps $\triangle ABC$ onto $\triangle DEF$.

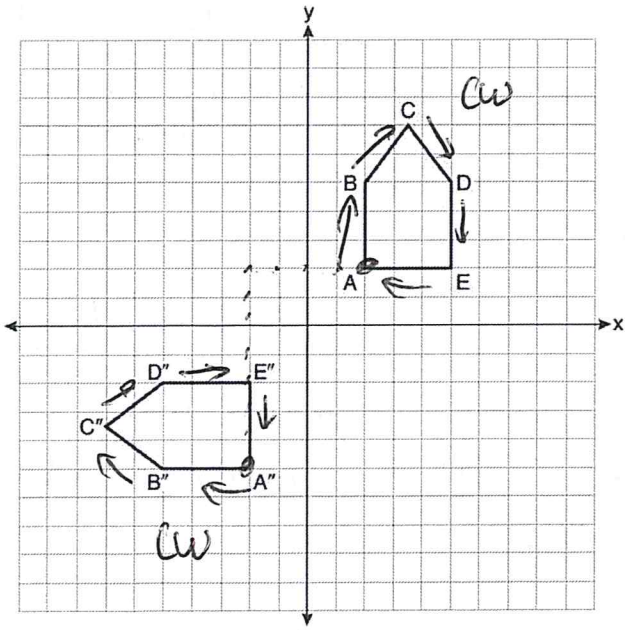


Same orientation

rotation

rotate $\triangle ABC$ 180° clockwise centered at A followed by a translation 6 units right and 2 units down.

16. On the set of axes below, pentagon *ABCDE* is congruent to *A"B"C"D"E"*. Describe a sequence of rigid motions that maps pentagon *ABCDE* onto *A"B"C"D"E"*.

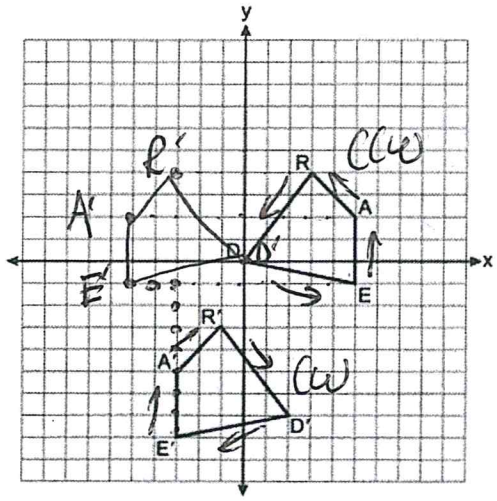


rotate ABCDE 90° counter-clockwise centered at A followed by a translation 4 left and 7 down.

Same orientation

rotation

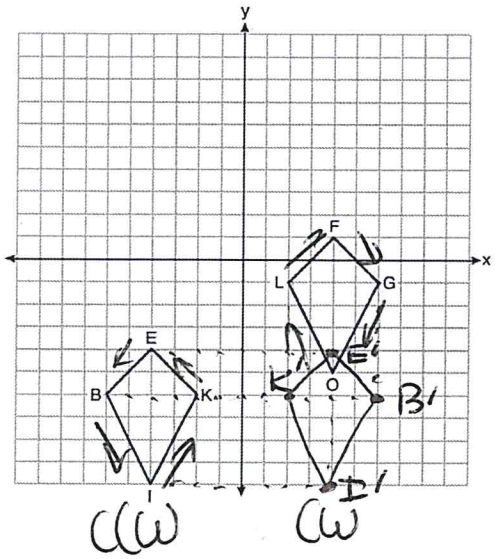
17. Quadrilateral *DEAR* and its image, quadrilateral *D'E'A'R'*, are graphed on the set of axes below. Describe a sequence of transformations that maps quadrilateral *DEAR* onto quadrilateral *D'E'A'R'*.



opposite orientation
reflection

Reflect DEAR over the y-axis followed by a translation 2 right and 7 down.

18. Quadrilaterals *BIKE* and *GOLF* are graphed on the set of axes below. Describe a sequence of transformations that maps quadrilateral *BIKE* onto quadrilateral *GOLF*.

