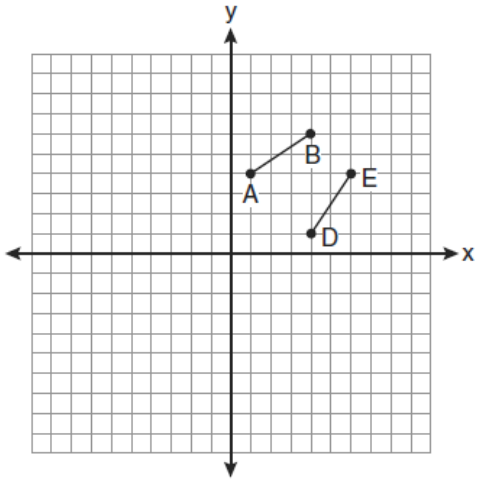
Name: _____ Date: _____

Regents Review – Session Two Common Core Geometry

1. The diagram below shows $\overline{AB}$ and $\overline{DE}$. Which transformation will move $\overline{AB}$ onto $\overline{DE}$ such that point *D* is the image of point *A* and point *E* is the image of point *B*?



(1) $T_{3,-3}$ (3) R_{90°

(2) $D_{\frac{1}{2}}$ (4) $r_{y=x}$

2. What is the image of point $(2,5)$ under the translation that shifts (x,y) to $(x+3,y-2)$?

(1) $(0,3)$ (3) $(5,3)$

(2) $(0,8)$ (4) $(5,8)$

3. Which transformation represents a dilation?

(1) $(8,4)\rightarrow(11,7)$

(2) $(8,4)\rightarrow(-8,4)$

(3) $(8,4)\rightarrow(-4,-8)$

(4) $(8,4)\rightarrow(4,2)$

4. Given the transformations:

$R(x,y)\rightarrow(-x,y)$

$S(x,y)\rightarrow(y,x)$

What is $(R\circ S)(5,-1)$?

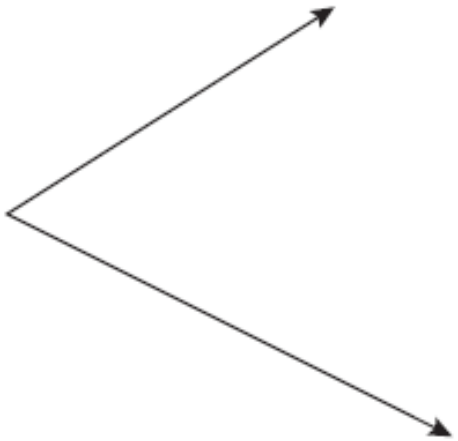
(1) $(1,5)$

(2) $(1,-5)$

(3) $(-1,5)$

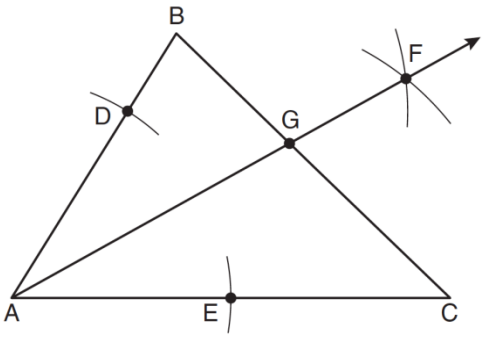
(4) $(-1,-5)$

5. Using a compass and straightedge, construct a bisector of the angle shown below. [*Leave all construction marks.*]



6. Using a compass and straightedge, construct an equilateral triangle with $\overline{AB}$ as a side. Using this triangle, construct a 30° angle with its vertex at *A*. [*Leave all construction marks.*]

7. As shown in the diagram below of ΔABC, a compass is used to find points *D* and *E*, equidistant from point *A*. Next, the compass is used to find point *F*, equidistant from points *D* and *E*. Finally, a straightedge is used to draw $\overrightarrow{AF}$. Then, point *G*, the intersection of $\overrightarrow{AF}$ and side $\overline{BC}$ of ΔABC, is labeled.



Which statement must be *true*?

