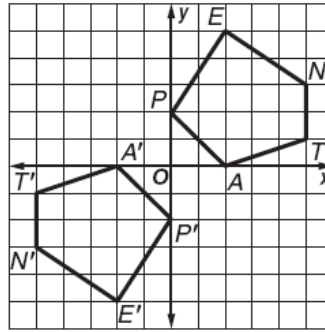


Multiple Choice: Select the correct answer.

1)

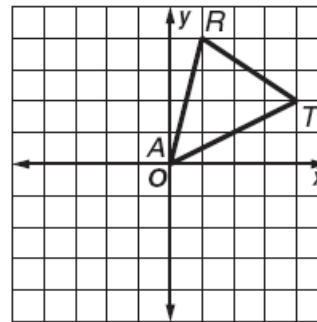
Matthew is trying to visualize what different transformations look like. One of his drawings was transforming *PENTA* into *P'E'N'T'A'*. Which transformation is this?

- A reflection in the *x*-axis
- B rotation of 90°
- C reflection in the *y*-axis
- D rotation of 180°



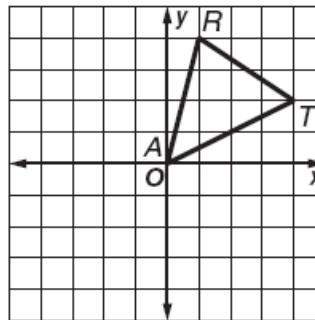
2) Write the coordinates of the image of each point by reflection in the *x*-axis.

- A $A'(0, 0), R'(-1, 4), T'(-4, 2)$
- B $A'(0, 0), R'(4, 1), T'(2, 4)$
- C $A'(0, 1), R'(-4, 1), T'(-4, -2)$
- D $A'(0, 0), R'(1, -4), T'(4, -2)$



3) If $\triangle RAT$ is dilated by a scale factor of 2, what are the coordinates of R' ?

- A. (1, 4)
- B. (2, 8)
- C. (8, 2)
- D. (2, 1)



4) A rotation is a transformation that does what?

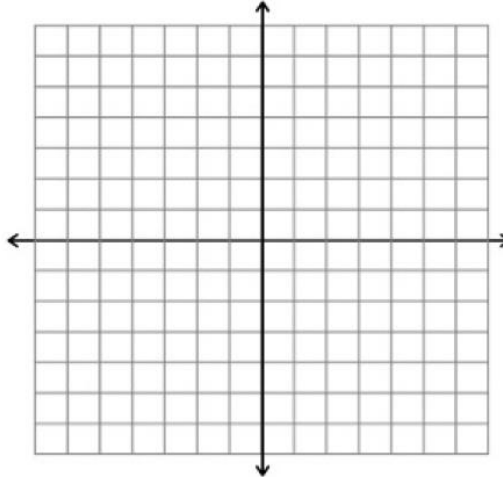
- a) Flips or folds
- b) Spins or turns
- c) Both a and b
- d) None of these

5) The measures of two interior angles of a triangle are 35° and 44° . What is the measure of the third angle?

- A. 39°
- B. 79°
- C. 91°
- D. 101°

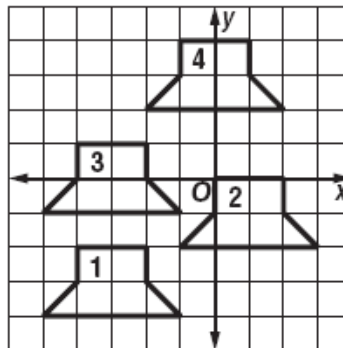
6) Given A (1, 2), B (1, 4), and C (3, 4), find the image of A under a counterclockwise rotation of 90 degrees about the origin.

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



7) Using the figure provided, write a rule to translate figure #3 to figure #4.

- A. $(x,y) \rightarrow (x+3, y+3)$
- B. $(x,y) \rightarrow (x-3, y+3)$
- C. $(x,y) \rightarrow (x+2, y-1)$
- D. $(x,y) \rightarrow (3x, 1y)$



8) Memorize transformation rules:

Dilation of scale factor k : $(x', y') = k \cdot (x, y)$

Reflection across y -axis: $(x', y') = (-x, y)$

Reflection across $y = x$: $(x', y') = (y, x)$

Reflection across origin: $(x', y') = (-x, -y)$

Rotation 90° CCW (and 270° CW): $(x', y') = (-y, x)$

Rotation 270° CCW (and 90° CW): $(x', y') = (y, -x)$

Translation of (a, b) : $(x', y') = (x + a, y + b)$

Reflection across x -axis: $(x', y') = (x, -y)$

Reflection across $y = -x$: $(x', y') = (-y, -x)$

Rotation 180° : $(x', y') = (-x, -y)$

13) describe the transformation $y = G(x-3) + 4$?

