

Name: \_\_\_\_\_

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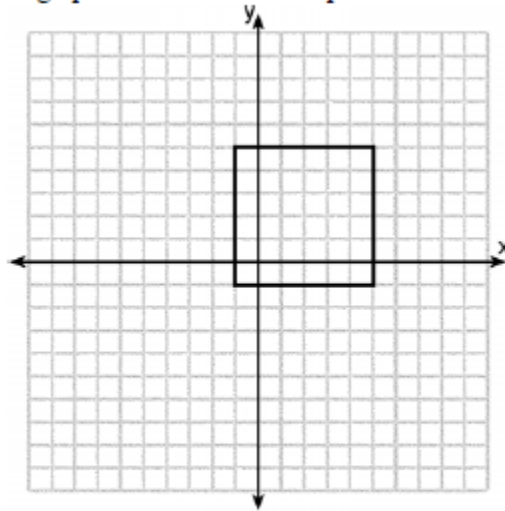
Mrs. Jacknis

Geometry CC

### Midterm Review #1

- 1) Which figure always has exactly four lines of reflection that map the figure onto itself?  
A) rectangle      B) square      C) regular octagon      D) equilateral triangle

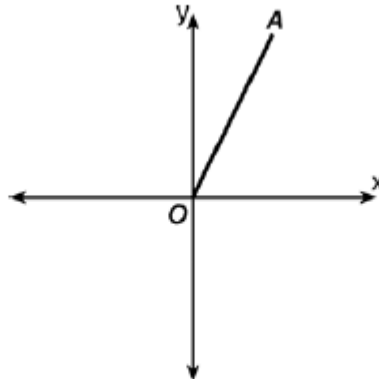
- 2) In the diagram below, a square is graphed in the coordinate plane.



A reflection over which line does not carry the square onto itself?

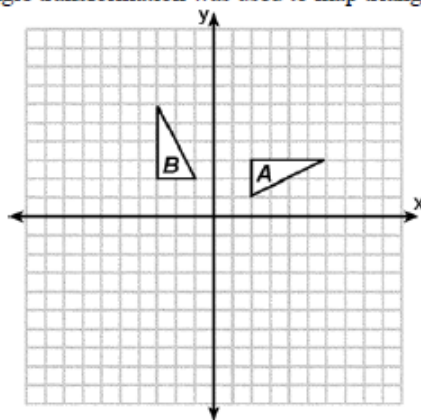
- A)  $x + y = 4$       B)  $y = x$       C)  $x = 5$       D)  $y = 2$

- 3) Which one of the following transformations of  $\overline{OA}$  would result in an image parallel to  $\overline{OA}$ ?



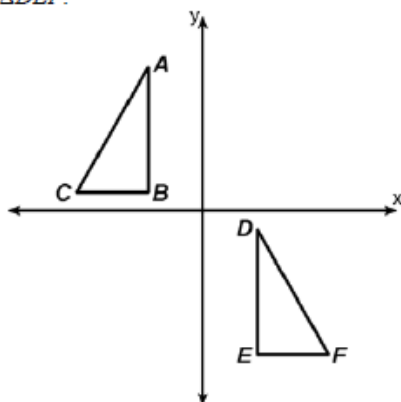
- A) a clockwise rotation of  $90^\circ$  about the origin      B) a reflection over the y-axis  
C) a translation of two units down      D) a reflection over the x-axis

- 4) In the diagram below, which single transformation was used to map triangle A onto triangle B?



- A) translation      B) line reflection      C) dilation      D) rotation

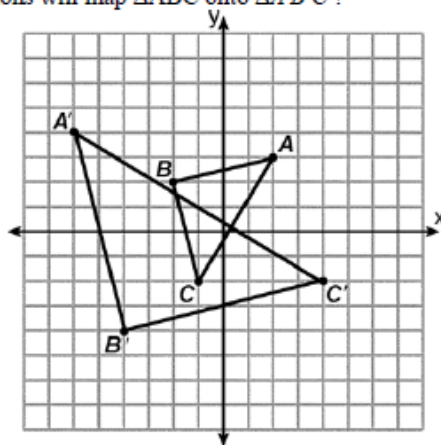
- 5) In the diagram below,  $\triangle ABC \cong \triangle DEF$ .



