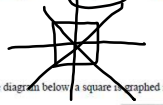
Name: _____ Date:_____

Mrs. Jacknis Geometry CC

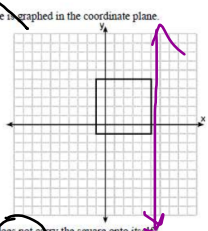
Midterm Review #1

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



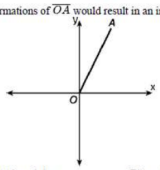
2) In the diagram below, a square is graphed in the coordinate plane.



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

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

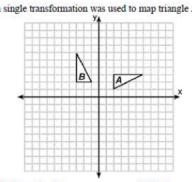
3) Which one of the following transformations of $\overline{OA}$ would result in an image parallel to $\overline{OA}$?



A) a clockwise rotation of 90° about the origin B) a reflection over the y−axis

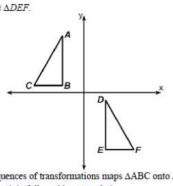
C) a translation of two units down D) a reflection over the x−axis

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, $\Delta ABC \cong \Delta DEF$.



Which one of the following sequences of transformations maps ΔABC onto ΔDEF?

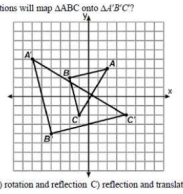
A) a rotation of 180° about the origin followed by a translation

B) a counterclockwise rotation of 90° 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

7) What sequence of transformations will map ΔABC onto ΔA′B′C′?



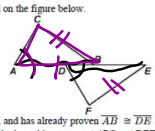
A) translation and dilation B) rotation and reflection C) reflection and translation D) dilation and rotation

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

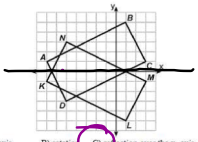
9) Kelly is completing a proof based on the figure below.



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

A) ∠CBA ≅ ∠FED and ASA B) $\overline{BC} \cong \overline{EF}$ and SAS C) ∠C ≅ ∠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?

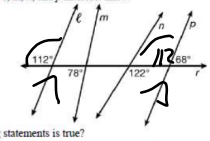


A) reflection over the y-axis B) rotation C) reflection over the x-axis D) translation

A (−7, 1) K (−7, −1)

(x, y) → (x, −y)

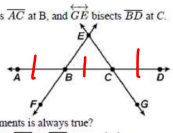
11) In the diagram below, lines ℓ, m, n, and p intersect line r.



Which one of the following statements is true?

A) m ∥ p B) ℓ ∥ n C) m ∥ n D) ℓ ∥ p

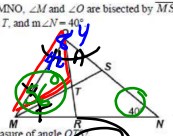
12) In the diagram below, $\overleftrightarrow{FE}$ bisects $\overline{AC}$ at B, and $\overleftrightarrow{GE}$ bisects $\overline{BD}$ at C.



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, ∠M and ∠O are bisected by $\overline{MS}$ and $\overline{OR}$, respectively. Segments MS and OR intersect at T, and m∠N = 40°.



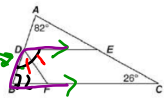
If m∠TMR = 28°, what is the measure of angle OTS?

A) 40° B) 60° C) 70° D) 50°

40 + 56 = 96

180 − 96 = 84/2

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

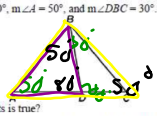


180−72=108/2=54

The measure of angle DFB is

A) 36° B) 82° C) 54° D) 72°

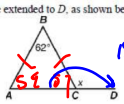
15) In the diagram below, m∠BDC = 100°, m∠A = 50°, and m∠DBC = 30°.



Which one of the following statements is true?

A) m∠ABD = 80° B) ΔABC is isosceles. C) ΔABD is obtuse. D) ΔABD is scalene.

16) Given ΔABC with m∠B = 62° and side extended to D, as shown below.



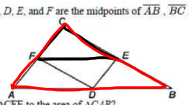
180−59→121

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

A) 59° B) 118° C) 62° D) 121°

180−62=118/2=59

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



What is the ratio of the area of ΔCFE to the area of ΔCAB?

