1) Find the mean of the mean, median, mode, and range of the following set of numbers.
    1,1,1,4,4,7,8,14

    a) 1
    b) 4
    c) 23/4
    d) 5/2
    e) None of the Above

2)   Ms. Abernathy's class average for her Beowulf test was a 62. She has 11 students in her class. Five students scored a 68, which was the mode. The lowest score was a 51. What is the highest possible score for any of her students?

    a) 85
    b) 86
    c) 87
    d) 88
    e) None of the Above

3) Find the area of the figure defined by equation $y^2 + 6x + 1 + x^2 + 8y = 126$.

    a) 100π
    b) 125π
    c) 126π
    d) 150π
    e) None of the Above

4) On Monday morning at 7, Pratik gives Jia and Sally a box of 110 lb chocolate bars. Every ten hours, they eat half of what is in the box. On what day do they have less than Marissa who has less than 3 lbs of chocolate?

    a) Wednesday
    b) Thursday
    c) Friday
    d) Saturday
    e) None of the Above

5) If a + s + f + a = 7, 3a − s + 5f + a = 123/5, and 10f = 36
Find $(a+1)^2$

a) 1
b) 4
c) 64/9
d) 16
e) None of the Above

6) Alex can drive 220 feet in 3 seconds. Blake can drive 60 miles per hour. Carl likes to drive 1680 miles in a day. Which of the following is true?

I. Blake drives faster than Carl.
II. Alex is the slowest driver of the 3.
III. Alex drives faster than Blake.

a) I only
b) II only
c) III only
d) II, III only
e) I, II, III

7) CK owns a restaurant and wants to know more about which dinner entrees his customers order. He decides to make a pie chart of the orders for one night using the following data:
There were 160 dinner guests.
   24 ordered meatloaf
   35% ordered spaghetti
   9/20 ordered pizza
   The remaining customers ordered lasagna. A quarter of the lasagna was vegetarian.
How many degrees of the pie chart should represent vegetarian lasagna?
a) 4.5°
b) 2.4°
c) 3.6°
d) 4.8°
e) None of the Above

8) Solve for B if A=5

$$\sqrt{5A^2 - 7BA + (81A^2B^2)^{\frac{1}{2}} - (2A)^2 + (\sqrt[50]{B})^{100}} = 7$$

a) -2
b) 2
c) 12
d) -12
e) None of the Above

9)   Solve DCCXLVII + CLXIV. Express your answer using Roman numerals.

a) DCCCLLXXVVIII
b) CMXI
c) DCCCCXI
d) MXI
e) None of the Above

10)   In the figure below, a square with sides measuring 14 cm has 4 circles with
centers at the vertices of the square. The radius of these circles is 7 cm. There is
also a circle inscribed inside the square. What is the area of the shaded region?
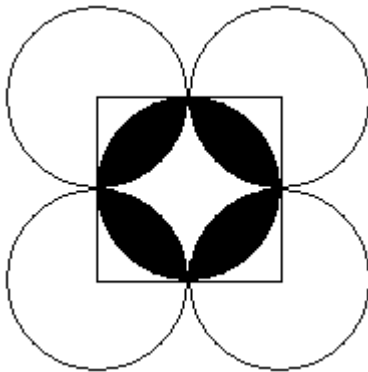
a) $3.5\pi - 14$
b) $7\pi - 49$
c) $84\pi - 140$
d) $98\pi - 196$
e) None of the Above

11)   If the area of this rectangle is 143, what is its perimeter?

$3x - 1$

$2x + 5$
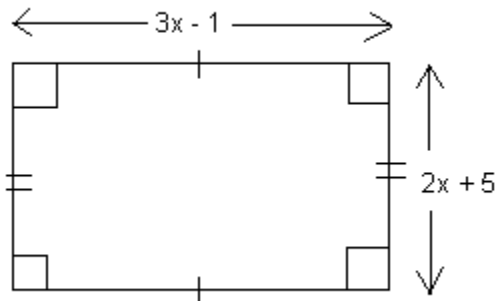
a) 46
b) 48
c) 50
d) 52
e) None of the Above

12) Five people want to sit in the last three seats available in the movie theater. If all the seats are filled in no particular order, how many different ways can the people sit in the three seats?