Which one of the following sequences of transformations maps  $\triangle ABC$  onto  $\triangle DEF$ ?

- A) a rotation of  $180^\circ$  about the origin followed by a translation  
 B) a counterclockwise rotation of  $90^\circ$  about the origin followed by a translation  
 C) a reflection over the x-axis followed by a translation  
 D) a reflection over the y-axis followed by a translation
- 6) Triangle  $A'B'C'$  is the image of  $\triangle ABC$  after a dilation followed by a translation. Which statement(s) would always be true with respect to this sequence of transformations?
- I.  $\triangle ABC \cong \triangle A'B'C'$   
 II.  $\triangle ABC \sim \triangle A'B'C'$   
 III.  $\overline{AB} \parallel \overline{A'B'}$   
 IV.  $AA' = BB'$
- A) IV, only      B) II and III, only      C) II, III, and IV, only      D) I and II, only

7) What sequence of transformations will map  $\triangle ABC$  onto  $\triangle A'B'C'$ ?

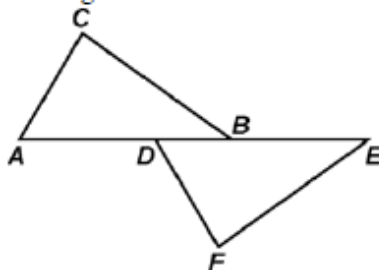


- A) translation and dilation B) rotation and reflection C) reflection and translation D) dilation and rotation

8) Two right triangles must be congruent if

- A) the corresponding legs are congruent B) the areas are equal  
C) an acute angle in each triangle is congruent D) the lengths of the hypotenuses are equal

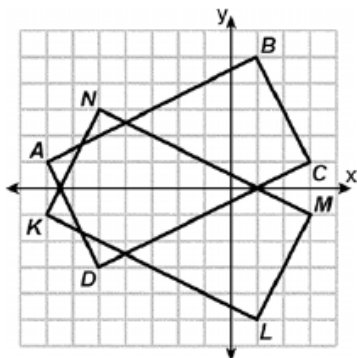
9) Kelly is completing a proof based on the figure below.



She was given that  $\angle A \cong \angle EDF$ , and has already proven  $\overline{AB} \cong \overline{DE}$ . Which pair of corresponding parts and triangle congruency method would *not* prove  $\triangle ABC \cong \triangle DEF$ ?

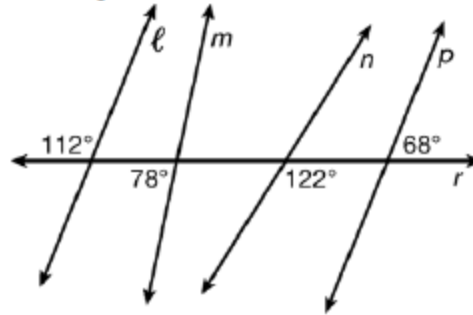
- A)  $\angle CBA \cong \angle FED$  and *ASA* B)  $\overline{BC} \cong \overline{EF}$  and *SAS* C)  $\angle C \cong \angle F$  and *AAS* D)  $\overline{AC} \cong \overline{DF}$  and *SAS*

10) On the set of axes below, rectangle  $ABCD$  can be proven congruent to rectangle  $KLMN$  using which transformation?



- A) reflection over the y-axis B) rotation C) reflection over the x-axis D) translation

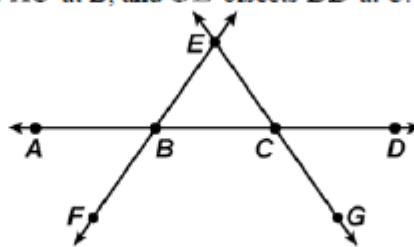
- 11) In the diagram below, lines  $\ell$ ,  $m$ ,  $n$ , and  $p$  intersect line  $r$ .



Which one of the following statements is true?