14) describe the transformation $y = -G(x) + 6$?

15) describe the transformation $y = -G(x - 4) - 6$?

16) What are the factors of the quadratic equation $y = x^2 - 10x + 24$?

- A) $(x + 2)(x + 12)$ B) $(x - 4)(x - 6)$ C) $(x - 2)(x - 12)$ D) $(x + 4)(x + 6)$

17) What are the factors of the quadratic equation $y = x^2 + 6x - 16$?

- A) $(x + 4)(x + 4)$ B) $(x - 2)(x + 8)$ C) $(x + 2)(x - 8)$ D) $(x - 4)(x + 4)$

18) What are the solutions for the quadratic equation $y = 2x^2 + 2x - 12$?

- A) {2,-3} B) {-2,3} C) {2,-6} D) {-2,-6}

19) What are the solutions to the quadratic equation $y = -3x^2 - 2x + 1$?

- A) {6,-5} B) {1,-.3333} C) {-1,.3333} D) {2,.6667}

20) What is the discriminant for the quadratic function $y = -2x^2 - x - 1$?

- A) 4 B) -7 C) -32 D) 64

Use the following equations for questions 21-23 below:

I: $y = 2x^2 + 2x - 4$

II: $y = -2x^2 - 8x - 8$

III: $y = -.5x^2 + 2x - 5$

IV: $y = -3x^2 - 2x + 1$

21) Using the above information, which equation(s) best represent a quadratic function with a minimum point?

- A) I only B) IV only C) I & II only D) III & IV only

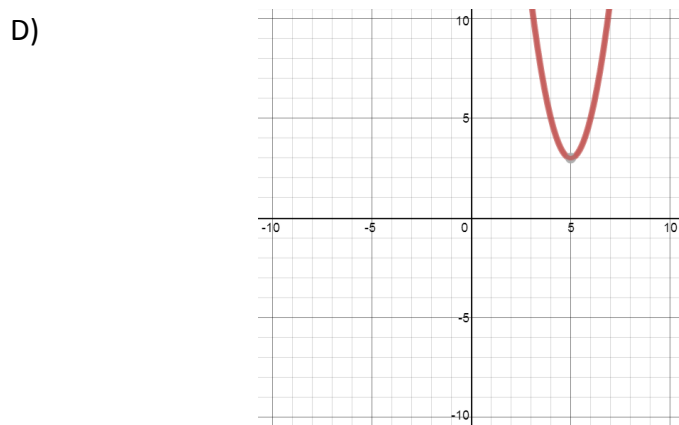
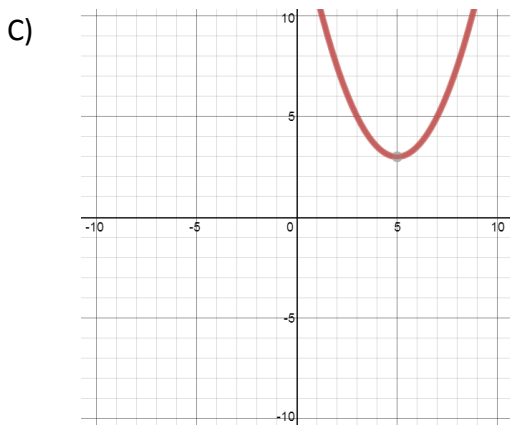
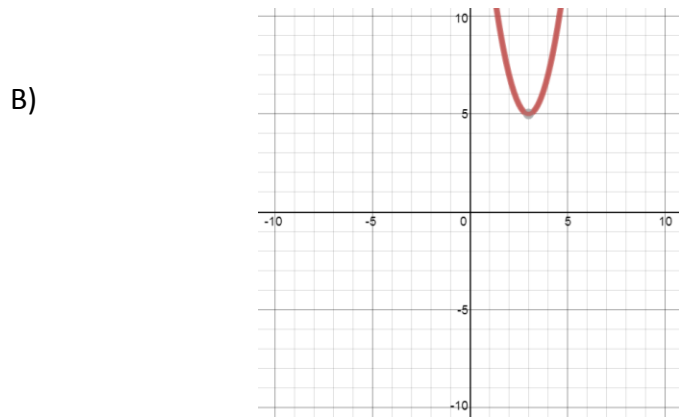
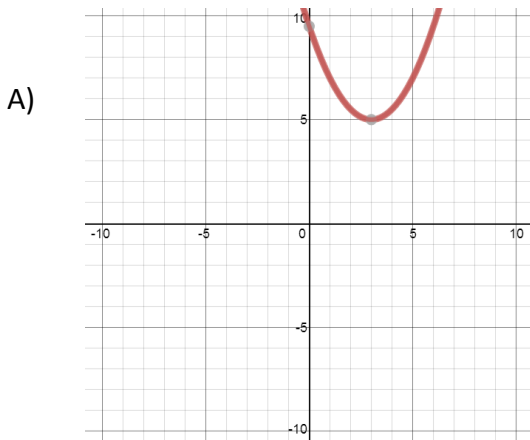
22) Using the above information, determine which equation represents a quadratic function with zero solutions? (*hint* use your discriminant formula)

