**Mathematics – Middle Grades – Exam #1****2012-13 Governor’s Cup Practice Questions**

**Student Instructions:**

* Write your complete ID code on your answer sheet.
* For each question, choose the BEST answer. If you change your answer, erase well.
1. A middle school is having a cereal box top competition for charity, as graphed at right. They are going to give a party to the homeroom that has the highest average of box tops collected per month over the four month span of the competition. Which homeroom would receive the reward party?

A. Mrs. Fynboe

B. Mrs. Naylor

C. Mr. Smith

D. Mrs. Fynboe **and** Mr. Smith tied for the win.

1. The line graph shows the points scored by three different players in the first four games of their basketball season. If their averages remained the same over a twenty game season, how many total points would Timothy score this season?

A. 340
B. 375
C. 400
D. 500

1. Randy has taken seven tests in his math class and he has an average of 87% on those tests. If he wants to have an average of 90% after his tenth test, then what will he have to average on the next three tests in this class?

A. 93%
B. 95%

C. 97%

D. It cannot be done.

1. What is the value of *x* in the following geometric sequence?

*x*, 64, \_\_\_, \_\_\_, 8

A. ½

 B. 32

 C. 128

 D. 256

1. The weight of a person on Venus varies directly with his or her weight on Earth. A person weighing 120 pounds on Earth weighs 106 pounds on Venus. How much would a person weighing 180 pounds on Earth weigh on Venus?

 A. 120 pounds

 B. 159 pounds

 C. 176 pounds

 D. 226 pounds

1. If Max drives at a steady speed of 50 miles per hour, how long will it take him to drive 10 miles?

 A. 12 minutes

 B. 10 minutes

 C. 15 minutes

 D. 30 minutes

1. Which integer is between - and - on a number line?

 A. -1

 B. -2

 C. -3

 D. -4

1. Sterling silver is made of an alloy of silver and copper in the ratio of 37:3. If the mass of a sterling silver nugget is 600 grams, how much silver does it contain?

 A. 48.65 grams

 B. 200 grams

 C. 450 grams

 D. 555 grams

1. 3.26 grams is what percentage of a kilogram?

 A. 0.00326%

 B. 0.0326%

 C. 0.326%

 D. 3.26%

1. Which of the following rational numbers best approximates point 'A' on the number line below?



 A. 

 B. 

 C. 

 D. 

1. How many pounds of ground beef should you buy to make 120 hamburgers, if each burger patty will weigh 5 ounces before cooking?

 A. 16

 B. 32

 C. 38

 D. 60

1. Mr. Simpson was offered a full-time sales position at two different appliance stores. The first store will pay him a weekly salary of $350 plus a commission of 10% of his sales. The second store will pay him a weekly salary of $225 plus a 12% commission. For what amount of weekly sales would he earn the same amount at both stores?

 A. $625

 B. $975

 C. $6250

 D. $17,500

1. The length between the bases on a major league baseball diamond is 90 feet. Chris wants to make a scale drawing of a baseball field. If the bases are 2.5 inches apart on his scale drawing, what is Chris' scale?

 A. 1 in. = 2.5 ft.

 B. 1 in. = 3 ft.

 C. 1 in. = 30 ft.

 D. 1 in. = 36 ft.

1. Calculate the sum of the arithmetic series: 3 + 5 + 7 + … + 101

 A. 2598

 B. 2600

 C. 2602

 D. 2604

1. Write an equation to find the next term in the pattern 3, 6, 12, 24, 48, …

 A. A(n) = 3n-1

 B. A(n) = 3(2)n-1

 C. A(n) = 3 · 2n

 D. A(n) = 3n2

1. John is four times as old as Sarah. If the sum of their ages is 30, how old is Sarah?

 A. 5

 B. 8

 C. 10

 D. 6

1. The minimum distance from Earth to Neptune is estimated to be 2.7 × 109 miles, while the minimum distance from Earth to Mars is estimated to be 3.4 × 107 miles. About how much farther from Earth is Neptune than Mars?

 A. Neptune is about 0.7 times farther.

 B. Neptune is about 10 times farther.

 C. Neptune is about 80 times farther.

 D. Neptune is about 1,000 times farther.

1. Susan drove from Bowling Green to Ashland, Kentucky, a distance of 262 miles, in 5 hours. She drove the first 112 miles at an average speed of 56 miles per hour. What was her average speed for the remainder of the trip?

 A. 56 miles per hour

 B. 75 miles per hour

 C. 50 miles per hour

 D. 52.4 miles per hour

1. What is the measure of an exterior angle of a regular dodecagon?

A. 30°

B. 60°

C. 12°

D. 15°

1. Using the diagram to the right, which of the following is a solution for *x*?

A. 62
B. 15
C. 18
D. 31

1. If one complementary angle is 5x – 7 and the other complementary angle is 2x + 13 then what is the measure of the larger angle?

A. 53°
B. 27°
C. 37°
D. 63°

1. Triangle PQR is similar to triangle DEF. Which of the following describes the relationship between the corresponding sides of the two triangles?

A. $\frac{PQ}{DF}$ = $\frac{2}{3}$

B. $\frac{PR}{DF}$ = $\frac{1}{3}$

C. $\frac{PR}{DF}$ = $\frac{2}{3}$

D. $\frac{PQ}{DE}$ = $\frac{2}{9}$

1. Larry made a rectangular table for his office. The sides of the table are 25 inches and 60 inches. What is the length of the diagonal?