- A)  $m \parallel p$                       B)  $\ell \parallel n$                       C)  $m \parallel n$                       D)  $\ell \parallel p$

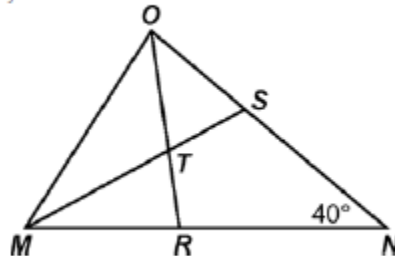
- 12) In the diagram below,  $\overleftrightarrow{FE}$  bisects  $\overline{AC}$  at B, and  $\overleftrightarrow{GE}$  bisects  $\overline{BD}$  at C.



Which one of the following statements is always true?

- A)  $\overleftrightarrow{BD}$  bisects  $\overline{GE}$  at C.                      B)  $\overline{FB} \cong \overline{EB}$                       C)  $\overleftrightarrow{AC}$  bisects  $\overline{FE}$  at B.                      D)  $\overline{AB} \cong \overline{DC}$

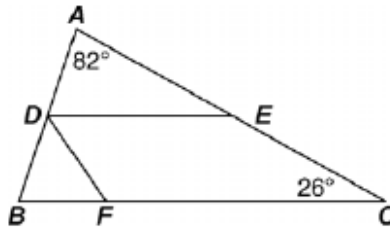
- 13) In the diagram below of triangle MNO,  $\angle M$  and  $\angle O$  are bisected by  $\overline{MS}$  and  $\overline{OR}$ , respectively. Segments  $MS$  and  $OR$  intersect at  $T$ , and  $m\angle N = 40^\circ$ .



If  $m\angle TMR = 28^\circ$ , what is the measure of angle  $OTS$ ?

- A)  $40^\circ$                       B)  $60^\circ$                       C)  $70^\circ$                       D)  $50^\circ$

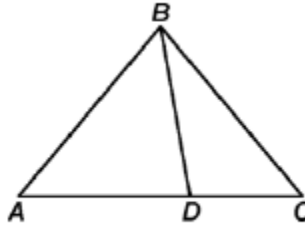
- 14) In the diagram below,  $\overline{DE}$  divides  $\overline{AB}$  and  $\overline{AC}$  proportionally,  $m\angle C = 26^\circ$ ,  $m\angle A = 82^\circ$ , and  $\overline{DF}$  bisects  $\angle BDE$ .



The measure of angle DFB is

- A)  $36^\circ$       B)  $82^\circ$       C)  $54^\circ$       D)  $72^\circ$

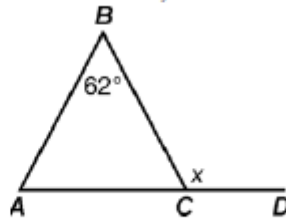
- 15) In the diagram below,  $m\angle BDC = 100^\circ$ ,  $m\angle A = 50^\circ$ , and  $m\angle DBC = 30^\circ$ .



Which one of the following statements is true?

- A)  $m\angle ABD = 80^\circ$       B)  $\triangle ABC$  is isosceles.      C)  $\triangle ABD$  is obtuse.      D)  $\triangle ABD$  is scalene.

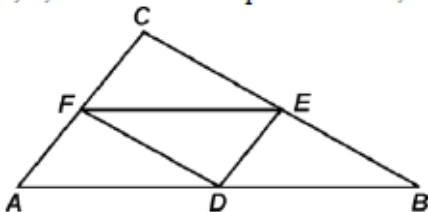
- 16) Given  $\triangle ABC$  with  $m\angle B = 62^\circ$  and side extended to  $D$ , as shown below.



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

- A)  $59^\circ$       B)  $118^\circ$       C)  $62^\circ$       D)  $121^\circ$

- 17) In the diagram below of  $\triangle ABC$ ,  $D$ ,  $E$ , and  $F$  are the midpoints of  $\overline{AB}$ ,  $\overline{BC}$ , and  $\overline{CA}$ , respectively.

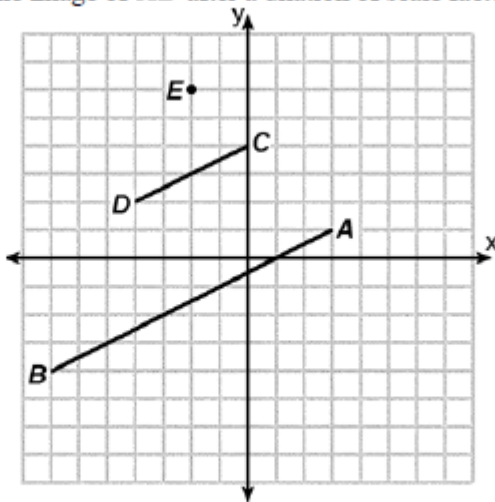


What is the ratio of the area of  $\triangle CFE$  to the area of  $\triangle CAB$ ?