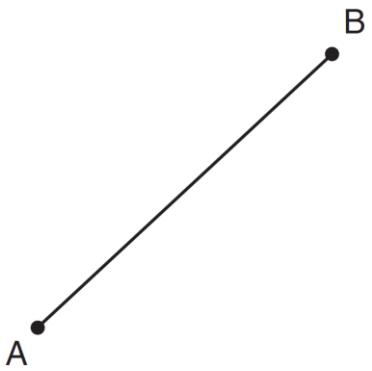
(1) $\overrightarrow{AF}$ bisects side $\overline{BC}$

(2) $\overrightarrow{AF}$ bisects $\angle BAC$

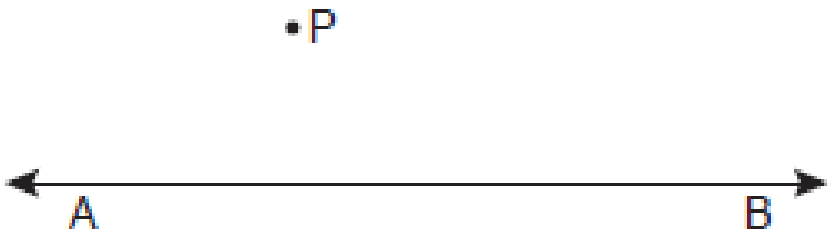
(3) $\overrightarrow{AF} \perp \overline{BC}$

(4) $\Delta ABG \sim \Delta ACG$

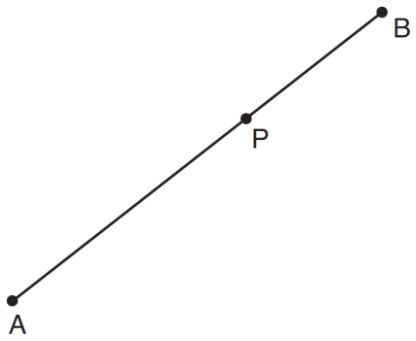
8. Using a compass and straightedge, construct the perpendicular bisector of $\overline{AB}$. [*Leave all construction marks*.]



9. Using a compass and straightedge, construct the line that is perpendicular to $\overleftrightarrow{AB}$ and that passes through point *P*. Show all construction marks.



10. Using a compass and straightedge, construct a line perpendicular to $\overline{AB}$ through point *P*. [*Leave all construction marks*.]



11. Using and compass and straightedge, construct a square using Line Segment AB below as one side of the square.

12. Line segment *AB* has endpoints $A(2,-3)$ and $B(-4,6)$. What are the coordinates of the midpoint of $\overline{AB}$?

(1) $(-2,3)$ (3) $(-1,3)$

(2) $\left(-1,1\frac{1}{2}\right)$ (4) $\left(3,4\frac{1}{2}\right)$

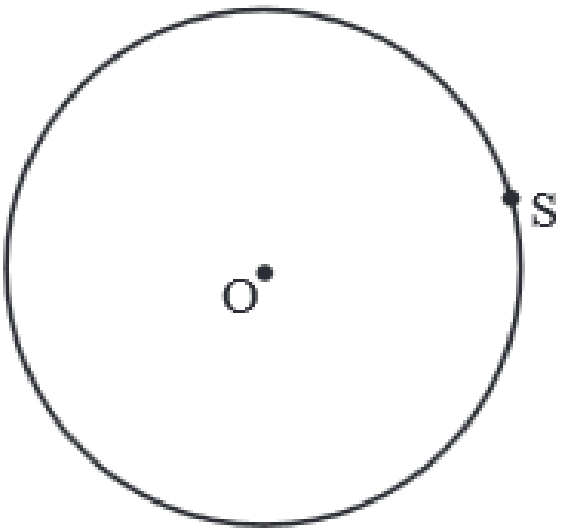
13. The endpoints of $\overline{CD}$ are $C(-2,-4)$ and $D(6,2)$. What are the coordinates of the midpoint of $\overline{CD}$?

