Name: Kely

Date:

UNIT 2

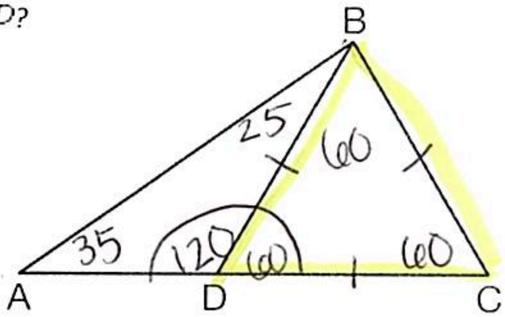
LESSON 7

AIM: HOW DO WE CONSTRUCT ROTATIONS OFF THE COORDINATE PLANE?

Do Now: In the diagram of $\triangle ABC$ below, $\overline{BD}$ is drawn to side $\overline{AC}$.

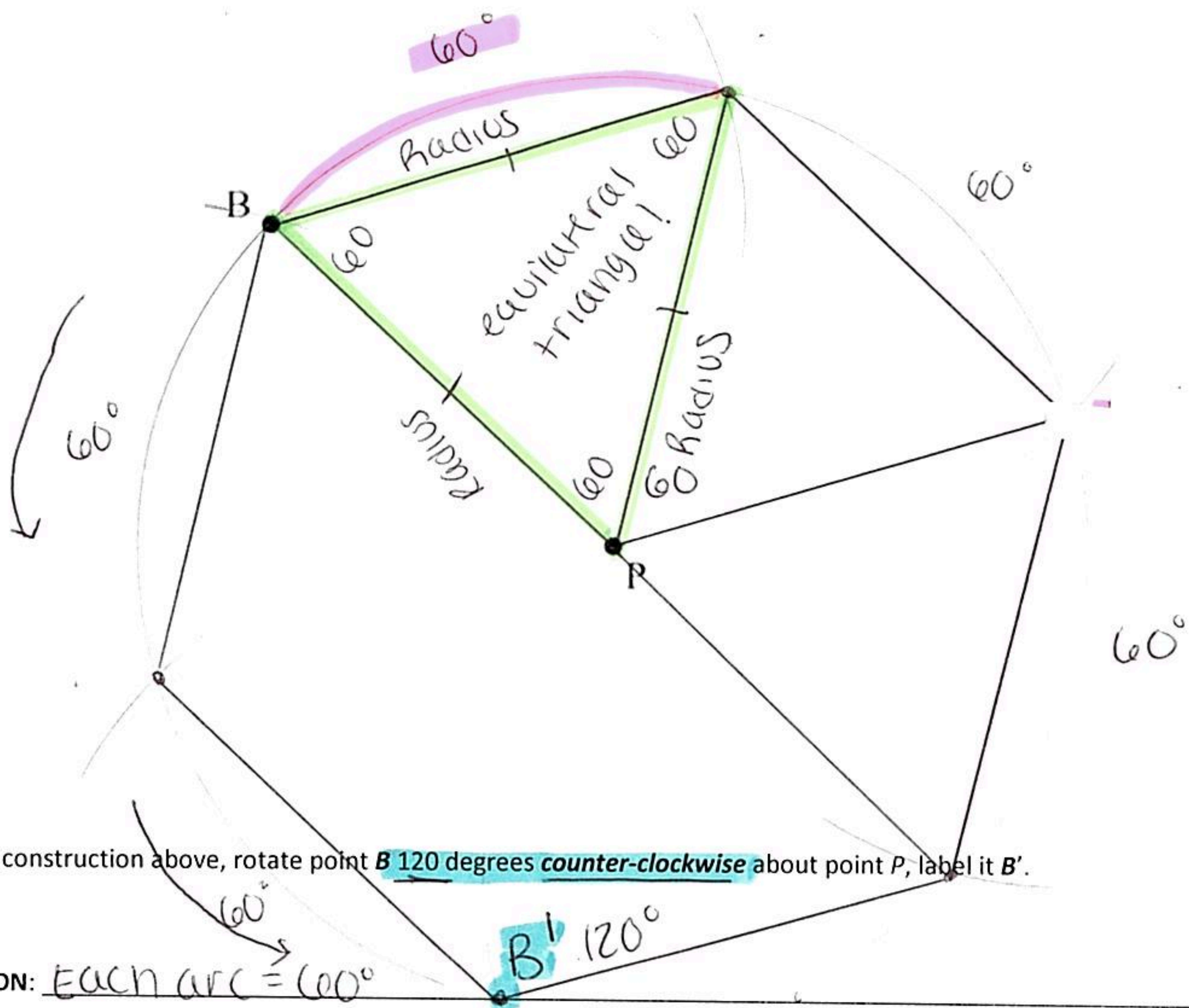
If $m\angle A = 35$, $m\angle ABD = 25$, and $m\angle C = 60$, which type of triangle is $\triangle BCD$?

