1. **B**

Using order of operations, we perform the parenthesis function first, so then we have. Next we do the multiplication function, resulting in. Finally, addition and subtraction are performed, and we achieve the final answer of 35.

2. **A**

The slope is:

****

Then plug into point-slope form and simplify:



3. **C**





4. **C**

The circumference of a circle is equal to , where  represents the radius of the circle. .

5. **B**

A number is a multiple of 3 (or is, in other words, divisible by 3) if the sum of its digits equals a number that is divisible by 3. The sums of the digits of the numbers of Adi, Briana, Izzy, Jeffery, and Joyce are 54, 43, 36, 64, and 41, respectively. Out of these, only 54 and 36 are divisible by 3, so Adi and Izzy will be able to ride King Chaos. That makes 2.

6. **C**

is the correct factorization of so the correct factors are  and .

7. **B**

The waiting time for Twirl-A-Whirl is half of the waiting time for the Buccaneer Battle. Half of 48 minutes is 24 minutes, and we set this equal to. Solving gives us.

8. **C**

First we must convert the given equation to slope-intercept form, resulting in the equation. From this we see that the slope is and the y-intercept is -4; adding these gives us answer of.

9. **D**

Square both sides of the equation so . Then move all values to one side and factor the quadratic. . Since you squared the equation in the beginning there’s a risk that you came up with extraneous solutions. Plug 4 and -1 back into the original equation to check. Negative one is an extraneous solution so 4 is the correct answer.

10. **D**

Joyce and Cici are not sitting next to each other in option A, so that is out of the question. Nick and Haoqing are not sitting next to each other in option B, so that is not possible either. Izzy and Albert are sitting next to each other in option C, which is not allowed, so that is not possible. In option D, we see that all of the conditions are satisfied: Nick and Haoqing are next to each other, Joyce and Cici are next to each other, Izzy and Albert are not next to each other, Pamela and Haoqing are not next to each other, and Sophie and Albert have people on both sides of them.

11. **C**

If it takes 2 minutes to travel 15 feet, then travelling 70 feet will take 

12. **C**

Plugging  into the given expression gives, which equals.

13. **A**

-2x2 – 26x > -56 – 2x2 – 12x 🡪 -14x > -56 🡪 x < 4

14. **C**

The probability of getting three heads when flipping a fair coin three times in a row is , which equals.

15. **B**

For each person admitted to the carnival and given the refund that day, the park received a net gain of. There were 120 people, so the carnival made.

16. **B**

Using order of operations, we perform the parenthesis function first, so then we have. Next we do the exponents function yielding. Then we do the multiplication and division functions, resulting in. Finally, addition and subtraction are performed, and we achieve the final answer of 10.

17. **A**

By definition, the slope of a line equals. Plugging in (2,725) and (14,3) into the formula, we get a result of: .

18. **D**

The diameter of a circle is twice the radius, which is  meters. Setting equal to 6, we get.

19. **B**

The difference between all the numbers on the Ferris Wheel compartments is 3. So if the first compartment is labeled with the number 1 and you are looking for the number of the 17th compartment then you would keep adding 3 until you get to the 17th number in the sequence. 1, 4, 7, 10, 13, 17, 20, 23, 26, 29, 32, 35, 38, 41, 44, 47, 50.

20. **B**

We compute the distances that Demon Divides travels at each of the three speeds. First, it goes at 20 meters per second for a minute, which is 60 seconds. Going 20 meters per second for 60 seconds means it traveled meters in this first part. Next it goes 50 meters per second for two minutes, or 120 seconds. Since, the ride went 6000 meters at 50 meters per second. Finally, it goes 30 meters per second for 3 minutes, or 180 seconds. Since, the ride went 5400 meters in its final leg. Adding these distances up, we get a total of meters which is 12.6 kilometers traveled by the Demon Divides ride.

21. **B**

The prime factorization of 456 is. There are 3 unique prime factors of 456.

22. **E**

There are two cases represented by the absolute values:

 



There are 10 integers between -5 and 6 and they are {-4, -3, -2, -1, 0, 1, 2, 3, 4, 5}

23. **C**

If both equations equal the same quantities, then they must be equal. Setting them equal (and simplifying the arithmetic) gives. Solving the equation yields. We want the “?” though, so we just plug in 1 to either expression to get 6.

24. **A**

The abscissa is the, and the ordinate is the. First we must find the intersection point of these two equations. Putting them both in slope-intercept form, we get  and. The left hand sides are equal, so we set the right hand sides equal. We get and. We substitute  into either of the two equations to find y, which equals – 7. The sum of 1 and – 7 is – 6.

25. **E**

Plugging  into the function gives us hours. In 7 hours from 4:00 PM, it will be 11:00 PM. Since this is not one of the answer choices, E is the correct answer.

26. **B**

To simplify this fraction, we must eliminate any radicals from the denominator. To do this, we multiply both the numerator and the denominator by, since this is the conjugate of the denominator. This results in an answer of .

27. **C**

Moving everything to the left-hand side of the inequality, we get . Factoring gives us , and this holds true when  is between 1 and 4 (not inclusive), and the integers satisfying this requirement are 2 and 3.

28. **C**

Adding up the time that Xue has already spent on the ride, we get seconds elapsed. Subtracting this from 6 minutes (360 seconds), we get seconds.

29. **A**

After Jimmy takes of the pie, there is  remaining. Joyce then takes  of the, leaving of the. One-third of three-fourths equals, which is the fraction of the original pie left for Xue.

30. **D**

Note that the first term is 71(1.35) so the sum is 71(1.35) + 29(1.35) = 1.35(71+29) = 135