(1) $(2,3)$
(2) $(2,-1)$
(3) $(4,-2)$
(4) $(4,3)$

14. Point M is the midpoint of $\overline{AB}$. If the coordinates of *A* are $(-3,6)$ and the coordinates of *M* are $(-5,2)$, what are the coordinates of *B*?

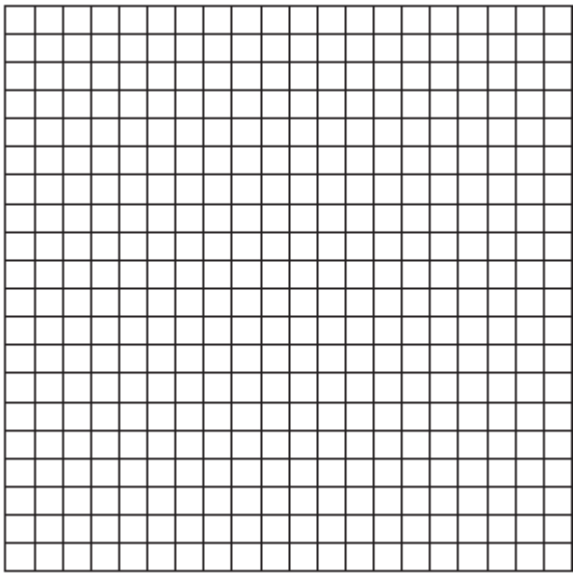
(1) $(1,2)$
(2) $(7,10)$
(3) $(-4,4)$
(4) $(-7,-2)$

15. Using a compass and straightedge, construct a square in the circle below.

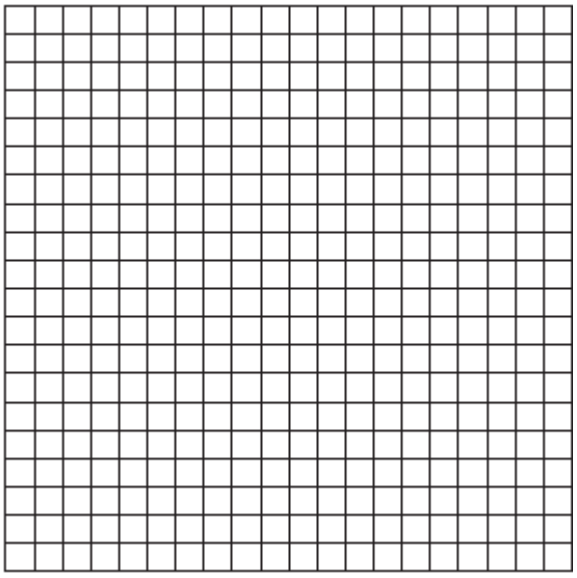


16. a. Determine the distance between point $A(-1,-3)$ and point $B(5,5)$.

b. Write an equation of the perpendicular bisector of $\overline{AB}$.
[*The use of the accompanying grid is optional*.]

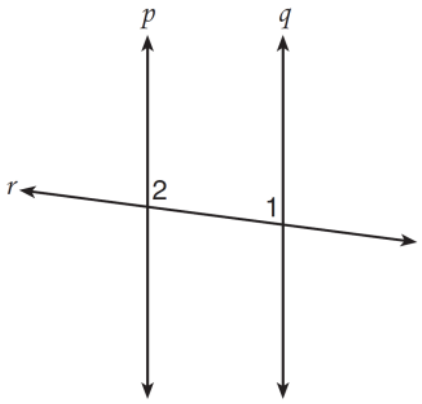


17. Write an equation of the perpendicular bisector of the line segment whose endpoints are $(-1,1)$ and $(7,-5)$. [*The use of the grid below is optional*]



18. Lines *p* and *q* are intersected by line *r*, as shown below. If $m\angle 1 = 7x - 36$ and $m\angle 2 = 5x + 12$, for which value of *x* would $p \parallel q$?