A) 1:1 B) 1:3 C) 1:4 D) 1:2

18) Given ΔABC ≅ Δ*DEF*, which one of the following statements is *not* always true?

A) m∠A = m∠*D* B) $\overline{DC} \cong \overline{DF}$

C) perimeter of ΔABC = perimeter of Δ*DEF* D) area of ΔABC = area of Δ*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 ΔDEF is Δ*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 ΔJKL have coordinates $J(5,1)$, $K(-2,-3)$, and $L(-4,1)$. Under which transformation is the image $\Delta J'K'L'$ *not* congruent to ΔJKL?

A) a translation of two units to the right and two units down

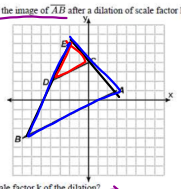
B) a counterclockwise rotation of 180 degrees around the origin

C) a reflection over the x-axis

D) 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.

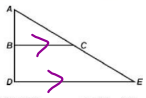
new / old



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

A) $\frac{BA}{EA}$ B) $\frac{EA}{BC}$ C) $\frac{EC}{EA}$ D) $\frac{EA}{BA}$

23) The image of ABC after a dilation of scale factor k centered at point A is ADE, as shown in the diagram below.

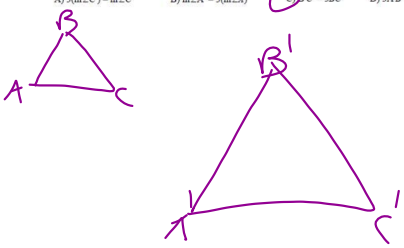


Which statement is always true?

A) $2AB = AD$ B) $\overline{AD} \perp \overline{DE}$ C) $AC = CE$ D) $\overline{BC} \parallel \overline{DE}$

24) If ΔABC is dilated by a scale factor of 3, which statement is true of the image $\Delta A'B'C'$?

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) $(x,y) \rightarrow (x+2,y-5)$

dilation
not a rigid motion

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.

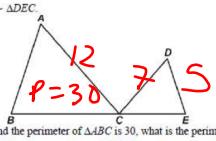
C) The measure of each angle in the image is three times the measure of the corresponding angle of the original triangle.

D) The area of the image is nine times the area of the original triangle.

$(\text{Ratio of Sides})^2 = \text{Ratio of areas}$ $(3)^2 = 9$

27) In the diagram below, ΔABC ~ ΔDEC.

Ratio of Sides = Ratio of Perimeters

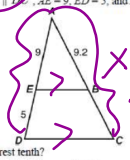


If $AC = 12$, $DC = 7$, $DE = 5$, and the perimeter of ΔABC is 30, what is the perimeter of ΔDEC?

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

$\frac{12}{7} = \frac{30}{x}$ $12x = 210$ $x = 17.5$

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

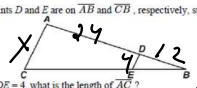


$14 \times \frac{9}{14} = \frac{9.2}{x}$

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 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 $\overline{AC}$?

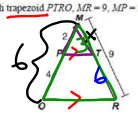
A) 72 B) 16 C) 8 D) 12

$\frac{12}{4} = \frac{36}{x}$

$12x = 144$

$x = 12$

30) Given ΔMRO shown below, with trapezoid $PTRO$, MR = 9, MP = 2, and PO = 4.



$18 = 6x$

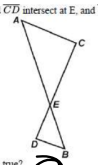
$x = 3$

$\frac{2}{x} = \frac{6}{9}$

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

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

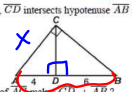
31) As shown in the diagram below, $\overline{AB}$ and $\overline{CD}$ intersect at E, and $\overline{AC} \parallel \overline{BD}$.



Given ΔAEC ~ ΔBED, which equation is true?

A) $\frac{ED}{BC} = \frac{AC}{BD}$ B) $\frac{BC}{AE} = \frac{BE}{ED}$ 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) $2\sqrt{15}$

10

$\frac{H}{L} = \frac{L}{S}$

$\frac{10}{x} = \frac{x}{4}$

$\sqrt{x^2} = \sqrt{40}$

$x = \sqrt{4}\sqrt{10}$

$= 2\sqrt{10}$