1) equilateral
2) scalene
3) obtuse
4) right



CONSTRUCTING ROTATIONS WITH ANGLES THAT ARE MULTIPLES OF 60

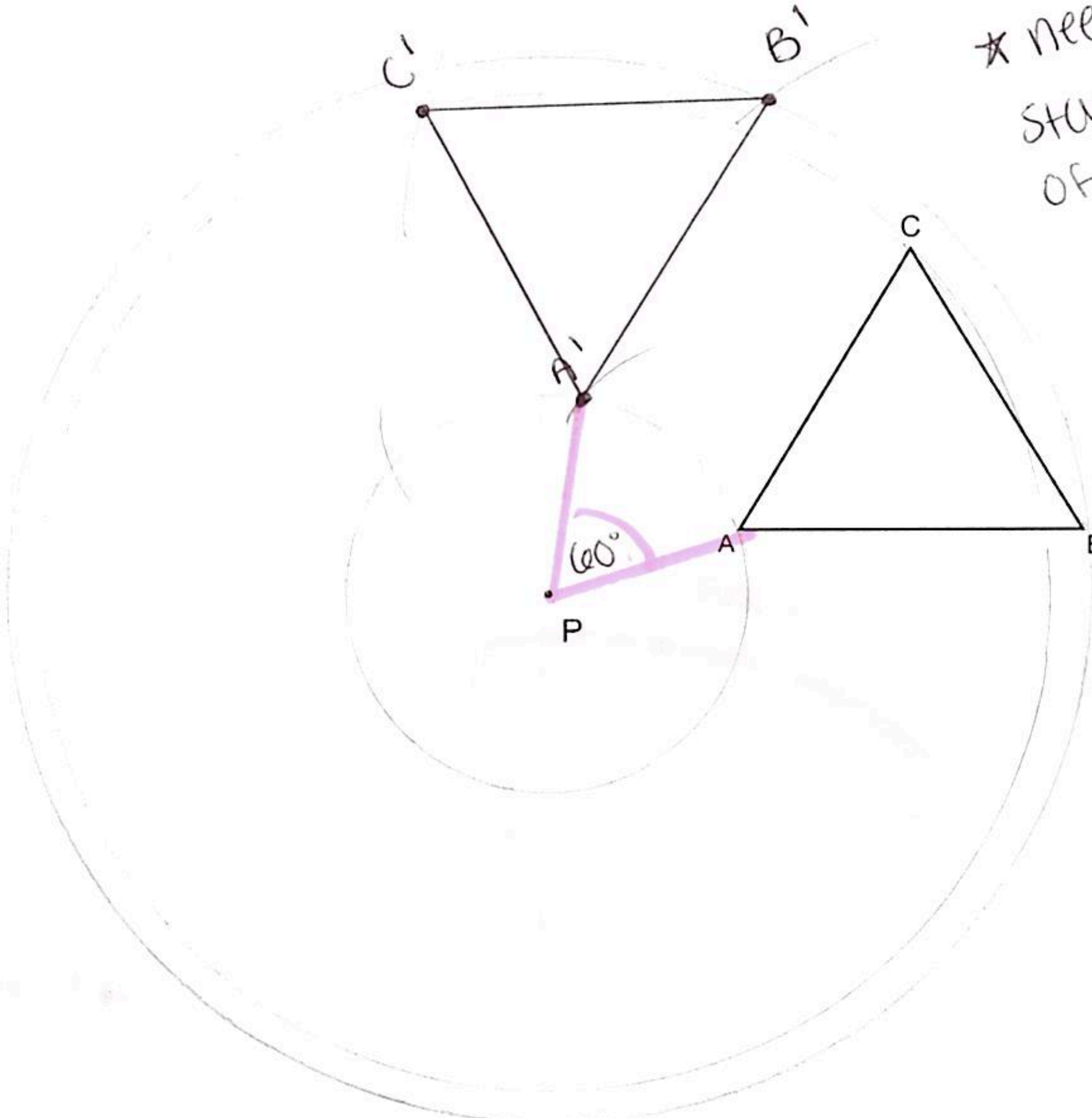
EXAMPLE #1: Using your compass and straightedge, construct a *hexagon* about point *P* with a radius of $\overline{PB}$.



