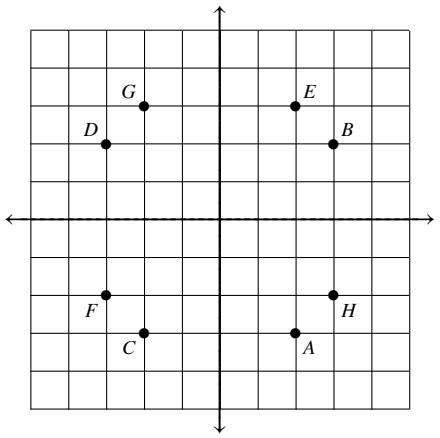
CCM2 Unit 1 NC Final Exam Review

1. What is the image of point A after a rotation of 90° in the counterclockwise direction?



A. B B. D C. E D. F

2. What is the image of $(-2, 3)$ after a rotation of 90° clockwise?

A. $(-3, -2)$ B. $(3, 2)$

C. $(3, -2)$ D. $(-2, -3)$

3. What is the image of $(-4, 1)$ after a rotation of 180° clockwise?

A. $(-1, -4)$ B. $(1, 4)$

C. $(4, -1)$ D. $(1, -4)$

4. Select the letters that would appear the same after a 180° rotation about the center.

I. A

II. X

III. O

IV. R

A. II only B. III only

C. II and III D. II and IV

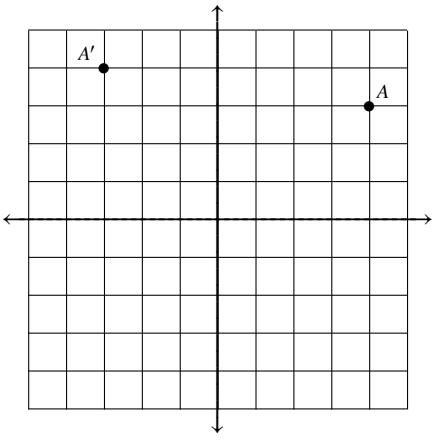
5. A' is the image of A. Which of the following rotations could be used to perform this transformation?

I. 90° counterclockwise

II. 90° clockwise

III. 270° clockwise

IV. 270° counterclockwise



A. I only B. IV only

C. I and II D. I and III

6. If a point in Quadrant II is reflected in the y-axis, its image will lie in Quadrant _____.

A. I B. II C. IV

D. on the y-axis

7. A point $(3, 5)$ is reflected over the x-axis. What are the coordinates of the image point?

A. $(3, 0)$ B. $(5, 3)$

C. $(3, -5)$ D. $(-3, 5)$

8. Find P', the image of $P(-3, 6)$, after a reflection across the line $y = x$.

A. $(6, -3)$ B. $(-3, -6)$

C. $(3, -6)$ D. $(6, 3)$

9. If $P(3, -4)$ is reflected on the point $(3, 0)$, what are the coordinates of P', the image of P?

A. $(3, 4)$ B. $(3, -4)$

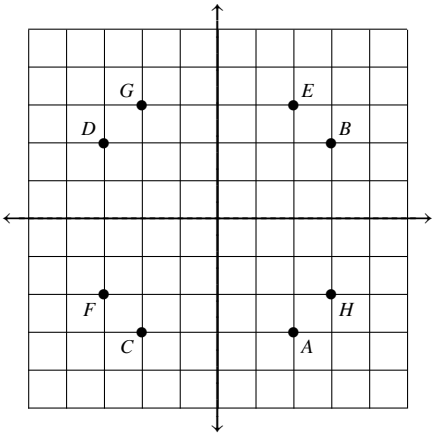
C. $(-3, -4)$ D. $(4, 3)$

10. What are the coordinates of the image of $P(3, -4)$ under a reflection in the y-axis?

A. $(-4, 3)$ B. $(-3, -4)$

C. $(3, 4)$ D. $(-3, 4)$

11. What is the image of point A after a rotation of 90° in the counterclockwise direction followed by a reflection in the x-axis?



