**Transformations**

**April 2015**

32. The circle in the standard (x,y) coordinate plane below has center (-8.5, 7.5) and has radius 5 coordinate units. [PICTURE]

The circle will be reflected across the y-axis. What will be the coordinates of the image of the center of the circle?

F. (-8.5, -7.5)

G. (-3.5, 2.5)

H. (3.5, -2.5)

J. (8.5, -7.5)

K. (8.5, 7.5)

**December 2015**

25. The point (6,3) and the line y = 7 are graphed in the standard (x,y) coordinate plane below. After the point has been reflected across the line, what are the coordinates of the point’s image? [PICTURE]

A. (-6, 11)

B. (2, 11)

C. (6, -11)

D. (6, -3)

E. (6, 11)

44. In the standard (x,y) coordinate plane below, R is located at (1,0), S is located at (1,2), and T is located at (4,0) to form right triangle (triangle)RST. The given lengths are in coordinate units. [PICTURE]

Right triangle (triangle)RST will be rotated about the x-axis to form a right circular cone. How long, in coordinate units, is the radius of the cone’s base?

F. 2

G. 3

H. 4

J. 6

K. 9

55. The graph of y = sin x is in the standard (x,y) coordinate plane is reflected over the x-axis, shifted up *a* units, and then shifted left 0.5π units. Which of the following equations represents the graph after the 3 transformations?

A. y = a – sin(x – 0.5π)

B. y = a – sin(x + 0.5π)

C. y = a + sin(x – 0.5π)

D. y = 0.5π – sin(x + a)

E. y = 0.5π + sin(x – a)

**June 2016**

37. Square ABCD, shown below, has side length 5 meters. The square is divided into 25 nonoverlapping congruent squares. Point P is the center of ABCD. [PICTURE]

Point M starts at A and is rotated counterclockwise about P a total of 450°. After the rotation, M is at the same location as which of the following points?

A. A

B. B

C. C

D. D

E. P

45. Consider the transformation of the standard (x,y) coordinate plane that maps each point (x,y) to the point (kx, ky) for a certain positive constant, k. In particular, this transformation maps (3,0) to (1,3). This transformation maps (9,24) to which of the following points?

A. (3, 8)

B. (6, 21)

C. (7, 18)

D. (11, 30)

E. (27, 72)

**December 2016**

23. In the standard (x,y) coordinate plane, a translation maps a point (x,y) to its image (x – 5, y + 3). To what image does this translation map (-3, -2) ?

A. (-8, -5)

B. (-8, 1)

C. (-2, 1)

D. (2, -5)

E. (2, 1)

**June 2017**

32. Parallelogram ABCD is graphed in the standard (x,y) coordinate plane below. Sides (line)AB and (line)CD are each (rad)10 coordinate units long. Sides (line)AD and (line)BC are each 5 coordinate units long. The distance between (line)AD and (line)BC is 3 coordinate units. [PICTURE]

Parallelogram ABCD will be reflected over the y-axis. What will be the coordinate of the image of A?

F. (-4,1)

G. (-1,-1)

H. (1,-1)

J. (1,1)

K. (4,-1)

**April 2017**

44. The graph of y = |x – 6| is in the standard (x,y) coordinate plane. Which of the following transformations, when applied to the graph of y = |x|, results in the graph of y = |x – 6|?

F. Translation to the right 6 coordinate units

G. Translation to the left 6 coordinate units

H. Translation up 6 coordinate units

J. Translation down 6 coordinate units

K. Reflection across the line x = 6