Using your construction above, rotate point ***B*** **120 degrees** ***counter-clockwise*** about point *P*, label it ***B'***.

CONCLUSION: Each arc = 60°
we need equilatral Δ's to construct rotations that are multiples of 60°!

EXAMPLE #2: Using your compass and straightedge, rotate ΔABC about point P $60°$ counter clockwise.



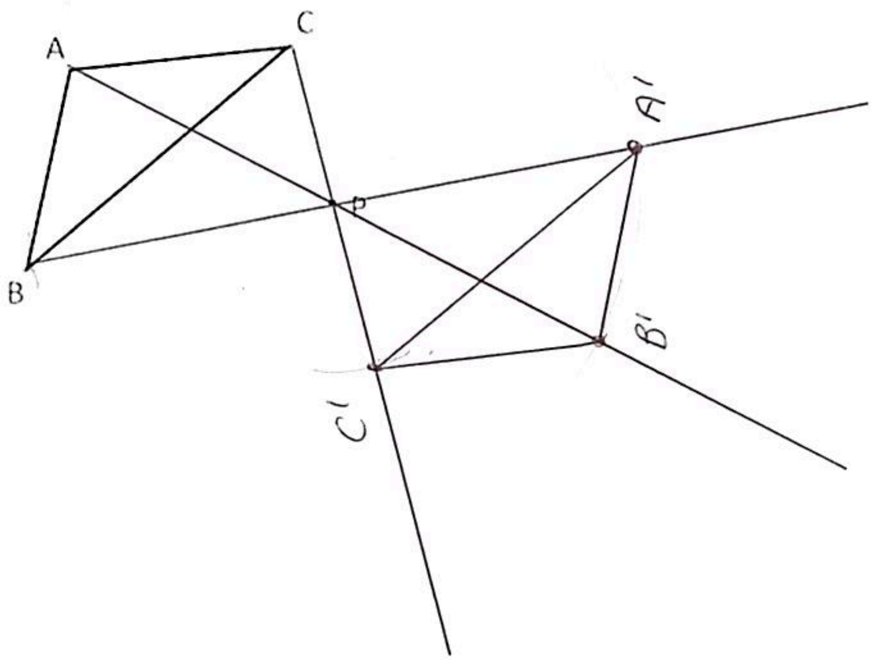
★ needle always starts @ center of rotation! ★

Is $\Delta ABC \cong \Delta A'B'C'$? Explain yes! A rotation is a rigid motion which preserves distance & ∠ measure