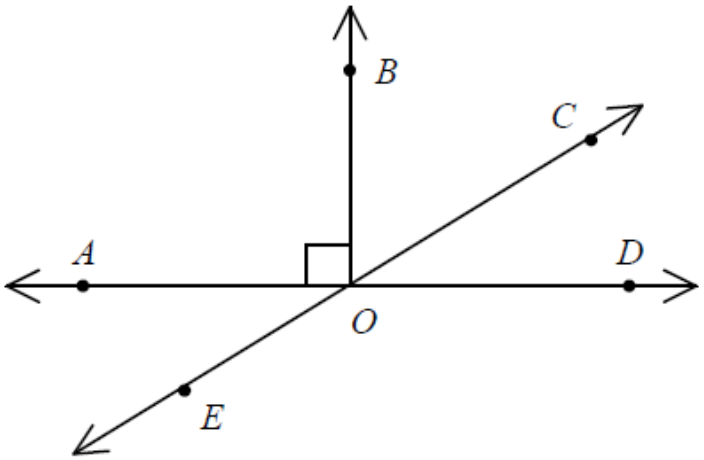
(1) 17
(2) 24
(3) 83
(4) 97



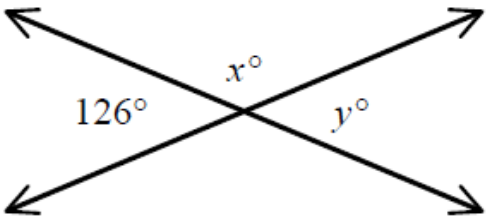
Use the picture to the right for both #19 & 20.

19. Name any angle supplementary to $\angle DOE$.

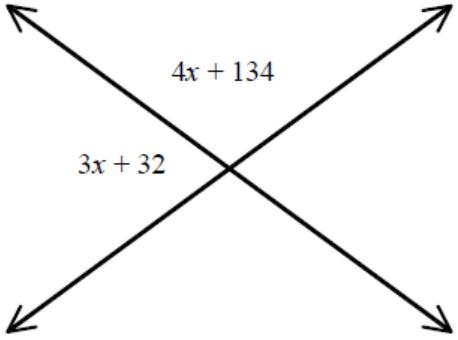
20. Name any angle complementary to $\angle BOC$.



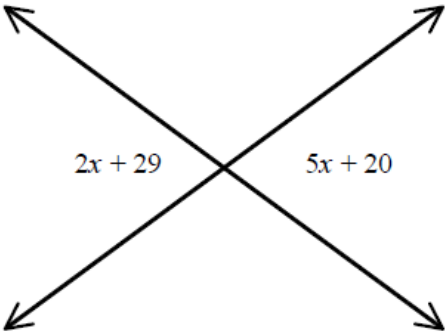
21. Find *x* and *y*.



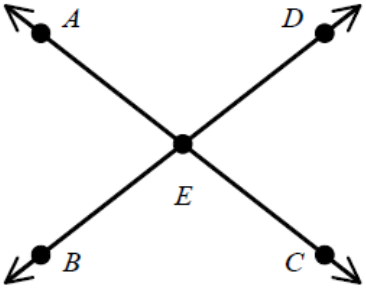
22. Solve for *x*.



23. Solve for *x*.



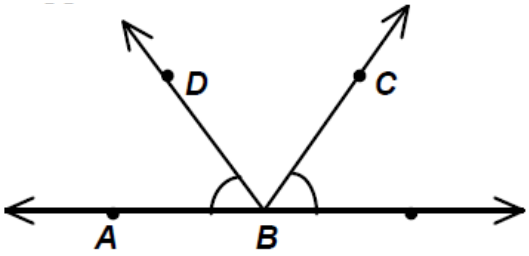
24. In the figure shown, $m\angle AED = 104$. Which of the following statements is *false*?



(1) $m\angle AEB = 76$
(2) $m\angle BEC = 104$
(3) $\angle BEC$ and $\angle CED$ are adjacent.
(4) $\angle AEB$ and $\angle DEC$ are supplementary angles.

