**Directions : Choose the letter of the correct answer. In all cases, E) NOTA means “none of these answers”.**

1. What is the value of ?

**A. 21 B. 35 C. 50 D. 125 E. NOTA**

2. On a map of the carnival rides Cici sees that Dare Devil Dive is located at (2,5) and Vertical Velocity is located at (4,11). What is an equation of the line connecting Dare Devil Dive and Vertical Velocity in Standard Form?

**A. 3x – y = 1 B. x + 3y = 17 C. 3x + y = -1 D. 3x – y = -1 E. NOTA**

3. A group of Chiles Mu Alpha Theta students is deciding what ride they want to go on next. Seven of them want to go on Thunder River, 9 of them want to go on SkyScreamer, and 8 of them want to go on Viper. If each of the students will go on exactly one ride, what fraction of the group wants to go on SkyScreamer?

**A.  B.  C.  D.  E. NOTA**

4. In order to ride on the Magical Marvel merry-go-round at the carnival, a student must first figure out the circumference of the merry-go-round. If the radius of the merry-go-round is 6 feet, what is its circumference expressed in feet? Assume that the merry-go-round is a perfectly circular shape. Express your answer in terms of .

**A. 3π B. 6π C. 12π D. 20π E. NOTA**

5. You can only ride King Chaos if your ticket number is a multiple of 3. Adi’s number is 891765033192, Briana’s number is 179383480, Izzy’s number is 39290123151, Jeffery’s number is 9204869998, and Joyce’s number is 4133245487. How many will be able to ride King Chaos?

**A. 1 B. 2 C. 3 D. 4 E. NOTA**

6. Only students who are able to factor quadratics are allowed to ride the Demon Divides, a scary ride that’s filled with math! Luke needs to factor this quadratic: . Can you help him? What is one factor of ?

**A. 4x - 5 B. 2x + 3 C. 2x - 3 D. 2x - 5 E. NOTA**

7. The time that a person must wait to ride the Twirl-A-Whirl is equal to half of the time that he or she must wait to ride the Buccaneer Battle. If the waiting time for the Buccaneer Battle is 48 minutes and the waiting time for the Twirl-A-Whirl is 3x – 12 minutes, what is ?

**A. 4 B. 12 C. 16 D. 20 E. NOTA**

8. Find the sum of the slope and the of this equation: .

**A.  B.  C.  D. -4 E. NOTA**

9. Adi is in line for the Flying Carousel and as she’s waiting she reads a sign that says, “You must be  ft. tall to ride this ride.” How tall must Adi be if  ?

**A. 1 ft B. 2 ft C. 3 ft D. 4 ft E. NOTA**

10. Nick, Pamela, Albert, Joyce, Sophie, Haoqing, Cici, and Izzy are figuring out seating arrangements while waiting in line for The Twister which has a row of eight seats. Nick and Haoqing are discussing math problems and have to sit next to each other. Cici has to hold Joyce’s hand so they have to sit next to each other. Izzy hates Albert’s screaming and can’t sit next to him. Pamela locked Haoqing out of his phone and can’t sit next to him. Sophie and Albert are afraid of rollercoasters and need people sitting on both sides of them. Which of the following is a possible seating arrangement?

**A. Albert, Joyce, Pamela, Sophie, Izzy, Nick, Haoqing, Cici**

**B. Cici, Joyce, Izzy, Haoqing, Sophie, Pamela, Albert, Nick**

**C. Izzy, Albert, Haoqing, Nick, Cici, Joyce, Sophie, Pamela**

**D. Nick, Haoqing, Sophie, Joyce, Cici, Albert, Pamela, Izzy**

**E. NOTA**

11. If it takes 2 minutes to move 15 feet in the Twister line, how long will Jimmy have to wait to get on The Twister if the line is 70 feet long?

**A.  min B.  min C.  min D. 10 min E. NOTA**

12. Jeffery has been known to be an impatient child who does not like to have to wait to get on rides. The time that he is going to have to wait, in minutes, for the newest rollercoaster can be represented by the expression . If  at the time that Jeffery gets into line for the ride, for how many minutes will he have to wait to ride?

**A. 7 B. 12 C. 15 D. 34 E. NOTA**

13. Solve for : 

**A. x < 4 B.  C. x > -4 D. x > 4 E. NOTA**

14. Oh no! Joyce and Jimmy are worried because they just found out that the carnival rides close when the weather is bad! Being intelligent math students, they immediately attempt to calculate the probability of bad weather on Sunday, the day when they want to go to the carnival. This probability is equal to the probability of getting three heads in a row when flipping a fair coin three times. What is the probability of bad weather on Sunday?

