HARAMAYA IFA BORU BOARDING SPECIAL SECONDARY SCHOOL
MATHEMATICS WORKSHEET FOR GRADE 11TH A/Y: 2017

CHOOSE THE CORRECT ANSWER FROM THE GIVEN ALTERNATIVES

1. Which one of the following is not rigid transformation of the plane?

    A. translation   B. Stretching   C. Reflection   D. Rotation

2. A triangle is rotated 90° clockwise about the origin. If its original vertices are at (1, 2), (3, 4), and (5, 0), what are the coordinates of the vertex at (1, 2) after rotation?

    A. (2, -1)   B. (-2, 1)   C. (2, 1)   D. (-1, 2)

3. Which the type of rigid motion applied if a figure is flipped over a line and its orientation is reversed.

    A. Rotation   B. Reflection   C. Translation   D. Glide reflection

4. If a translation T takes the (3,-5) point to the point (1 ,4), what is the image of the circle $x^2 + y^2 - 3x + 5y = 0$

    A. $x^2 + y^2 + x - 13y = -34$ C. $x^2 + y^2 + 13x - 13y + 4 = 0$
    B. $x^2 + y^2 + 13x - y + 34 = 0$ D. $x^2 + y^2 + x - 13y = 34$

5. What is the image the point (5, 1) when it is rotated 270^0 clockwise, then reflected over the line x=4

    A. (7, -5)   B. (9, 5)   C. (9, -5)   D. (5, 9)

6. Which one of the following is the image of point A(-1, 1) after reflection in the line y=3

    A. (-1, 5)   B. (1, 5)   C. (7, 1)   D. (1, 7)

7. In rotation R, the image of (3, 5) is (-2, 4) and the image of (1, 4) is (-1, 2), then what is center of rotation and image of $(-1, 0)$ respectively?

    A. $(3, 2): (3, 0)$ B. $(2, 2): (0, 3)$ C. $(2, 1): (3, 0)$ D. $(1, 2): (3, 0)$

8. Which one of the following is the image of point A(-1, 5) after reflection in the line x=1

    A. (-1, 5)   B. (5, 3)   C. (-5, 3)   D. (3, 5)

9. Which one of the following is a transformation that occurs when every point of a figure is moved from one location to another location along the same direction through the same distance

    A. Reflection   C. Identity transformation   B. Translation   D. Rotation

10. Which one of the following statement is not true?

    A. Every circle with center at the center of rotation is fixed

    B. The image of circle with center at origin reflected about the line y=x is itself.

    C. Reflection is one to one correspondence

    D. Translation followed by reflection is equal to reflection followed by translation

11. What is the image of the point A(-6, -4) with respect to the translation $(x, y) \rightarrow (x - 3, y + 4)$?

    A. (-9, 0)   B. (-9, -8)   C. (-4, 9)   D. (0, -9)

12. What is the image of a point A(5, 3) when it is reflected over the y-axis, then rotated 90^0 clockwise?

    A. (3, -5)   B. (-5, 3)   C. (-5, -3)   D. (3, 5)

13. Which of the following is a type of rigid motion?

        A.   Reflection   B. Dilation   C. Stretching   D. Shearing

14. What happens to the shape and size of a figure under rigid motion?

        A. The shape changes, but the size remains the same

        B. The size changes, but the shape remains the same

        C. Both shape and size change

        D. Both shape and size remain the same

15. What is preserved during rigid motion?

    A. Distance and angles   B. Orientation only   C. Area only   D. Shape, but not size

16. A triangle is reflected over the y-axis. Which of the following properties remain unchanged?

    A. Orientation and shape   B. Size only   C. Shape and size   D. Orientation only

17. Two congruent shapes are related by a rigid motion. Shape A is at (0, 0), (1, 0), (1, 1), and (0, 1), while shape B is at (2, 1), (3, 1), (3, 2), and (2, 2). What rigid motion maps shape A to shape B?