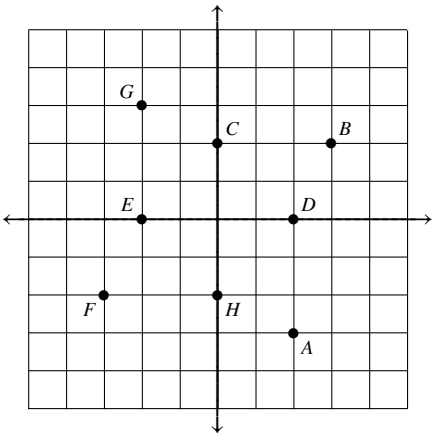
A. C B. D C. E D. H

12. What is the image of point $A(2, -3)$ after these three transformations?

I. a translation 2 units to the left and 5 units up;

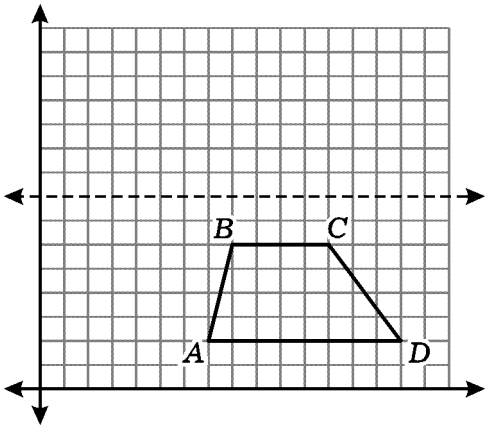
II. A reflection in the x-axis; and

III. A 180° clockwise rotation about the origin



A. C B. E C. G D. H

13. If the trapezoid *ABCD* is reflected about the dashed line, what are the new coordinates for *D′*?



A. $(7, -2)$ B. $(7, 14)$

C. $(15, -2)$ D. $(15, 14)$

14. What are the coordinates of R', the image of $R(-1, 8)$, after a reflection in the origin?

A. $(8, 1)$ B. $(-8, -1)$

C. $(-1, -8)$ D. $(1, -8)$

15. Which shape, if rotated 90°, will coincide with itself? ("Coincide" means means there's an exact match between the set of points, or one shape will lay perfectly on top of the other.)

A. rectangle B. equilateral triangle

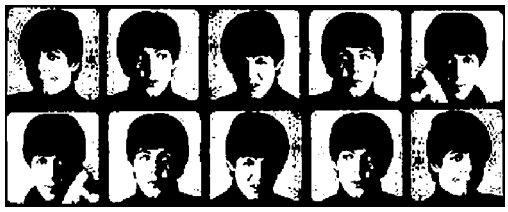
C. parallelogram D. square

16. A congruence transformation that includes both a reflection and a translation is called "glide symmetry". For example:

reflection + translation = glide symmetry

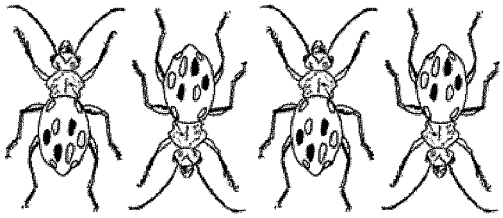
Glide symmetry is very common in nature and the visual arts. Which of the following shows glide symmetry?

I.



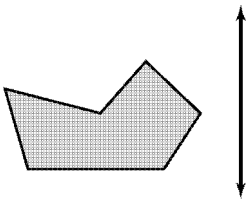
II.

III.

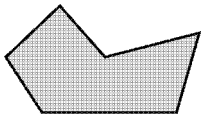


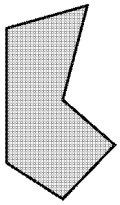
A. I only B. II only C. II and III only D. I, II and III

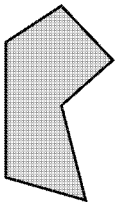
17. The following figure appears in a math workbook. Students are asked to reflect the polygon across the line, then rotate it 90° clockwise.