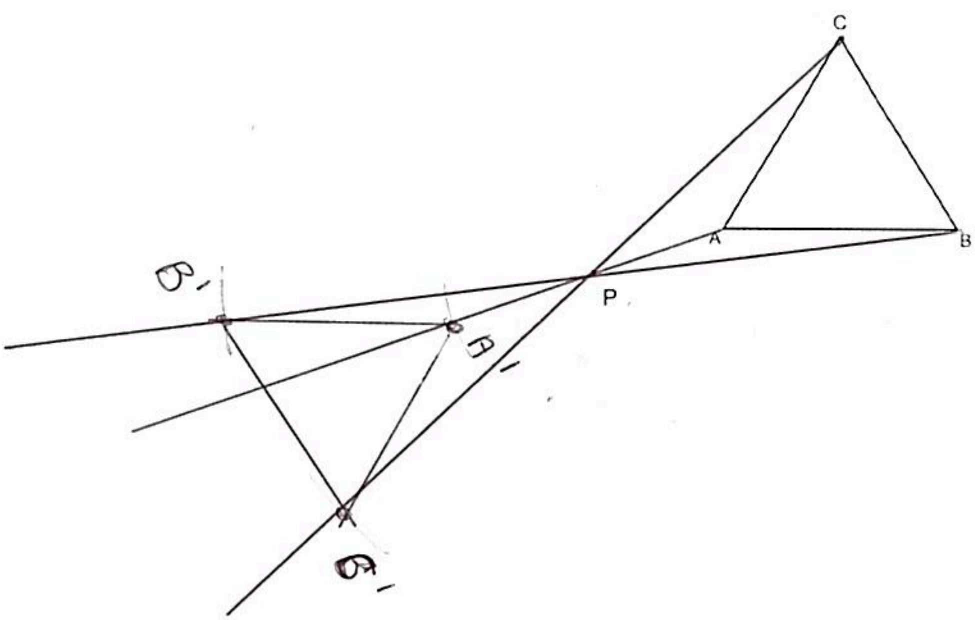
ALL POSITIVE ANGLES ARE ROTATED counter clockwise!

CONSTRUCTING ROTAIONS OF 180° $\rightarrow$ Lines!

1. Using your compass and straightedge, construct the rotation of ΔABC $180°$ about point P.



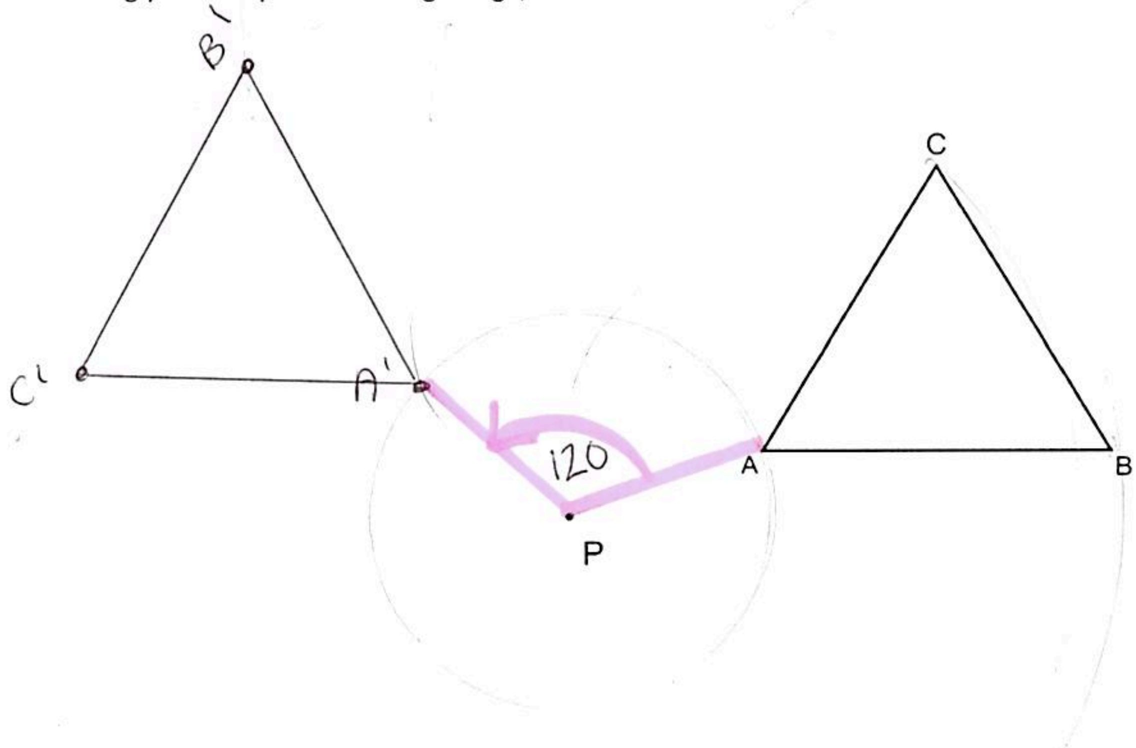
2. Using your compass and straightedge, construct the rotation of ΔABC $180°$ about point P