        A. Reflection over the y-axis   C. Translation by vector (2, 1)

        B. Rotation by $180°$ D. Glide reflection

18. If a point (3, -2) is translated by vector $(-4,5)$, what are its new coordinates?

        A. (7, 3)   B. (-1, 3)   C. (-1, -7)   D. (7, -7)

19. Which of the following vector represents a translation that moves point (2, -1) to (5, 3)?

        A. (3,4)   B. $(-3, -4)$ C. $(5, -1)$ D. $(-5,1)$

20. What does translation of a geometric figure involve?

    A. Rotation around a point   C. Changing its size

    B. Sliding the figure without changing its shape or orientation   D. Reflecting it over a line

21. If the circle $(x - 3)^2 + (y + 2)^2 = 4$ is translated by $(2, -3)$, what is the new equation?

    A. $(x - 2)^2 + (y + 5)^2 = 4$ C. $(x - 3)^2 + (y + 2)^2 = 9$

    B. $(x - 5)^2 + (y + 1)^2 = 4$ D. $(x + 2)^2 + (y - 3)^2 = 4$

22. How does translating a line affect its slope?

        A. The slope increases.   C. The slope decreases.

        B. The slope remains unchanged.   D. The slope becomes the negative reciprocal

23. A line $y = 2x + 1$ is translated by $(-3, 4)$. What is the equation of the translated line?

    A. $y = 2(x + 3) + 5$ C. $y = 2(x - 3) + 1$

    B. $y - 4 = 2(x + 3)$ D. $y + 4 = 2(x - 3)$

24. What is the line of reflection if a reflection carries the point (1, 2) to the point (3,4)?

    A. $x + y = -5$ B. $x - y = 5$ C. $y - x = -5$ D. $x + y = 5$

25. Is the reflection of a horizontal line over any vertical line also horizontal?

A. Only if the lines are perpendicular   B. Yes, because the slope remains unchanged

C. No, it becomes vertical   D. It depends on the specific lines

26. When reflecting the line $y = mx + b$, over $y = -x$, what is the slope of the reflected line?

   A. $\dfrac{-1}{m}$ B. m C. $-m$ D. $\dfrac{1}{m}$

27. Two congruent figures are related by a reflection over the line $y = x$. If one vertex of the original figure is at (3, 5), what is the corresponding vertex of the reflected figure?

   A. (-5, -3)   B. (3, -5)   C. (5, 3)   D. (-3, 5)

28. What happens when a circle is reflected over a line?
   A. The radius changes, but the center stays the same.
   B. The center is reflected across the line, and the radius remains unchanged.
   C. Both the center and radius change.
   D. The circle becomes an ellipse.

29. Why does the radius of a circle remain unchanged when reflected over a line?
   A. The center of the circle changes, affecting the radius
   B. Reflection changes the distance between points.
   C. Reflection preserves distances between points.
   D. Reflection only changes angles, not distances

30. A circle with center at (3, -5) and radius 7 is reflected over the line $y = -x$. What is the center of the reflected circle?
   A. (5, -3)   B. (-3, 5)   C. (3, 5)   D. (-5, 3)

31. If a circle $(x - 4)^2 + (y + 1)^2 = 25$ is reflected over y= 1, what is the new center of the circle?
   A. (4, -3)   B. (4, 3)   C. (-4, 3)   D. (-4, -3)

32. Does the reflection of a circle over any line change its size?

   A. Yes, the radius increases.   C. Yes, the radius decreases.

   B. No, the size (radius) remains unchanged.   D. It depends on the line of reflection

33. When reflecting a circle $(x - h)^2 + (y - k)^2 = r^2$ over $x = c$, what is the new center?

   A. $(h + 2c, k)$ B. $(2c - h, k)$ C. $(-h, -k)$ D. $(h - 2c, -k)$

34. If T is a translation that sends $(0, 0)$ to $(3, -2)$ and M is reflection that maps $(0, 0)$ to $(2, 4)$ then T(M (1, 3))?
   A. (0, -1)   B. (4, 1)   C. (32, 4)   D. (3, 2)

35. In a reflection the image of the point $p(-2, 3)$ is $p'(6,7)$. What is the equation of line of reflection?

   A. $x + 2y - 9 = 0$ B. $2x + y - 9 = 0$ C. $2x + y + 9 = 0$ D. $x + 2y + 9 = 0$

36. The image of the point (2,2) reflected in line passing through the origin and making $60°$ with the $x - axis$

   A. $(-1 + \sqrt{3}, -1 + \sqrt{3})$ B. $(-1 + \sqrt{3}, 1 + \sqrt{3})$ C. $(1 + \sqrt{3}, -1 + \sqrt{3})$ D. $(1 + \sqrt{3}, 1 + \sqrt{3})$

