1. **D** 16. **A**

2. **C** 17. **C**

3. **C** 18. **D**

4. **D** 19. **B**

5. **B** 20. **B**

6. **B** 21. **C**

7. **C** 22. **B**

8. **D** 23. **C**

9. **B**  24. **A**

10. **B** 25. **D**

11. **D** 26. **A**

12. **A**  27. **D**

13. **C** 28. **C**

14. **B** 29. **C**

15. **B** 30. **E**

1) The points are (0, 0) and (3, 4).  **D**

2) 4(2x + 5) + 9x = 9(2x + 7) – (x + 20) 🡪 8x + 20 + 9x = 18x + 7 – x – 20 🡪 17x + 20 = 17x – 13 🡪

20 = -13 🡪 no solutions **C**

3. A and B are lines, not parabolas. Choice C has a coefficient of the squared term that is negative, thus the parabola opens downward. So, **C** it is.

4. The sides are equal if the exponents are the same. Set x2 + 2x + 2 = x2 + x – 3. The quadratic terms cancel, leaving 2x + 2 = x – 3, leaving x = -5. So, **D) Miss Ray** is correct.

5. In x number of hours, the minute hand goes around the clock x number of times. Since the hour hand moves 1/12 as fast, the hour hand will have moved x/12 number of times around the clock.

When the two hands first overlap, the minute hand will have had to go around one more time than the hour hand. When the two hands complete their Nth overlap, the minute hand will have gone around N more times. So this gets us x=x/12+N

Replacing x with 24 gets us 24=2+N, so N= **B. 22**

6. All three hands will only overlap at 12:00 am and 12:00 pm, since every time the minute and hour hand overlap, the second hand will be at the 12 on the clock. So the answer is **B. 2**

7. b = stories told by the bears, p = stories told by the pigs.

b + p = 50

b = p + 10

Using substitution, you get p + 10 + p = 50, 2p + 10 = 50, 2p = 40, p = 20, 50-20 = 30. **C**

8.Since and there are three of them, you get x3. There is one leftover x, so the answer is

 and answer choice **D**.

9. Use the distance formula, D = RT, to figure the answer. We need to convert the 4 kilometers to meters (4000) and plug in the numbers. 4000 = R x 5, or R = 800 meters per hour giving you choice **B.**

10. This is the Fibinocci sequence, which is solved by adding the previous two terms to get the next term. (1+1=2, 1+2=3, 2+3=5, ...). Adding up the first 7 numbers gets us **B. 33**

11. Standard Form means there are no fractions and the lead coefficient is positive. Transforming the original problem from Slope-Intercept Form to Standard Form yields 3x – 4y = 20. **D.**

12. 1 + 2 + 3 + 4 + 5 + 6 + 7 = 28 or answer choice **A.**

13. Splitting the absolute value into two inequalities, we get 5x>x-24 and 5x<-x+24

The second one gives us the largest integer, x < 4, 3. **C**

14. The equation simplifies to –*x*2=-1 which means *x*2=1 and there are **B. 2** solutions

15. This formation is the definition of a parabola, and the only parabola in the choices is **B.**

16. Each mouse has a 1/5 chance of choosing the same mouse friend as the other mice. As this must occur three times, the correct answer is 1/5 x 1/5 x 1/5 = 1/125 or choice **A.**

17. Each pig thrown adds 2n-1, or every additional odd number, units of force. So the first pig would add 1, the second pig adds 3, the third pig 5, etc…. To get 50, 1 + 3 + 5 +7 + 9 + 11 + 13 + 15 gets at least 50. That’s 8 pigs. **C. 8.**

18. Plugging in x = 0, 1, and 2 to find the cost of the 1st, 2nd, and 3rd pig thrown would yield us 7 units for the first, 5 units for the second, and 3 units for the third. Adding these up gives us **D. 15**

19. Hey, look! Everything cancels except the 1 and the 9. The answer is 1/9, choice **B.**

20. The shortest distance between two points is a straight line. Use the distance formula for (0, 0) and (6, 8) to get 10. **B**

21. Both players have to draw out the same card, so the probability that she ties with baby bear is 1/13, choice **D**

22. **B.** f(5)=3/6=0.5

23. **C.** h(3) = 9/6 and g(3) = -16. 9/6 – 1/6 = 8/6 = 4/3.

24. **C.** The degree of h(x)’s numerator is 2, so when you square the function, its degree will be 4.

25. The slope of the bear’s line is -3/5. The slope of perpendicular lines are opposite reciprocals, so the slope of Nilay’s line is 5/3. **D**

26. Additive Identity (you are adding zero). **A**

27. The first three natural numbers are 1, 2 and 3. so (1+2+3)+(1+4+9)+(1+8+27)+(1+16+81)= **D. 154**

28. There are 25 prime numbers under 100, **C.**

29. Jamie, Nilay, and Katherine eat a combined (2+5)/14=1/2 of the ice cream, leaving half of it for the ten remaining people. Half of a tenth is one twentieth **C**

30 . Given answer. **E. NOTA**