- A) 1:1                      B) 1:3                      C) 1:4                      D) 1:2
- 18) Given  $\triangle ABC \cong \triangle DEF$ , which one of the following statements is *not* always true?
- A)  $m\angle A = m\angle D$                       B)  $\overline{BC} \cong \overline{DF}$   
C) perimeter of  $\triangle ABC =$  perimeter of  $\triangle DEF$                       D) area of  $\triangle ABC =$  area of  $\triangle DEF$
- 19) Which one of the following transformations would not always produce an image that would be congruent to the original figure?
- A) translation                      B) dilation                      C) reflection                      D) rotation
- 20) The image of  $\triangle DEF$  is  $\triangle D'E'F'$ . Under which transformation will the triangles *not* be congruent?
- A) a reflection over the line  $y = x$   
B) a reflection through the origin  
C) a dilation with a scale factor of 1 centered at  $(2,3)$   
D) a dilation with a scale factor of  $\frac{3}{2}$  centered at the origin

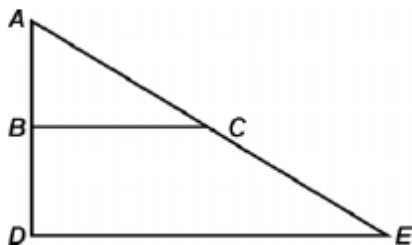
- 21) The vertices of  $\triangle JKL$  have coordinates  $J(5,1)$ ,  $K(-2,-3)$ , and  $L(-4,1)$ . Under which transformation is the image  $\triangle J'K'L'$  not congruent to  $\triangle JKL$ ?
- A) a translation of two units to the right and two units down  
 B) a counterclockwise rotation of 180 degrees around the origin  
 C) a reflection over the x-axis  
 D) a dilation with a scale factor of 2 and centered at the origin

- 22) In the diagram below,  $\overline{CD}$  is the image of  $\overline{AB}$  after a dilation of scale factor  $k$  with center  $E$ .



Which ratio is equal to the scale factor  $k$  of the dilation?

- A)  $\frac{BA}{EA}$       B)  $\frac{EA}{EC}$       C)  $\frac{EC}{EA}$       D)  $\frac{EA}{BA}$
- 23) The image of  $\triangle ABC$  after a dilation of scale factor  $k$  centered at point  $A$  is  $\triangle ADE$ , as shown in the diagram below.



Which statement is always true?

- A)  $2AB = AD$       B)  $\overline{AD} \perp \overline{DE}$       C)  $AC = CE$       D)  $\overline{BC} \parallel \overline{DE}$
- 24) If  $\triangle ABC$  is dilated by a scale factor of 3, which statement is true of the image  $\triangle A'B'C'$ ?
- A)  $3(m\angle C') = m\angle C$       B)  $m\angle A' = 3(m\angle A)$       C)  $B'C' = 3BC$       D)  $3A'B' = AB$

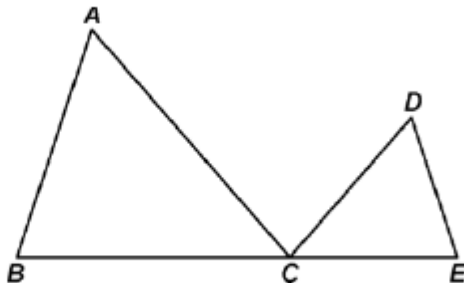
25) Which one of the following transformations would result in the perimeter of a triangle being different from the perimeter of its image?

- A)  $(x,y) \rightarrow (y,x)$       B)  $(x,y) \rightarrow (x,-y)$       C)  $(x,y) \rightarrow (4x,4y)$       D)  $(x,y) \rightarrow (x+2,y-5)$

26) A triangle is dilated by a scale factor of 3 with the center of dilation at the origin. Which one of the following statements is true?