25. Suppose $m\angle ABC = 110$, what is $m\angle DBC$?

(1) 40
(2) 120
(3) 20
(4) 110
(5) 45

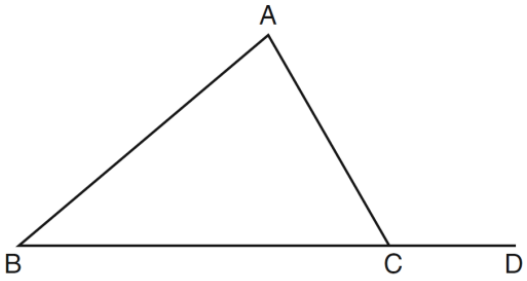


26. Side $\overline{PQ}$ of ΔPQR is extended through *Q* to point *T*. Which statement is *not* always true?

(1) $m\angle RQT > m\angle R$
(2) $m\angle RQT > m\angle P$
(3) $m\angle RQT = m\angle P + m\angle R$
(4) $m\angle RQT > m\angle PQR$

27. In the diagram below of ΔABC, $\overline{BC}$ is extended to *D*. If $m\angle A = x^2 - 6x$, $m\angle B = 2x - 3$, and $m\angle ACD = 9x + 27$, what is the value of *x*?

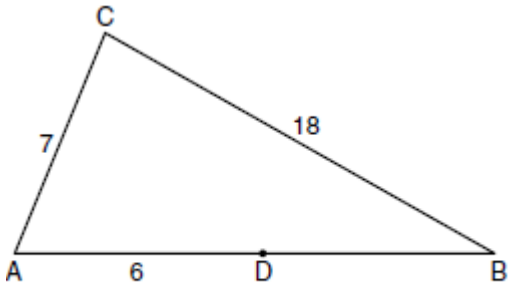
(1) 10
(2) 2
(3) 3
(4) 15



(Not drawn to scale)

28. In the diagram below of ΔABC, *D* is a point on $\overline{AB}$, $AC = 7$, $AD = 6$, and $BC = 18$. The length of $\overline{DB}$ could be:

(1) 5
(2) 12
(3) 19
(4) 25



(Not drawn to scale)

29. Sara is building a triangular pen for her pet rabbit. If two of the sides measure 8 feet and 15 feet, the length of the third side could be

(1) 13 ft
(2) 7 ft
(3) 3 ft
(4) 23 ft

30. In ΔRST, $m\angle R = 58$ and $m\angle S = 73$. Which inequality is *true*?

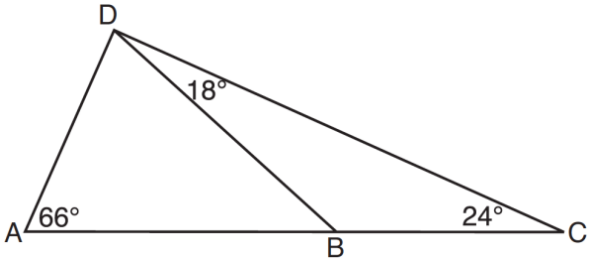
(1) $RT < TS < RS$
(2) $RS < RT < TS$
(3) $RT < RS < TS$
(4) $RS < TS < RT$

31. In ΔABC, $\angle A \cong \angle B$ and $\angle C$ is an obtuse angle. Which statement is *true*?

(1) $\overline{AC} \cong \overline{AB}$ and $\overline{BC}$ is the longest side.
(2) $\overline{AC} \cong \overline{BC}$ and $\overline{AB}$ is the longest side.
(3) $\overline{AC} \cong \overline{AB}$ and $\overline{BC}$ is the shortest side.
(4) $\overline{AC} \cong \overline{BC}$ and $\overline{AB}$ is the shortest side.

32. As shown in the diagram of ΔACD below, B is a point on $\overline{AC}$ and $\overline{DB}$ is drawn. If $m\angle A = 66$, $m\angle CDB = 18$, and $m\angle C = 24$, what is the longest side of ΔABD?

(1) $\overline{AB}$
(2) $\overline{DC}$
(3) $\overline{AD}$
(4) $\overline{BD}$

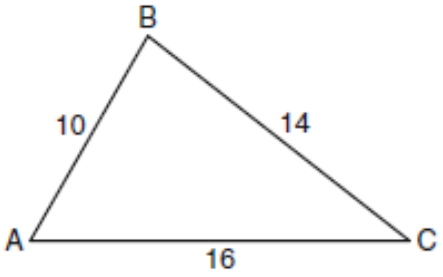


33. If the midpoints of the sides of a triangle are connected, the area of the triangle formed is what part of the area of the original triangle?