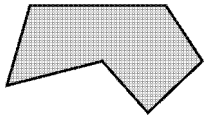


Which figure shows the result of the two transformations?

A. 

B. 

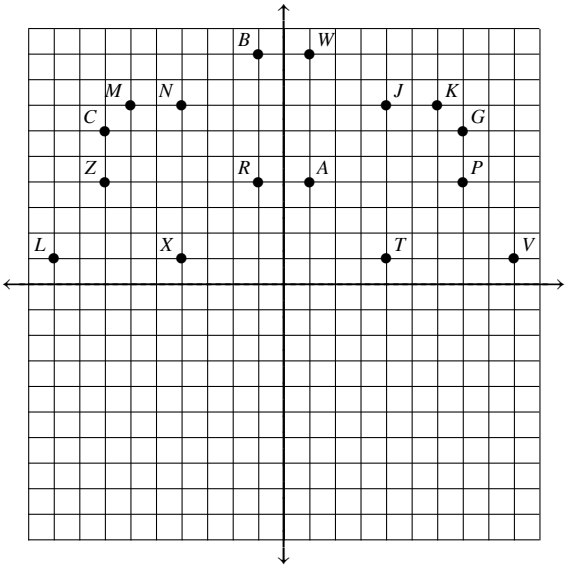
C. 

D. 

18. $\square RPGW$, with coordinates $R(-1, 4)$, $P(7, 4)$, $G(7, 6)$ and $W(1, 9)$, undergoes the transformations:

I. reflection in the y-axis; and

II. rotation of 90° clockwise



Which of the following is the image figure?

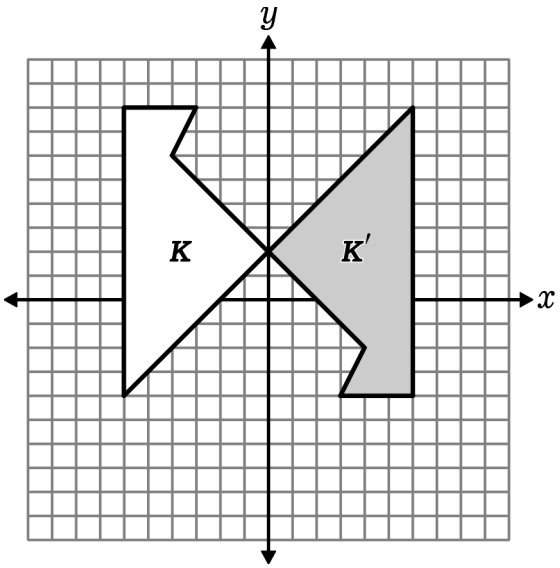
A. $\square AZCB$

B. $\square TJKV$

C. $\square XTCB$

D. $\square ATJB$

19. In the diagram, K and K' are congruent.



Which of the following is a way of transforming K into K'?

A. a rotation of 180° about the origin

B. a clockwise rotation of 90° about the point $(0, 2)$

C. a reflection across the x-axis, then a translation down 2 units

D. a reflection across the y-axis, then a reflection across the line $y = 2$

20. Which of the following is *not* a congruence transformation for a two-dimensional figure?

A. dilation B. rotation

C. reflection D. translation

21. On a coordinate system, a square which lies entirely in quadrant I has a vertex at the origin. Another square, which lies entirely in quadrant III, also has a vertex at the origin. If the squares are congruent, this could be shown with all of the following transformations *except*—

A. translation B. rotation

C. reflection D. dilation

22. A translation maps $J(1, 4)$ onto $K(7, -3)$. Find the coordinates of the image of $L(5, 10)$ under the same translation.