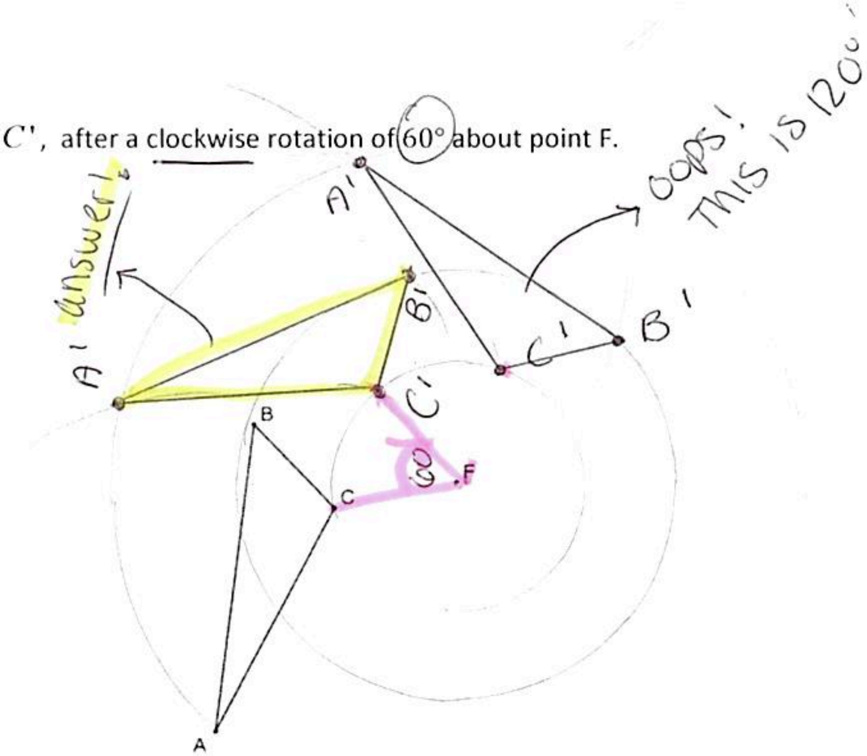
Is $\Delta ABC \cong \Delta A'B'C'$? Explain yes!. A rotation is a rigid motion which preserves distance & ∡ measure

PRACTICE:

3. Using your compass and straightedge, construct the rotation of ΔABC $120°$ counter clock-wise about point P



4. Construct $\Delta A'B'C'$, after a clockwise rotation of 60° about point F.



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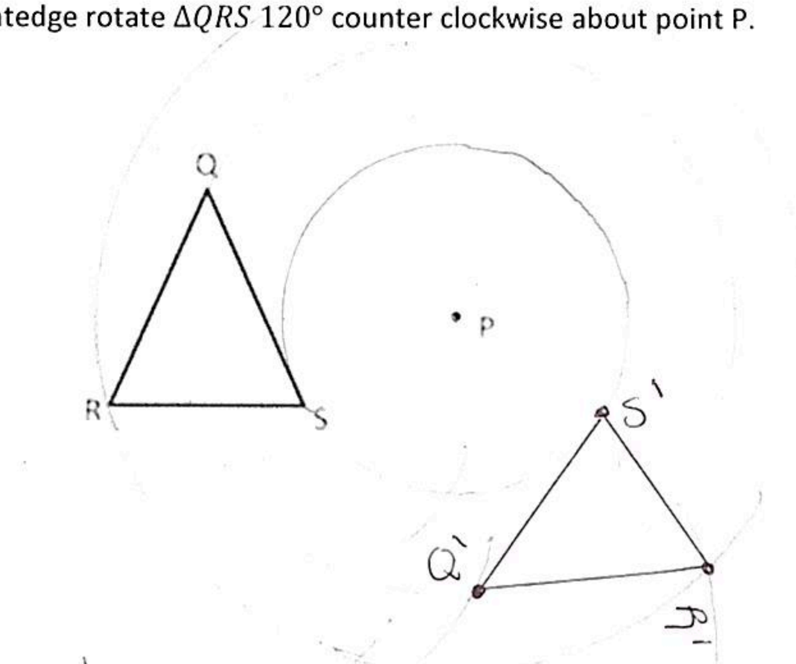
UNIT 2