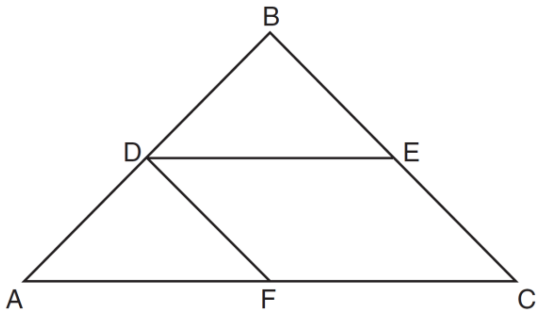
(1) $\frac{1}{4}$ (3) $\frac{3}{8}$

(2) $\frac{1}{3}$ (4) $\frac{1}{2}$

34. In the diagram of ΔABC below, $AB = 10$, $BC = 14$, and $AC = 16$. Find the perimeter of the triangle formed by connecting the midpoints of the sides of ΔABC.



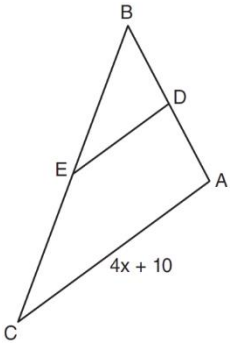
35. In the diagram below of ΔABC, $\overline{DE}$ and $\overline{DF}$ are midsegments. If $DE = 9$, and $BC = 17$, determine and state the perimeter of quadrilateral *FDEC.*



(Not drawn to scale)

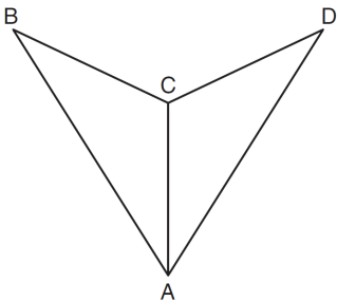
36. In the diagram below of ΔABC, *D* is the midpoint of $\overline{AB}$, and *E* is the midpoint of $\overline{BC}$. If $AC = 4x + 10$, which expression represents *DE*?

(1) $x + 2.5$
(2) $2x + 5$
(3) $2x + 10$
(4) $8x + 20$



37. As shown in the diagram below, $\overline{AC}$ bisects $\angle BAD$ and $\angle B \cong \angle D$. Which method could be used to prove $\Delta ABC \cong \Delta ADC$?

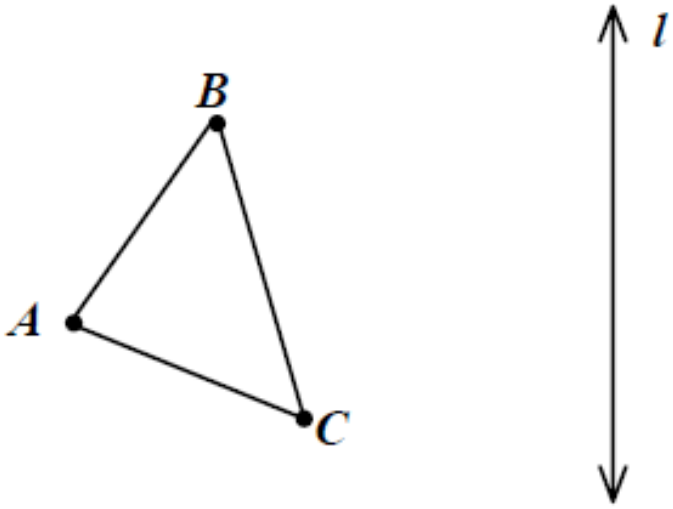
(1) SSS
(2) AAA
(3) SAS
(4) AAS



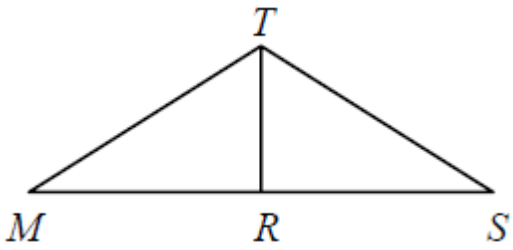
38. The diagonal $\overline{AC}$ is drawn in parallelogram *ABCD*. Which method can *not* be used to prove that $\Delta ABC \cong \Delta CDA$?