A. $(11, 3)$ B. $(-1, 17)$

C. $(1, -17)$ D. $(-1, -17)$

23. $\triangle STV$ has vertices $S(-3, -2)$, $T(-4, 3)$ and $V(-2, 3)$. If $(x, y) \rightarrow (x + 2, y - 3)$, what are the vertices of its image?

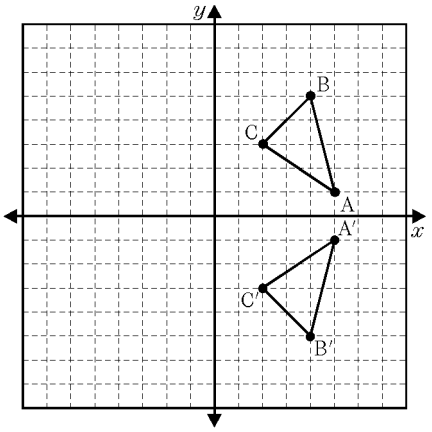
A. $S'(-1, -5)$, $T'(-2, 0)$, $V'(0, 0)$

B. $S'(-5, 1)$, $T'(-6, 6)$, $V'(-4, 6)$

C. $S'(-1, -4)$, $T'(-2, 5)$, $V'(1, 6)$

D. $S'(3, 2)$, $T'(4, -3)$, $V'(2, -3)$

24. What is the mapping for the reflection where $\triangle ABC$ maps to $\triangle A'B'C'$?



A. $(x, y) \rightarrow (x, -y)$ B. $(x, y) \rightarrow (-x, y)$

C. $(x, y) \rightarrow (x, y)$ D. $(x, y) \rightarrow (x, -\frac{1}{2}y)$

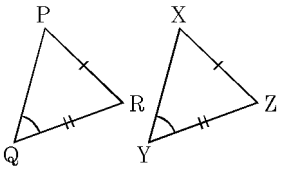
25. State the congruence relation for $\triangle XYZ$ and $\triangle PQR$.

A. ASA

B. SSA

C. SAS

D. not necessarily congruent



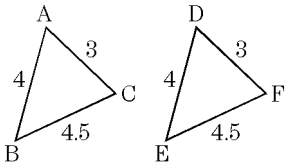
26. State the congruence relation for $\triangle ABC$ and $\triangle DEF$.

A. SSS

B. SSA

C. AAA

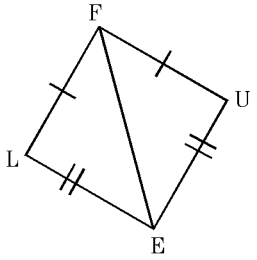
D. SAS



27. State the congruence relation for $\triangle FLE$ and $\triangle FUE$.

A. ASA B. AAA

C. SSA D. SSS



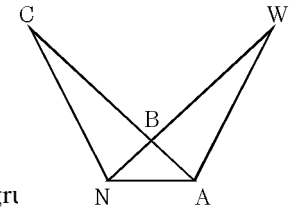
28. In the figure shown, $m\angle CNA = m\angle WAN$ and $CN = WA$. What congruence statement proves $\triangle CAN \cong \triangle WNA$?

A. SAS

B. ASA

C. SSA

D. not necessarily congru

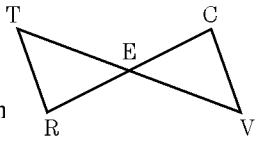


29. In the figure shown, $m\angle T = m\angle V$ and E is the midpoint of $\overline{TV}$. What congruence statement proves $\triangle TER \cong \triangle VEC$?