- A) Choice I B) Choice II C) Choice III D) Choice IV

23) Using the above information, determine which equation represents a quadratic function with one solutions? (*hint* use your discriminant formula)

- A) Choice I B) Choice II C) Choice III D) Choice IV

24) Given the graph of the parent function, $y = x^2$, which of the following graphs correctly represents the equation $y = 2(x - 3)^2 + 5$.



For Questions 25 & 26, please refer to the example below.

An arrow is shot across a field into a target area on the ground in a competition. The model for the arrow's trajectory can be used with the equation $y = -.3x^2 + 6x + 15$.

25) After 10 seconds have passed, how high is the arrow in the sky?

- A) ≈ 40 yards B) ≈ 45 yards C) ≈ 30 yards D) ≈ 25 yards

26) How long will it be before the arrow finally strikes the ground?

A) ≈ 18 seconds

B) ≈ 20 seconds

C) ≈ 22 seconds

D) ≈ 24 seconds

II. Simplifying Radical Expressions – Write each expression in simplified radical form. (Note: Your final answer should not have any fractional exponents.)

31. $\sqrt{x^5y^9z^{14}}$

32. $\sqrt{52x^7}$

33. $\sqrt{162x^5}$

34. $\sqrt{444y^4}$

35. $\sqrt{48x^3y}$

36. $\sqrt[3]{-24}$

37. $\sqrt[3]{24x^7}$

38. $\sqrt[3]{250y^4}$

Write each expression in simplified radical form.

39. $\sqrt[5]{8m^2n^4} \cdot \sqrt[5]{20m^4n}$

40. $\sqrt{72} - \sqrt{75} + \sqrt{98}$

41. $\sqrt[3]{k} \cdot k^{6/4}$

42. $\sqrt{81x^3y^6}$

43. $-3^4\sqrt{16y^9}$

44. $\sqrt[3]{(b-5)^2(b-5)^4}$

Write each expression in simplified radical form.

45. $(10n)^{\frac{3}{2}}$

46. $(64n^{12})^{-\frac{1}{6}}$

47. $a^{\frac{6}{5}}$

Write each expression in exponential form.

48. $(\sqrt[3]{3a})^4$

49. $\sqrt{6p}$

50. $\sqrt[6]{10x}$

1. Solve for x .
 $15 = 9 + \sqrt{x}$

2. Solve for y .
 $\sqrt{y-8} + 5 = 7$

3. Solve for z .
 $\sqrt{3z+4} = 5$

4. Solve for w .
 $\sqrt{5w+3} = \sqrt{4w+5}$

5. Solve for p .
 $\sqrt{p+16} + 4 = p$

6. Solve for m .
 $\sqrt{m-1} + 5 = m - 2$

7. Solve for n .
 $\sqrt{3n+10} = n + 4$

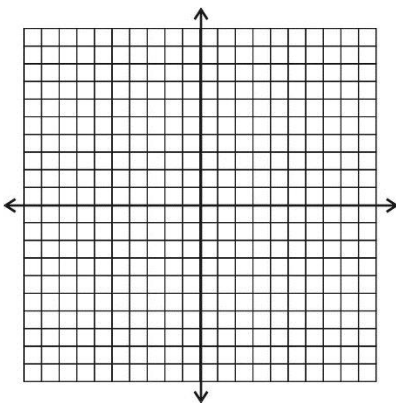
8. Solve for r .
 $\sqrt{10-13r} = r - 4$

9. Solve for k .
 $\sqrt{k-9} - \sqrt{k} = -1$

10. Solve for h .
 $\sqrt{2h-5} = 1 - \sqrt{h-3}$

Graph the following

$$y = -3\sqrt{x-3} + 2$$



$$y = 5\sqrt[3]{x+2} - 1$$