(1) SSS
(2) SAS
(3) SSA
(4) ASA

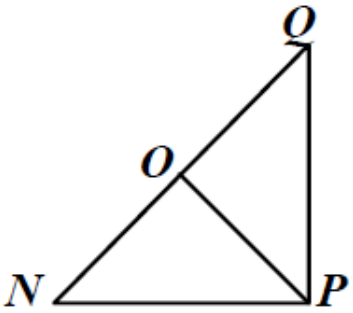
39. Sketch the image of ΔABC after a reflection in the line l. How can you prove the two triangles are congruent?



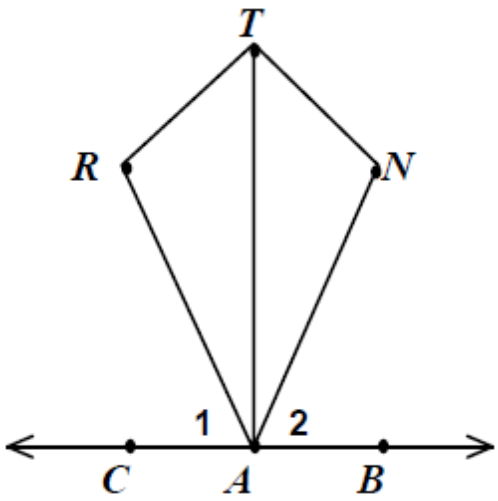
40. Given: R is the midpoint of $\overline{MS}$, $\overline{TR} \perp \overline{MS}$
Prove: $\overline{TM} \cong \overline{TS}$



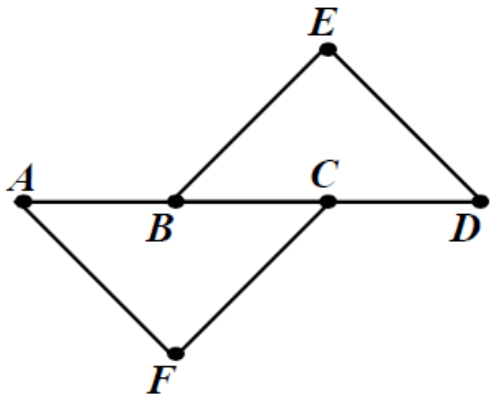
41. Given: $\overline{PO}$ is the perpendicular bisector of $\overline{QN}$.
Prove: $\Delta QOP \cong \Delta NOP$



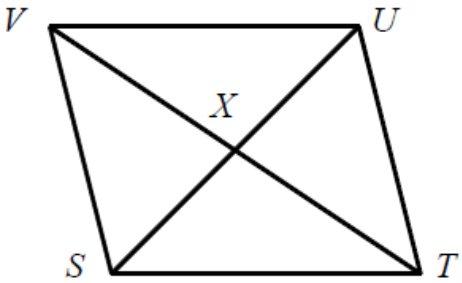
42. Given: $\overline{AN} \cong \overline{AR}$, $\overline{AT} \perp \overline{CB}$, and $\angle 1 \cong \angle 2$
Prove: $\overline{RT} \cong \overline{NT}$



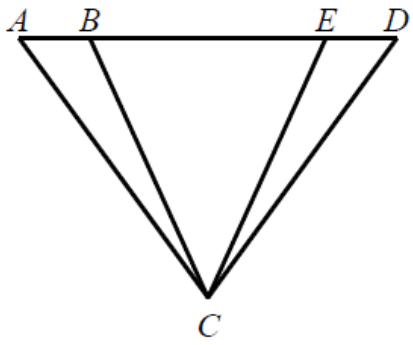
43. Given: $\overline{AB} \cong \overline{CD}$, $\angle A \cong \angle D$, and $\overline{AF} \cong \overline{DE}$
Prove: $\Delta FAC \cong \Delta EDB$