**A.  B.  C.  D.  E. NOTA**

15. When bad weather falls upon the carnival, the rides are all closed and the people are asked to leave the carnival. However, they receive a partial refund of their admission price. The admission price for everyone is $15 and the refund pays back $10. If it is a rainy day and the carnival’s 120 people who paid the $15 admission are asked to leave, and receive the $10 refund, how much money did the carnival make at the end of the day?

**A. $0 B. $600 C. $1200 D. $1800 E. NOTA**

16. Leap-The-Dips at Lakemont Park in Altoona, Pennsylvania is the oldest rollercoaster still in operation (built in 1902!) and travels at an average speed of mph. What is the average speed of the Leap-The-Dips?

**A. 7 mph B. 10 mph C. 23 mph D. 25 mph E. NOTA**

17. The top of a rollercoaster drop is at (2, 725) and the base of the drop is at (14, 3). What is the slope of the drop?

**A.  B.  C.  D.  E. NOTA**

18. The carnival’s most famous ride is the Ferris Wheel. It is a perfect circle and rotates at a constant speed. If the radius of the Ferris Wheel is 3 meters and its diameter is meters, what is the value of ?

**A. 1 B. 2 C. 3 D. 4 E. NOTA**

19. The first four compartments of the Ferris Wheel are labeled consecutively with the numbers 1, 4, 7, and 10 respectively. If the numbering continues in the same pattern and Sophie is sitting in the 17th compartment, then what number is Sophie’s compartment labeled with?

**A. 48 B. 49 C. 50 D. 52 E. NOTA**

20. Demon Divides is the single most terrifying ride at the carnival! It is a rollercoaster that goes at top speeds. It goes at 20 meters per second for the first minute, then at 50 meters per second for the next two minutes, and finally at 30 meters per second for the last 3 minutes. How many kilometers does Demon Divides travel during the entire 6-minute ride?

**A. 1.26 B. 12.6 C. 126 D. 12,600 E. NOTA**

21. The Kingda Ka at Six Flags Great Adventure in Jackson, New Jersey is the world’s tallest rollercoaster (it’s also the fastest!) and reaches an astonishing height of 456 ft tall. How many unique prime numbers are factors of 456?

**A. 2 B. 3 C. 4 D. 5 E. NOTA**

22. In order to make your teacup spin on the Twirl-A-Whirl you must answer the following question correctly: How many integers are in the solution set of ?

**A. 5 B. 9 C. 11 D. 12 E. NOTA**

23. While Nick and Jimmy are riding on Buccaneer Battle they see a sign with a mathematical equation on it. Jimmy reads the equation correctly as “2 • 3 • a = t” and Nick, who lost his glasses on the ride, reads the equation incorrectly as “2 + 3 + a = t”. They both, however, miraculously solve for the same value of “*a*”. What is the value of t?”

**A. 1 B. 2 C. 6 D. Not enough information E. NOTA**

24. Oh no! Collisions are unavoidable in the Bumper Car Arena. Jeffery’s bumper car is traveling along the path and at the same time Linsey’s bumper car is traveling along the path. What is the sum of the abscissa and the ordinate of the intersection point of the two paths?

**A. – 6 B. 0 C. 6 D. 12 E. NOTA**

25. Cici is sad because the Vertical Velocity is closed. It turns out that the ride is being closed temporarily for repair. It is currently 4:00 PM. If the time that it takes, in hours, for the ride to be fixed is modeled by the function , and , what time will it be when she can ride the Vertical Velocity?

**A. 5:00 PM B. 7:00 PM C. 8:00 PM D. 10:00 PM E. NOTA**

26. Rationalize the denominator : .

**A.  B.  C.  D.  E. NOTA**

27. Find all of the integer solutions of the equation .

**A. All Integers B. {1, 2, 3, 4} C. {2, 3} D. Ø E. NOTA**

28. Sometimes children at carnivals get scared of some of the rides. One day, Xue decides to do the Parabola Peak ride, but gets scared during it! It is now at the second peak and has spent 20 seconds climbing up the first peak, 15 seconds descending the first peak, and 55 seconds climbing up the second peak. If the ride lasts a total of 6 minutes, how much longer does Xue have to wait until she can get off?

**A. 180 seconds B. 225 seconds C. 270 seconds D. 375 seconds E. NOTA**

29. There is a shared pie given to the top three riders (Jimmy, Joyce, and Xue). If Jimmy takes of the pie and Joyce takes of the remaining pie, what fraction of the whole pie is left for Xue?

**A.  B.  C.  D.  E. NOTA**

30. Compute 7.1(13.5) + 29(1.35) to find how many hours it took to write and edit this awesome test for you.

**A. 0.135 B. 1.35 C. 13.5 D. 135 E. NOTA**