37. What does rotation about the origin involve?

      A. Sliding the figure without changing its shape

      B. Turning the figure around the origin by a certain angle

      C. Flipping the figure over a line

      D. Changing the size of the figure

38. If the point (3, 4) is rotated 90° counterclockwise about the origin, what is its new position?

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

39. The line $y = -13x + 4$ *r*rotated 270° counterclockwise about the origin. What is the equation of the rotated line?

      A. $y = 3x + 4$ B. $y = -3x + 4$ C. $y = 3x - 4$ D. $y = -3x - 4$

40. Does the radius of a circle change when the circle is rotated about the origin?

      A. Yes, it increases.   C. No, the radius remains unchanged.

      B. Yes, it decreases.   D. It depends on the angle of rotation

41. Let L be a line whose equation is $2x - y = 10$ which one of the following is the equation of image of L after reflection in the line $y = 2x - 5$ followed by the rotation through 90° about the origin.

    A. $x + 2y = 0$ B.$2x + y = 0$ C. $x + 2y = 5$ D. $x - 2y = 5$

42. When a line $y = mx + b$ is rotated 180° about the origin, what is the new equation?

      A. $y = -mx + b$ B. $y = mx - b$ C. $y = -mx - b$ D. $y = mx + b$

43. A line $y = 2x + 1$ is rotated 90° clockwise about point (0,1). What happens to its slope?

      A. It becomes $-1/2$ B. It remains 2   C. It becomes 1/2   D. It becomes -2

44. When a line $y = mx + c$ is rotated 180° about point (a, b) what is the new equation?

      A. $y = -mx + 2b - c$ C. $y = mx + c$ C. $y = -mx - 2b - c$ D. $y = mx - 2b + c$

45. A triangle with vertices at (0,0),(1,2),(2,0) is rotated 90° clockwise about (1,1). What are the new coordinates?

    A. (2, 2), (0, 1), (2, 0)   C. (2, 1), (1, 0), (2, −1)

    B. (2, 0), (1, −1), (0, 0)   D. (1, 0), (2, −1), (3, 0)

46. What is the equation of the line l: $3x - 2y = 1$ after it has been rotated $-135°$ about (-2, 3)?

    A. $y + 5x - 3 - 2\sqrt{2} = 0$ B. $y + 5x + 7 + 13\sqrt{2} = 0$ C. $y + 5x + 7 + \sqrt{2} = 0$
    D. $y + 5x - 3 - 15\sqrt{2} = 0$

47. A square with vertices at (1, 1), (1, 4), (4, 4), (4, 1) is translated by (−2, 3). What are the new coordinates of the vertices?

A. (−1, 4), (−1,7), (2,7), (2,4)   C. (3, −2), (3,1), (6,1), (6, −2)
B. (−1, −2), (−1,1), (2,1), (2, −2)   D. (1,4), (1,7), (4,7), (4,4)

48. Does translating a circle change its size or shape?

A. Yes, it changes both size and shape.   C. No, size and shape remain unchanged.

B. Size changes, shape remains the same.   D. Shape changes, size remains the same.

49. After translating a line $y = mx + c$ by (h, k) what is the equation of the translated line?

A. $y = mx + (c + k)$ B. $y - k = m(x - h) + (c + k)$

C. $y - k = m(x - h) + c$ D. $y = m(x - h) + (c - k)$

50. If the images of line $y - 2x = -3$ under a translation is $y - 2x = -14$, then which one of the following is translation of the translation line?

A. (2, 7)   B. (1, 9)   C. (5, −1)   D. (0, 11)

51. What is a reflection in geometry?

A. A rotation around a point   C. A slide of a figure in any direction

B. A flip over a line creating a mirror image   D. A change in size of a figure

52. If point (4, 3) is reflected over the y-axis, what are its coordinates?

A. (−4, 3)   B. (4, −3)   C. (−4, −3)   D. (3, 4)

53. Which of the following lines of reflection will map point (5, -2) to (5, 2)?

A. The x −axis   B. The y-axis   C. Line $y = x$ D. Line $x = 0$

54. Why does the reflection of a line over another line maintain the same slope?

A. Because reflection reverses the direction   C. It does not maintain the same slope

B. Because reflection preserves distance   D. Because reflection changes angles

55. What is the effect on the coordinates of a point when reflected over the y-axis?

A. Only the y-coordinate changes sign   C. Both coordinates change sign

B. Coordinates remain the same   D. Only the x-coordinate changes sign

56. Find the reflection of the line $y = 2x + 3$ over the y-axis?

A. $y = -2x - 3$ B. y=2x−3   C. $y = 2x - 3$ D. $y = -2x + 3$

57. A line $y = -x + 2$ is reflected over the line $y = x$. What is the equation of the reflected line?
A. $y = -x - 2$ B. $y = x - 2$ C. $y = x + 2$ D. $y = -x + 2$

58. If the line $3x - 4y + 10 = 0$ is translated by T to $3x - 4y + 27 = 0$ and the image of point $(0, 1)$ by T is $(3, t)$, then which of the following is the value of t?