44. Given: $\overline{SV} \cong \overline{TU}$ and $\overline{SV} \parallel \overline{TU}$
Prove: $\overline{VX} \cong \overline{XT}$

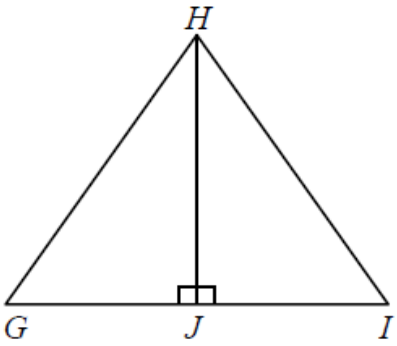


45. Given: $\overline{AC} \cong \overline{DC}$ and $\overline{BA} \cong \overline{ED}$
Prove: $\Delta ABC \cong \Delta DEC$



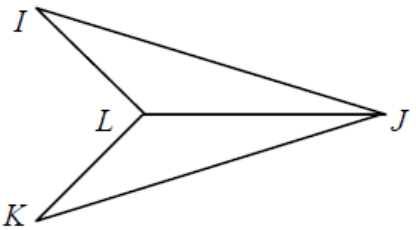
46. Given $\overline{GJ} \cong \overline{JI}$, which of the following statements is *true*?

(1) $\Delta GIJ \cong \Delta JHG$ by SSS
(2) $\Delta GJH \cong \Delta IJH$ by ASA
(3) $\Delta GHJ \cong \Delta IHJ$ by SAS
(4) $\Delta GJH \cong \Delta IJH$ by SSS



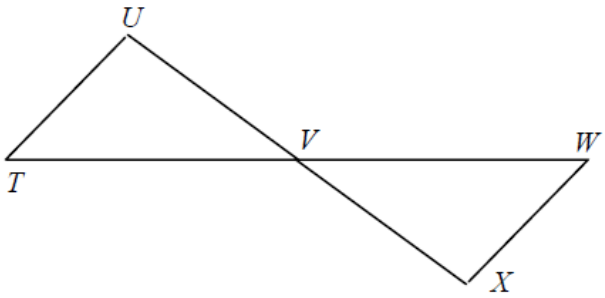
47. Given $\overline{LJ}$ bisects $\angle IJK$ and $\angle ILJ \cong \angle JLK$, which of the following statements is *true*?

(1) $\Delta IJL \cong \Delta KJL$ by SAS
(2) $\Delta IKL \cong \Delta LJI$ by SSS
(3) $\Delta ILJ \cong \Delta KLJ$ by ASA
(4) $\Delta ILJ \cong \Delta KLJ$ by SSS



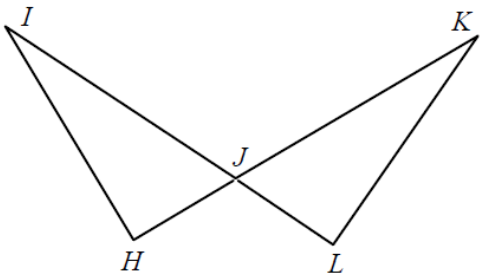
48. Given $\overline{TV} \cong \overline{VW}$ and $\overline{UV} \cong \overline{VX}$, which of the following statements is *true*?

(1) $\Delta TUV \cong \Delta WXV$ by SAS
(2) $\Delta TUV \cong \Delta XWV$ by ASA
(3) $\Delta TUV \cong \Delta VWX$ by SAS
(4) $\Delta TUV \cong \Delta WXV$ by ASA



49. Given $\overline{HJ} \cong \overline{JL}$ and $\angle H \cong \angle L$, which of the following statements is *true*?

(1) $\Delta HIJ \cong \Delta LKJ$ by ASA
(2) $\Delta HIJ \cong \Delta JKL$ by SAS
(3) $\Delta HIJ \cong \Delta KLJ$ by SAS
(4) $\Delta HIJ \cong \Delta KLJ$ by AAS



50. Find the length of QE.