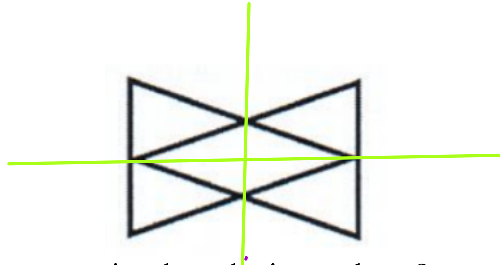
Name:____________________________ Date:________________________________

Geometry Honors

Midterm Review Extra Practice

1. For the given image



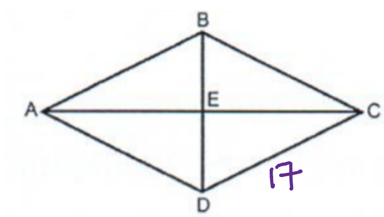
a) How many rotational symmetries does the image have?

1 at 180°

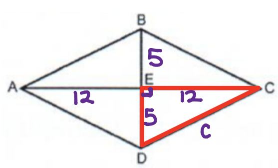
b) How many reflectional symmetries does the image have?

2

2. For the given Rhombus ABCD.



a) If $\overline{BE} = 5$, and $\overline{AC} = 24$, find $\overline{DC}$



$5^2 + 12^2 = c^2$

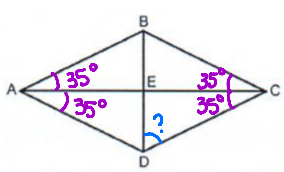
$25 + 144 = c^2$

$169 = c^2$

$c = 13$

$\boxed{\overline{DC} = 13}$

b) If $\angle BAE = 35°$, find $\angle CDE$

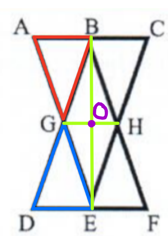


$360° - 4(35°) = 220°$

$\frac{220°}{4} = 55°$

$\boxed{m\angle CDE = 55°}$

3. Based the image below



a) What rigid motion(s) map ΔABG to ΔDEG?

a reflection over $\overline{GH}$

b) What rigid motion(s) map ΔBHC onto ΔDEG?

a reflection over $\overline{GH}$ followed by a reflection over $\overline{BE}$

or

a rotation of 180° around point O

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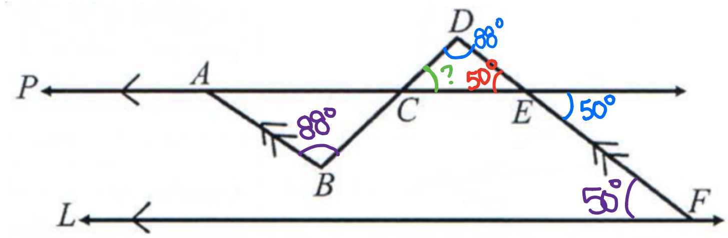
4. If $\overline{P} \parallel \overline{L}, \overline{AB} \parallel \overline{DF}, \angle LFE = 50°$, and $\angle ABC = 88°$.

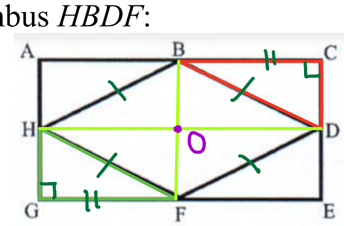


Find $\angle DCE$.

$180° - 88° - 50° = 42°$

$m\angle DCE = 42°$

5. Given Rectangle $ACEG$ and Rhombus $HBDF$:



a) Describe a sequence of rigid motions to prove that $\Delta HGF = \Delta DCB$

A reflection over $\overline{BF}$ followed by a reflection over $\overline{HD}$.

$\boxed{\text{or}}$

A rotation of 180° around O (the intersection of the diagonals of HBDF)

b) Given Rectangle ACEG, Rhombus HBDF, $\overline{GF} = \overline{CB}$. Prove that $\Delta HGF \cong \Delta DCB$

S	R
① HBDF is a rhombus, $\overline{GF} \cong \overline{CB}$, ACEG is a rectangle	① Given
② $\overline{BH} \cong \overline{HF} \cong \overline{FD} \cong \overline{BD}$	② sides of a rhombus are equal
③ $\angle A, \angle C, \angle E, \angle G$ are right angles	③ rectangles have 4 right ∠s
④ $\angle A \cong \angle C$	④ all right ∠s are equal
⑤ $\Delta HCF \cong \Delta DCB$	⑤ HL.