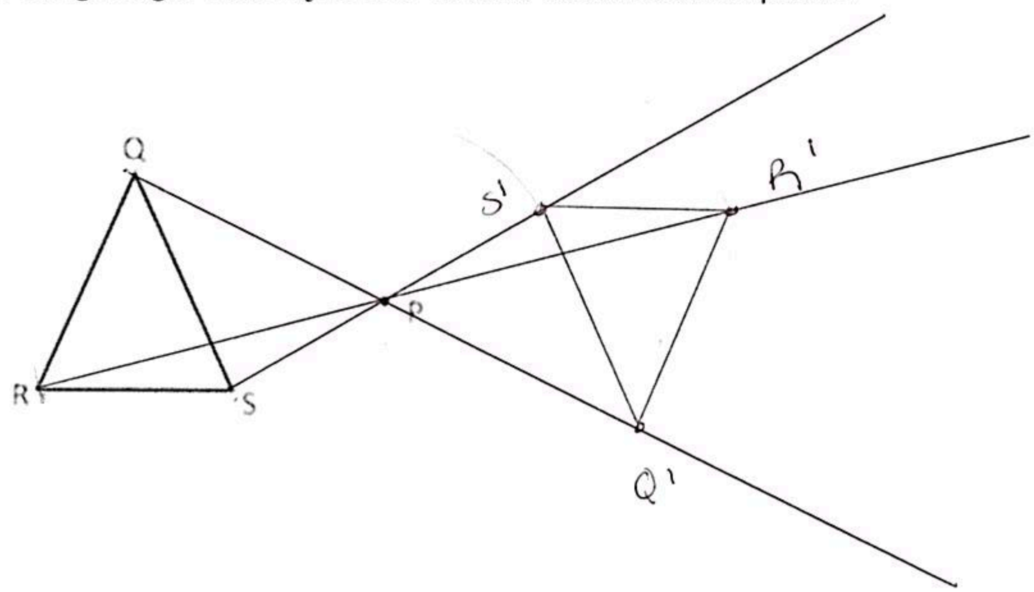
LESSON 7 HOMEWORK

1. Use your compass and straightedge rotate ΔQRS 120° counter clockwise about point P.



Is $\Delta QRS \cong \Delta Q'R'S'$? Explain yes! A rotation is a rigid motion which preserves ∡ measure & distance