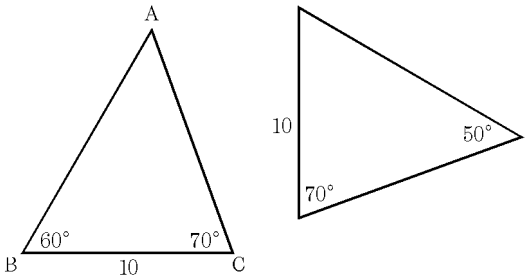
A. SSS B. ASA

C. SSA

D. not necessarily con



30. If the triangles can be proved congruent using only the information marked on the diagram, what is the reason?



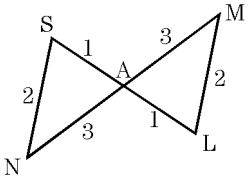
A. SSA

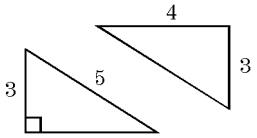
B. ASA

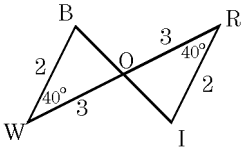
C. SAS

D. cannot be proven congruent

31. Which diagrams show two triangles which *must* be congruent?

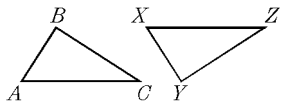
I. 

II. 

III. 

A. I only B. II only C. I and II only D. I and III only

32. The ASA (Angle, Side, Angle) relationship is a way to show that triangles are congruent. Sets of triangle parts are listed. Which set gives parts that allow triangle *ABC* to be proven congruent to triangle *XYZ* by ASA?

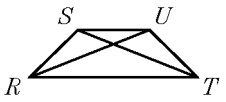


A. $\angle A \cong \angle X$; $\angle B \cong \angle Y$; $\angle C \cong \angle Z$

B. $\angle A \cong \angle X$; $\overline{BC} \cong \overline{YZ}$; $\overline{AC} \cong \overline{XZ}$

C. $\angle A \cong \angle X$; $\overline{AB} \cong \overline{XY}$; $\overline{AC} \cong \overline{XZ}$

D. $\angle A \cong \angle X$; $\overline{AB} \cong \overline{XY}$; $\angle B; \cong \angle Y$

33. 

Triangle *RST* is congruent to triangle *TUR*. Complete each statement.

a) $\angle RST \cong$ _____

b) $\angle STR \cong$ _____

c) $\overline{RU} \cong$ _____

d) triangle *STR* ≅ triangle _____

34. What are the coordinates of point $(2, 3)$ after a translation to the right of 2 units and down 5 units, and then a dilation by a factor of 1.5 about $(0, 0)$?

A. $(6, -3)$ B. $(-2, -1)$

C. $(3, 0)$ D. $(0, 2)$

35. What are the coordinates of point $(2, 3)$ after a translation to the left of 2 units and down 5 units, and then a dilation by a factor of 0.5 about $(0, 0)$?

A. $(-6, -3)$ B. $(-2, -1)$

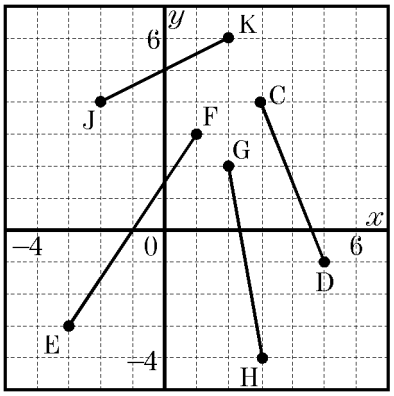
C. $(0, -1)$ D. $(0, 2)$

36. $\triangle A'B'C'$, with vertices $A'(0, 0)$, $B'(0, 2)$ and $C'(1.5, 3)$, is the image of $\triangle ABC$ with vertices $A(0, 0)$, $B(0, 4)$, and $C(3, 6)$ under a dilation. If the origin is the center of dilation, what is the scale factor?