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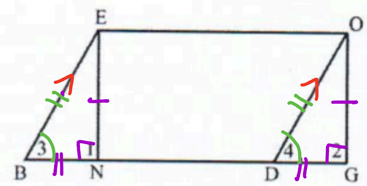
Given: $\overline{EN} \perp \overline{BG}$, $\overline{OG} \perp \overline{BG}$, $\overline{BN} \cong \overline{DG}$, $\overline{EN} \cong \overline{OG}$

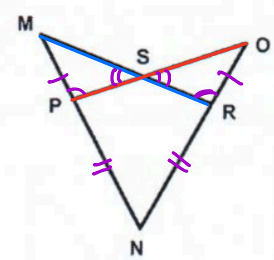
5a) Prove: $\Delta BEN \cong \Delta DOG$ 5b) Prove: Parallelogram EODB



Statement	Reason
① $\overline{EN} \perp \overline{BG}$, $\overline{OG} \perp \overline{BG}$, $\overline{BN} \cong \overline{DG}$, $\overline{EN} \cong \overline{OG}$	① Given
② $m\angle ENB = 90°$, $m\angle OGD = 90°$	② $\perp$ lines form right $\angle$s
③ $\angle ENB \cong \angle OGD$	③ all right $\angle$s are equal
④ $\Delta BEN \cong \Delta DOG$	④ SAS
⑤ $\overline{BE} \cong \overline{DO}$	⑤ CPCTC
⑥ $\angle 3 \cong \angle 4$	⑥ CPCTC
⑦ $\overline{BE} \parallel \overline{DO}$	⑦ alt. int $\angle$s are $\cong$ when lines are $\parallel$
⑧ EODB is a parallelogram	⑧ A quadrilateral with 1 pair of equal and parallel sides is a parallelogram.

5) Given: MP = OR, PN = RN, $\angle SPM \cong \angle SRO$

Prove: MR = PO



Statement	Reason
① $\overline{MP} \cong \overline{OR}$, $\overline{PN} \cong \overline{RN}$, $\angle SPM \cong \angle SRO$	① Given
② $\angle MSP \cong \angle OSR$	② vertical angles are $\cong$
③ $\Delta MSP \cong \Delta OSR$	③ AAS
④ $\overline{MS} \cong \overline{OS}$, $\overline{SP} \cong \overline{SR}$	④ CPCTC
⑤ $\overline{MS} + \overline{SR} = \overline{OS} + \overline{SP}$ or $\overline{MR} \cong \overline{PO}$	⑤ addition property

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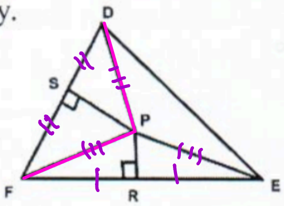
6) Given: $\overline{PS}$ and $\overline{PR}$ are the perpendicular bisectors of ~~AC~~ $\overline{FD}$ and ~~AB~~ $\overline{FE}$ respectfully.

Prove: a) $\overline{PF} \cong \overline{PD}$ b) $\overline{PF} \cong \overline{PE}$

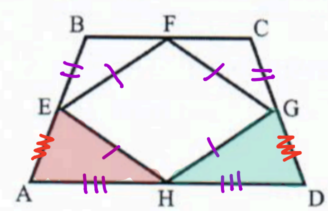


Statement	Reason
① $\overline{PS}$ and $\overline{PR}$ are the ⊥ bisectors of $\overline{FD}$ and $\overline{FE}$ respectively	① given
② $\overline{FS} \cong \overline{DS}$, $\overline{FR} \cong \overline{ER}$	② bisectors divide segments into two equal segments.
③ $m\angle DSP = 90°$, $m\angle PSF = 90°$, $m\angle FRP = 90°$, $m\angle PRE = 90°$	③ ⊥ lines form 90° angles
④ $\angle DSP \cong \angle PSF \cong \angle FRP \cong \angle PRE$	④ all right ∠s are ≅
⑤ $\overline{SP} \cong \overline{SP}$, $\overline{PR} \cong \overline{PR}$	⑤ reflexive
⑥ $\triangle DSP \cong \triangle FSP$	⑥ SAS
⑦ $\overline{PF} \cong \overline{PD}$	⑦ CPCTC
⑧ $\triangle FPR \cong \triangle EPR$	⑧ SAS
⑨ $\overline{PF} \cong \overline{PE}$	⑨ CPCTC

c) Point P is called the circumcenter of the triangle.

6) Given: Isosceles Trapezoid ABCD, Rhombus EFGH, $\overline{BE} \cong \overline{CG}$

H is the midpoint of $\overline{AD}$. Prove: $\triangle AEH \cong \triangle DGH$



Statement	Reason
① ABCD is an isosceles trapezoid, EFGH is a rhombus, $\overline{BE} \cong \overline{CG}$, H is the midpoint of $\overline{AD}$	① Given
② $\overline{EH} \cong \overline{GH}$	② sides of a rhombus are ≅
③ $\overline{BA} \cong \overline{CD}$	③ lateral sides of an isosceles trapezoid are ≅
④ $\overline{BA} - \overline{BE} \cong \overline{CD} - \overline{CG}$ or $\overline{EA} \cong \overline{GD}$	④ subtraction property
⑤ $\overline{AH} \cong \overline{DH}$	⑤ midpoint divides a segment into two equal segments
⑥ $\triangle AEH \cong \triangle DGH$	⑥ SSS