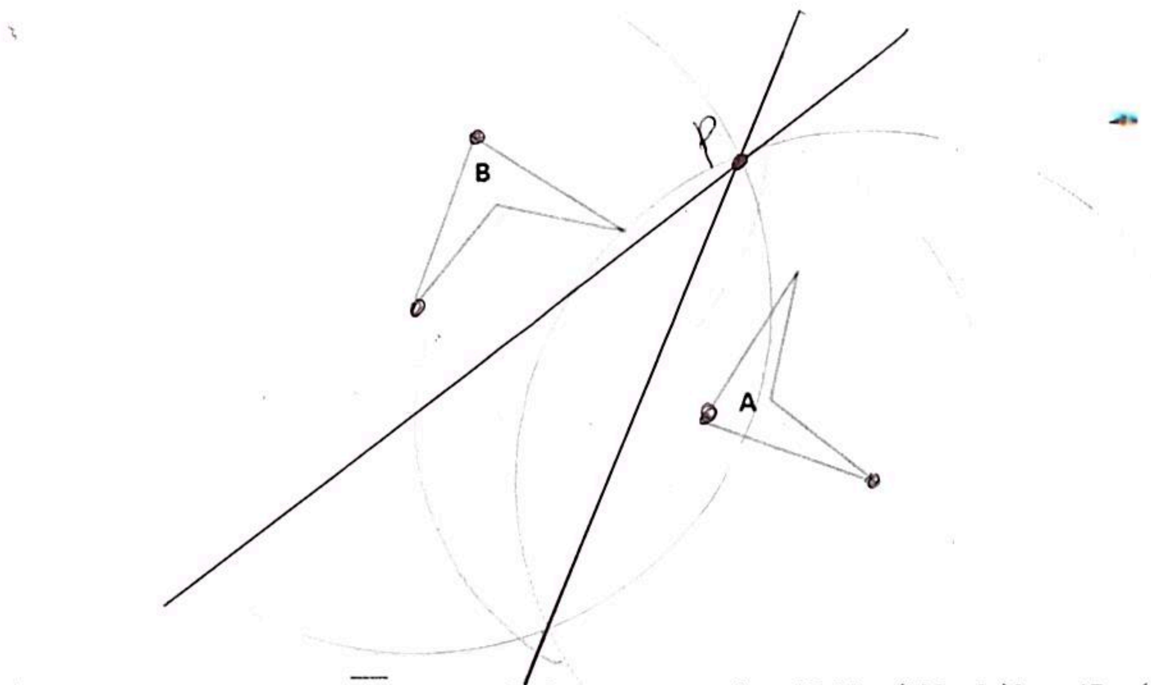
2. Use your compass and straightedge rotate ΔQRS 180° counter clockwise about point P.



Is $\Delta QRS \cong \Delta Q'R'S'$? Explain yes! A rotation is a rigid motion which preserves distance & ∡ measure

→

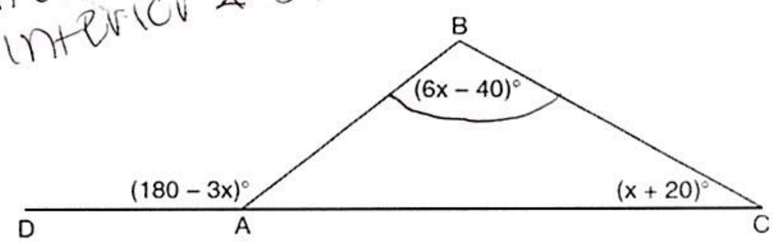
3. Find the center of rotation and the angle of rotation for the transformation below that carries A onto B.



4. In $\triangle ABC$ shown below, side $\overline{AC}$ is extended to point D with $m\angle DAB = (180 - 3x)°$, $m\angle B = (6x - 40)°$, and $m\angle C = (x + 20)°$.

What is $m\angle ABC$?

exterior ∡ = sum of two non adjacent interior ∡'s!



(1) 20º
(2) 40º
(3) 60º
(4) 80º

$180 - 3x = 6x - 40 + x + 20$

$180 - 3x = 7x - 20$

$+20 + 3x \quad +3x + 20$

$200 = 10x$

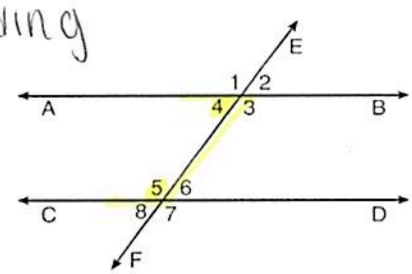
$x = 20$

$\measuredangle ABC = 6(20) - 40$

$= 120 - 40$

$= 80$

5. Transversal $\overleftrightarrow{EF}$ intersects $\overleftrightarrow{AB}$ and $\overleftrightarrow{CD}$, as shown in the diagram below. Which statement could always be used to prove $\overleftrightarrow{AB} \parallel \overleftrightarrow{CD}$? → alt. int, alt. ext, corresponding or sameside int. ∡'s only!



(1) $\angle 1 \cong \angle 3$ vertical

(2) $\angle 3$ and $\angle 5$ are ~~supplementary~~ ≅

(3) $\angle 7$ and $\angle 8$ are supplementary linear pair

(4) $\angle 4$ and $\angle 5$ are supplementary

↳ same side interior