A. $\frac{1}{4}$ B. $\frac{1}{2}$ C. 2

D. undefined

37. State the coordinates of the midpoint of line segment EF.



A. $(-2, 0)$ B. $(-1, 0)$

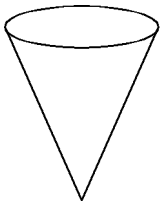
C. $(2, 3)$ D. $\sqrt{52}$

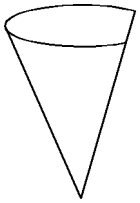
38. Determine the coordinates of the midpoint of the line segment with endpoints $R(6, -2)$ and $S(-3, -2)$.

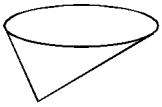
A. $(1, 2)$ B. $(1.5, 2)$

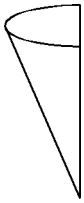
C. $(1.5, -2)$ D. $(3, -2)$

39. If you cut this object in half horizontally, what shape could result?



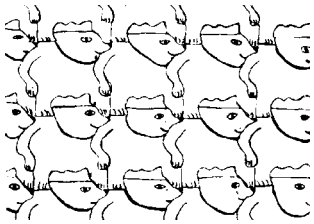
A. 

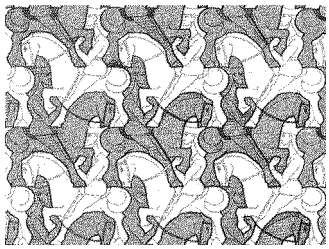
B. 

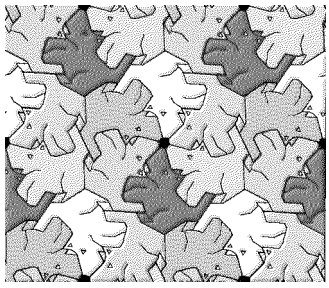
C. 

D. 

40. A tessellation is a repeating pattern based on congruence transformations. Here are some examples:

I. 

II. 

III. 

Which of the above examples use only *translations* to make the pattern?

A. I only B. II only C. I and II only D. II and III only

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1.
Answer: A
Objective: G.CO.02

2.
Answer: B
Objective: G.CO.02

3.
Answer: C
Objective: G.CO.02

4.
Answer: C
Objective: G.CO.02

5.
Answer: D
Objective: G.CO.02

6.
Answer: A
Objective: G.CO.02

7.
Answer: C
Objective: G.CO.02

8.
Answer: A
Objective: G.CO.02

9.
Answer: A
Objective: G.CO.02

10.
Answer: B
Objective: G.CO.02

11.
Answer: D
Objective: G.CO.02

12.
Answer: A
Objective: G.CO.02

13.
Answer: D
Objective: G.CO.02

14.
Answer: D
Objective: G.CO.02

15.
Answer: D
Objective: G.CO.03

16.
Answer: D
Objective: G.CO.04

17.
Answer: C
Objective: G.CO.05

18.
Answer: B
Objective: G.CO.05

19.
Answer: D
Objective: G.CO.06

20.
Answer: A
Objective: G.CO.06

21.
Answer: D
Objective: G.CO.06

22.
Answer: A
Objective: G.CO.06

23.
Answer: A
Objective: G.CO.06

24.
Answer: A
Objective: G.CO.06

25.
Answer: D
Objective: G.CO.07

26.
Answer: A
Objective: G.CO.07

27.
Answer: D
Objective: G.CO.07

28.
Answer: A
Objective: G.CO.07

29.
Answer: B
Objective: G.CO.07

30.
Answer: B
Objective: G.CO.07

31.
Answer: D
Objective: G.CO.07

32.
Answer: D
Objective: G.CO.07

33.
Answer: $\angle TUR$; $\angle URT$; ST; URT
Objective: G.CO.07

34.
Answer: A
Objective: G.SRT.01A

35.
Answer: C
Objective: G.SRT.01A

36.
Answer: B
Objective: G.SRT.01B

37.
Answer: B
Objective: G.GPE.06

38.
Answer: C
Objective: G.GPE.06

39.
Answer: D
Objective: G.GMD.04

40.
Answer: A
Objective: G.CO.04