**MARIO TEST - SOLUTIONS**

1. **A**

Using the order of operations:

546/{12+[(7-24\*12)-9]+5}\*0

= 546/{12+[(7-288)-9]+5}\*0

= 546/{12+[(-281)-9]+5}\*0

= 546/{12+[-290]+5}\*0

= 546/{-278+5}\*0

= 546/{-273}\*0

= -2\*0

= 0

2. **B**

Volume of a cone =

r = 3

h = 10

Plugging in these numbers for their respective variables we get:







3. **B**

Every hour, the pool is filled to 1/3rd of its capacity, and drained of 1/5th of its capacity.

Therefore, in total, every hour the pool is filled by of its total capacity.



Simplifying the expression, we get that the pools is filled at a rate of ths per hour.

Time = Work / Rate, since the work in this case means filling up 1 whole pool,

time = = = 7.5 hours

4. **C**

To simplify a radical, find the prime factorization of the number under the square root. Then, for every two identical factors, take out one and put it outside the radical.





5. **B**

20 bananas per second = 60(20) bananas per minute = 1200 bananas per minute

100 bananas = 1 bundle

1200/100 = 12 bundles

6. **C**

In 10 seconds, Bowser will have traveled 20(10) or 200 meters. That means he has 200 meters left until he reaches his castle. It will take him another ten seconds to cover this final 200 meters. Princess Peach will have to cover the entire 400 meter distance in at least the time it takes Bowser to run his final 200 meters (in which case she would reach Mario at the moment she and Bowser both reached the castle). Since the 200 meters will take Bowser ten seconds, Peach will have to run 400 meters in ten seconds, or 40 m/s.

7. **B**

Area of a rectangle = (length)(width)

l = length

w = width

l = 3w + 5

a = l(w)

Substituting 3w + 5 for l,

a = (3w +5)w

Now we distribute the w to get

8. **B**





If we multiply the first equation by 2, we get the system:





Subtract the first equation from the second to get:



9. **D**

Luigi’s path creates a right triangle with legs of 11 miles and 60 miles. This is a special triangle, the 11-60-61 triangle. Therefore, Luigi will be a distance of 61 miles away from his initial starting point. Alternatively, you could have used the Pythagorean formula, which states that the sum of the squares of the legs of a right triangle equals the square of it’s hypotenuse.

Pythagorean formula:







10. **E**

Mario’s path:

Slope 

Therefore, since Peach’s slope is perpendicular to Mario’s, the slope of her path must be

(negative reciprocal of 5)

Peach’s path:Using point slope form we know that her path is modeled by the equation



Where m = -1/5 and we can plug in the point (0,0). Using this information, we get that the equation of her path is

After some simplification we get

which is not an answer choice. NOTA.



11. **B**

To find the maximum of a parabola we must find





12. **C**



Carefully distribute the negative and get rid of the parenthesis



Combine like terms



13. **C**









14. **A**



Three DISTINCT (2, 3, and 7) factors

.

15. **E**





Subtract five from both sides:

Divide through by three:

16. **A**

Reference:

1Fl = 7F

F = 2Fr

Fr = 11Fw

Conversion:

154Fw = 11(14)Fw

11(14)Fw = 14Fr

14Fr = 2(7)Fr

2(7)Fr = 7F

7F = 1Fl

17. **C**

Sunday - day which preceded this one

TODAY - Monday - day after the day which preceded this one

Tuesday

Wednesday

Thursday

Friday - when the cake must be ordered

BIRTHDAY - Saturday - five days after the day after the one which preceded this one

18. **A**



—



=



=

19. **C**

Not losing money = making a minimum of 0 coins per month

A net value of 0 coins per month means that the total number of coins collected by the Goombas must equal the 3000 coin cost (per month).

50coins(Goombas produced per month) - 3000coins = 0

0 = 50g - 3000

50g = 3000

g = 3000/50

g = 60

20. **B**



21. **D**

Conjugate pairs multiply in such a way that:



In the question, a = 13x and b = 16. By plugging in these value we get



22. **C**





Subtract five from both sides:

Multiply both sides by (3/7):

23. **C**



We can spilt up the large fraction into its components and simplify:

Then, when you put it all back together, you get



24. **D**

g(x) =

= 6

f(g(x) = f(6) =

= 37

25. The answer is **B**.