- A) The slope of any side of the image is three times the slope of the corresponding side of the original triangle.  
B) The perimeter of the image is nine times the perimeter of the original triangle.  
C) The measure of each angle in the image is three times the measure of the corresponding angle of the original triangle.  
D) The area of the image is nine times the area of the original triangle.

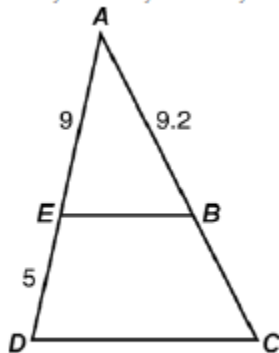
27) In the diagram below,  $\triangle ABC \sim \triangle DEC$ .



If  $AC = 12$ ,  $DC = 7$ ,  $DE = 5$ , and the perimeter of  $\triangle ABC$  is 30, what is the perimeter of  $\triangle DEC$ ?

- A) 17.5      B) 14.0      C) 14.8      D) 12.5

28) In the diagram of  $\triangle ADC$  below,  $\overline{EB} \parallel \overline{DC}$ ,  $AE = 9$ ,  $ED = 5$ , and  $AB = 9.2$ .

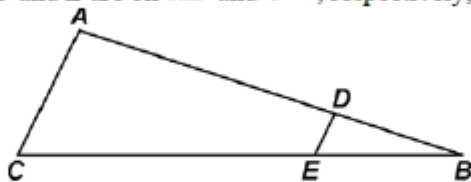


What is the length of  $\overline{AC}$ , to the nearest tenth?

- A) 5.1      B) 14.3      C) 5.2      D) 14.4



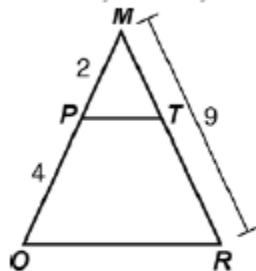
- 29) In the diagram of  $\triangle ABC$ , points  $D$  and  $E$  are on  $\overline{AB}$  and  $\overline{CB}$ , respectively, such that  $\overline{AC} \parallel \overline{DE}$ .



If  $AD = 24$ ,  $DB = 12$ , and  $DE = 4$ , what is the length of  $\overline{AC}$ ?

- A) 72                      B) 16                      C) 8                      D) 12

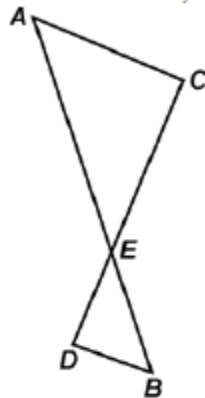
- 30) Given  $\triangle MRO$  shown below, with trapezoid  $PTRO$ ,  $MR = 9$ ,  $MP = 2$ , and  $PO = 4$ .



What is the length of  $\overline{TR}$ ?

- A) 3                      B) 5                      C) 4.5                      D) 6

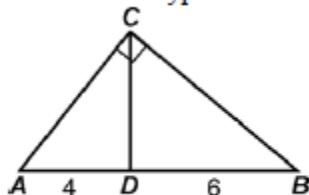
- 31) As shown in the diagram below,  $\overline{AB}$  and  $\overline{CD}$  intersect at  $E$ , and  $\overline{AC} \parallel \overline{BD}$ .



Given  $\triangle AEC \sim \triangle BED$ , which equation is true?

- A)  $\frac{ED}{EC} = \frac{AC}{BD}$                       B)  $\frac{EC}{AE} = \frac{BE}{ED}$                       C)  $\frac{AE}{BE} = \frac{AC}{BD}$                       D)  $\frac{CE}{DE} = \frac{EB}{EA}$

- 32) In the diagram of right triangle  $ABC$ ,  $\overline{CD}$  intersects hypotenuse  $\overline{AB}$  at  $D$ .



If  $AD = 4$  and  $DB = 6$ , which length of  $\overline{AC}$  makes  $\overline{CD} \perp \overline{AB}$ ?

- A)  $2\sqrt{10}$                       B)  $4\sqrt{2}$                       C)  $2\sqrt{6}$                       D)  $2\sqrt{15}$