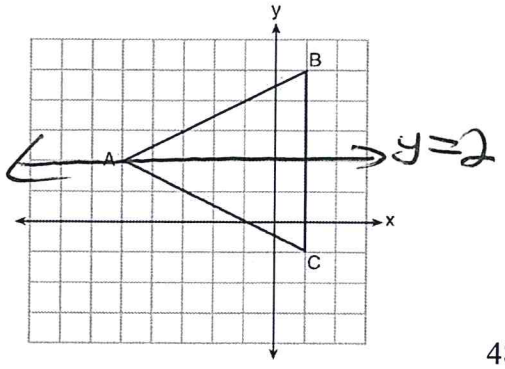


opposite orientation
reflection

Reflect BIKE over the y-axis followed by a translation 5 units up.

line of reflection = line of symmetry
center of rotation = center of shape

19. Triangle *ABC* is graphed on the set of axes below.

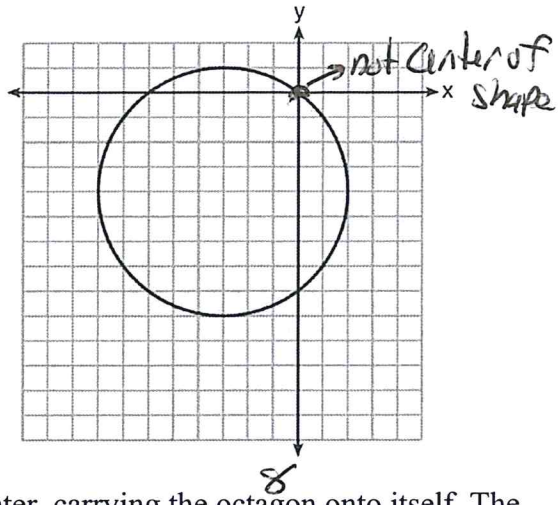


Which transformation maps $\triangle ABC$ onto itself?

1) Reflection over the x-axis
2) Reflection over $x = 2$
3) Reflection over $y = 2$
4) Reflection over $x = -2$

20. Which transformation does not map the circle in the diagram below onto itself?

1) Rotation of 90 centered at the origin
2) Reflection over the line $x = -3$
3) Rotation of 90 centered at $(-3, -4)$
4) Reflection over the line $y = -4$



21. A regular octagon is rotated n degrees about its center, carrying the octagon onto itself. The value of n could be

1) 10°
2) 150°
3) 225°
4) 252°

22. Which of the following rotations would not map a regular pentagon onto itself?

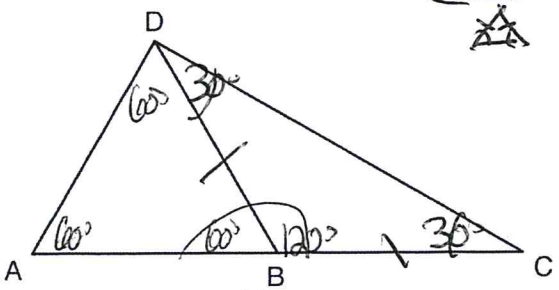
(1) 144
(2) 120
(3) 216
(4) 720

Spiral Review

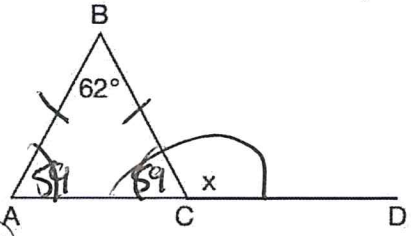
Complex Triangle Problems:

1) The three angles of a triangle add to equal 180°. Look for triangles.
2) Linear pairs add to 180°. Look for linear pairs.
3) Isosceles triangle has congruent angles opposite congruent sides (given congruent sides).
4) Equilateral triangle has angles 60, 60, 60 (given equilateral triangle).
5) An angle bisector cuts an angle into two congruent halves (given bisected angles).
6) Use parallel lines cut by a transversal (extend and follow the transversal, fill in 8 angles.)

23. In the diagram below of $\triangle ACD$, B is a point on $\overline{AC}$ such that $\triangle ADB$ is an equilateral triangle, and $\triangle DBC$ is an isosceles triangle with $\overline{DB} \cong \overline{BC}$. Find $m\angle C$.



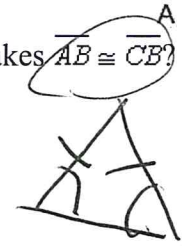
24. Given $\triangle ABC$ with $m\angle B = 62°$ and side $\overline{AC}$ extended to D, as shown below.



180 − 62 = 118

118 / 2 = 59

180 − 59 = 121

Which value of x makes $\overline{AB} \cong \overline{CB}$?

1) 59°
2) 62°
3) 118°
4) 121°