A. 85 inches
B. 70 inches
C. 65 inches
D. 60 inches

1. If the legs of a right triangle measure 9 feet and 12 feet then what is the sine of the smallest angle?

A. $\frac{4}{3}$
B. $\frac{4}{5}$
C. $\frac{3}{4}$
D. $\frac{3}{5}$

1. What is the area, in terms of $π,$ of a circle with a circumference of 70$π $inches?

A. 4900 $π$ in.2
B. 1225$π$ in.2
C. 1225$π$ in.
D. 4900$π$ in.

1. If a rectangular box has dimensions of 1 foot x 2 feet x 3 feet, then what is the volume in cubic inches?

A. 10368 in.3B. 6 in.3
C. 0.003 in.3

D. 0.003in.

1. If the base of a triangle is *x* units long and the height of this triangle is exactly 4 times the length of the base, then what is the area of this triangle in square units?

A. 2xunits2
B. 4x2 units2
C. 4xunits2

D. 2x2 units2

1. Solve the following inequality for x: 5x + 2 ≥ 9x + 14

A. x ≥ $\frac{6}{7}$
B. x ≤ -3
C. x ≥ -3
D. x ≤ 3

1. Solve the following inequality for x: 3x - 7 ≤ 6x + 14

A. x ≥ -7
B. x ≤ 7
C. x ≥ $\frac{7}{3}$
D. x ≤$\frac{-7}{3}$

1. Solve the following inequality for x: │2x - 1│ ≥ 25

A. -12 ≤ x ≤ 12
B. -12 ≤ x ≤ 13
C. -13≥ x or x ≥ 13
D. -12 ≥ x or x ≥ 13

1. Convert the decimal number 31 into a binary number.

A. 11001

B. 11110

C. 01111

D. 11111

1. What is the sum of the first 75 positive odd integers?

A. 2738
B. 5700
C. 5625
D. 2850

1. What is the largest prime number below 1,000,000?

A. 999,325
B. 999,999
C. 999,813
D. 999,983

1. Which of the following is a factorization of 3x2+8x – 16?

A. (3x – 4) (x + 4)
B. (3x – 4)2
C. (3x + 4)2
D. (3x + 4) (x - 4)

1. Which of the following is a factorization of 4x2 – 36x + 81?

A. (4x – 9) (x + 9)
B. (2x – 9)2
C. (2x + 9)2
D. (4x + 6) (x - 6)

1. What is the degree of the polynomial 12x3y2z + 15x5yz2 – 24xy12z4 ?

A. 16
B. 24
C. 17
D. 6

1. Sarah wants to call her 5 friends in her class from school. In how many different orders could she call her 5 friends from her class?

A. 100 ways
B. 24 ways
C. 120 ways

D. 60 ways

1. A bag contains 7 red marbles, 6 green marbles, 1 white marble, and 8 black marbles. If a marble is drawn at random, what is the theoretical probability that the marble drawn is either green or black?

A. $\frac{2}{3}$
B. $\frac{4}{11}$
C. $\frac{7}{11}$
D. $\frac{7}{22}$

1. If you roll two standard 6 sided dice 1200 times, in theory how many times should the sum of the dice equal 7 ?

A. 700
B. 200
C. 600
D. 350

1. Given , evaluate .

 A. 

 B. 

 C. 

 D. 

1. Given that  and , when does ?

 A. 

 B. 

 C. 

 D.  and 

1. Given the table below that represents an indirect variation, find the missing value:

|  |  |
| --- | --- |
| x | y |
| 3 | 8 |
| 12 | 2 |
| 36 | ? |

 A. 

 B. 

 C. 1

 D. 16

1. Given the linear equation: , which equation below has the same solution?

 A. 

 B. 

 C. 

 D. 

1. The equation  is equivalent to which of these equations solved for ?

 A. 

 B. 

 C. 

 D. 

1. Which equation represents the function in the given graph?

 A. 

 B. 

 C. 

 D. 

1. Simplify the following expression, leaving the answer with only positive exponents: 

 A. 

 B. 

 C. 

 D. 

1. Evaluate the following numerical expression: 

 A. 4

 B. 16

 C. 

 D. 

1. Expand the following binomial expression: 

 A. 

 B. 

 C. 

 D. 

1. Given the following sequence, which quadratic pattern gives a formula for the nth term: 28, 63, 110, 169,
240, …

 A. 

 B. 

 C. 

 D. 

1. Solve: 

 A. 

 B. 

 C. 

 D. 

**Middle Grades Mathematics Exam #1
2012-13 Governor’s Cup Practice Questions**

1. A
2. D
3. C
4. C
5. B
6. A
7. C
8. D
9. C
10. B
11. C
12. C
13. D
14. B
15. B
16. D
17. C
18. C
19. A
20. C
21. A
22. C
23. C
24. D
25. B
26. A
27. D
28. B
29. A
30. D
31. D
32. C
33. D
34. A
35. B
36. C
37. C
38. C
39. B
40. A
41. C
42. B
43. B
44. C
45. D
46. A
47. A
48. B
49. D
50. A