    A. -3 B. -1 C. -2 D. 0

59. Which one of the following is a transformation that occurs when every point of a figure is moved from one location to another location along the same direction through the same distance

         A. Reflection   B. Identity transformation   C. Translation   D. Rotation

60. Which one of the following statement is not true?

         A. Every circle with center at the center of rotation is fixed

         B. The image of circle with center at origin reflected about the line is itself.

         C. Reflection is one to one correspondence

         D. Translation followed by reflection is equal to reflection followed by translation.

61. If the line T takes the point (1, 2) to (3, 4), then T takes the line L: 2x+3y+6=0 to:

         A. 2x+3y-16=0   B. 2x+3y-4=0   C. 3x+2y-4=0   D. 2x+3y+16=0

62. What is the image of a point (2, 1) after reflection in the line?

         A. (2,-1)   B. (-2, 1)   C. (-1,-2)   D. (1,-2)

63. If a translation that sends to (0, 0) to (3, -2), and M is a reflection that maps (0, 0) to (2, 4), what is the value of T(M (1,3))?

         A. (0, -1)   C. (4, 1)   C. (3, 2)   D. (-1, 0)

64. What is the image of the line after it has been reflected in the line $l: y = x - 3$?

         A. $y = x + 1$ B. y=2x+1   C. $y = x - 10$ D. $y = x - 5$

65. When the plane is rotated 45° about a point (1, -2), what would be the image of the point (2, 4)?

     B. $(1 - \frac{5\sqrt{2}}{2}, -2 + \frac{7\sqrt{2}}{2})$ C. $(\frac{5\sqrt{2}}{2}, \frac{7\sqrt{2}}{2})$

     C. $(-1 + \frac{5\sqrt{2}}{2}, -2 - \frac{7\sqrt{2}}{2})$ D. $(1 + \frac{5\sqrt{2}}{2}, -2 - \frac{7\sqrt{2}}{2})$

66. Let L be a line given by a vector equation $(x, y) = (1, 1) + t(\sqrt{3}, 1), t \in \mathbb{R}$, which one of the following is the image of L after being rotated 15° about (1, 1) then translated by vector $u = (-1, 1)$.

     A. $x - y = 2$ C. $-x + y = 2$

     B. $\sqrt{3}x - y = 2$ D. $-x + \sqrt{3}y = 1$

67. In a reflection the image of a line y-2x=3 is the line 2y-x=9. What is the axis of reflection?

         A. y=2x-12   B. y=x+4   C. y=-3x-12   D. y=-x+4

68. In rotation R, the image of (3, 5) is (-2, 4) and the image of (1, 4) is (-1, 2), then what is center of rotation and image of $(-1, 0)$ respectively?

         A. $(3, 2): (3, 0)$ B. $(2, 2): (0, 3)$ C. $(2, 1): (3, 0)$ D. $(1, 2): (3, 0)$

69. Let L be a line given by a vector equation $(x, y) = (-2, 1) + t(1, 1), t \in \mathbb{R}$, which one of the following is the image of L after being translated by the vector $u = (2, -1)$ followed by the rotation through 45° about the origin.

B. $y = \sqrt{2}x$ B. $\sqrt{2}$ C. $x = 0$ D. $-2\sqrt{2}x$

70. The image a figure with vertices A$(1, 2)$, B. $(3, 6)$, C. $(-1, 2)$, D. $(-2, -2)$ after reflection across the x-axis

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

71. What is the translation vector $u = (h, k)$ so that the equation $x^2 + 2y^2 + 6x - 8y + 15 = 0$ is transformed to an equation of the form $x^2 + 2y^2 + d = 0$ where d is constant
   A. $(-3, 2)$ B. $(3, -2)$ C. $(-2, 3)$ D. $(2, -3)$

PRACTICE! PRACTICE! MAKES PERFECT!!!