a) 10
b) 24
c) 45
d) 60
e) None of the Above

13) Jerry drives for 40 miles at 40 mph. He then drives for 45 minutes at 48 mph. Lastly, but not least, he drives 65 miles at 52 mph. What is the average speed Jerry drives over the entire trip?

a) 47 mph
b) 49 mph
c) 51 mph
d) 56 mph
e) None of the Above

14) Find the units digit of $(3^{147})(7^{234})$

a) 1
b) 3
c) 7
d) 9
e) None of the Above

15) The sum of the digits of a two-digit number is 12. If the two digits switch places, the new number equals the original number plus 18. What is the original number?

a) 39
b) 93
c) 57
d) 75
e) None of the Above

16) In 7 hours, Anna usually makes x jokes. Today, she is coming up with 5 more jokes per hour than usual, and in 6 hours has already made 3x jokes. What is her new rate in jokes per hour?

a) 7/3
b) 2
c) 14
d) 7
e) None of the Above

17) In triangle ABC, $\angle A = \angle B + \angle C$. If $\dfrac{B}{C} = \dfrac{4}{5}$, what is the sum of $\angle A$ and $\angle C$

    a) 140°
    b) 130°
    c) 90°
    d) 40°
    e) None of the Above

18) The length of a rectangle is twice its width. If the width is increased by 3 cm, the area increases by 24 cm². What is the length?

    a) 4 cm
    b) 2 cm
    c) 7 cm
    d) 8 cm
    e) None of the Above

19) The sum of five consecutive integers is always divisible by:

    a) 2
    b) 3
    c) 5
    d) 10
    e) None of the Above

20) Let *a* be a real number. Which of the following are either always positive or always negative?

I. $-a^4 - 1$
II. $a^4 - b^2$
III. $a^3 + b^2$

    a) I only
    b) II only
    c) III only
    d) I and II only
    e) II and III only

21) How many squares can be made out of the following square?
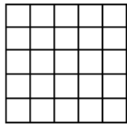
a) 55
b) 54
c) 50
d) 41
e) None of the Above

22) The letters A, M, O, and S can be used to form 24 distinct "words." If these words are placed in reverse alphabetical order, in what position does the word "MSOA" occur?

a) 12
b) 13
c) 18
d) 19
e) None of the Above

23) Car A goes 10 miles per hour, and Car B goes 8 miles per hour. Both cars leave from a starting position and heads in the same route to the same destination. If Car B started an hour before Car A, and Car A caught up with Car B at 2:30PM, what time did car B leave?

a) 8:30 AM
b) 9:00 AM
c) 9:30 AM
d) 10:30 AM
e) None of the Above

24) What is the smallest positive integer, k, such that $64x^2 + kx + 36$ has integer solutions?

a) 24
b) 48
c) 72
d) 96
e) None of the Above

25) What is the smallest angle between the hour and minute hands of a 12 hour clock at 8:10?

        a) 165°
        b) 175°
        c) 180°
        d) 185°
        e) None of the Above

26   What is the circumference of the largest ring that can fit into a 6" x 6" x 6" cube? Assume the ring's thickness is negligible

        a) 6π

        b) $6\sqrt{2}\,\pi$

        c) $\dfrac{27}{2}\pi$

        d) $3\sqrt{6}\,\pi$

        e) None of the Above

27) Phil is now 4 times as old as his brother Bill was 5 years ago. In another 10 years, Bill will be exactly half Phil's age. How old will Bill be in 20 years?

        a) 15
        b) 25
        c) 35
        d) 50
        e) None of the Above

28) In Willy Wonka's Wacky World, a different monetary system is used. When you enter, you need to convert your American money into Wurkos. One dollar will get you 65 Wurkos. A Wurko is equivalent to 32 Wabashes, and a Wabash is equivalent to 13 Wyles. You have 12 dollars. You buy a pair of Woohoos for 127 Wurkos, 27 Wabashes, 11 Wyles. Then you see a fantastic Wuglug that costs 363 Wurkos, 13 Wabashes, and 9 Wyles. You must buy a ticket out of Willy Wonka's Wacky World that will cost you 12 Wurkos, 12 Wabashes, and 12 Wyles. How much money will you have left in dollars and cents when you get home? (Round to the nearest cent)

        a) $7.74
        b) $7.75
        c) $4.25
        d) $4.26
        e) None of the Above