Snow College Jr. Mathematics Contest

April 1, 2014 **Junior Division: Grades 7–9** **Form: T**

Bubble in the single best choice for each question you choose to answer.

1. Maria owns a bicycle shop and ordered 1200 parts; 60 were found to be defective. What percent of the parts were defective?

   (A) 2%
   (B) 3%
   (C) 4%
   (D) 5%
   (E) 6%

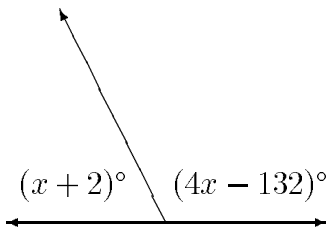
2. Which of the following products is/are palindromic (read the same backwards and forwards)?

   (i) 11111×11111
   (ii) 22222×22222
   (iii) 33333×33333
   (iv) 44444×44444

   (A) only (i)
   (B) only (ii) and (iii)
   (C) only (iii) and (iv)
   (D) only (i), (ii), and (iv)
   (E) none of them

3. Find the measure of each marked angle.

   (A) 66° and 114°
   (B) 62° and 118°
   (C) 64° and 116°
   (D) 64° and 26°
   (E) 45° and 135°

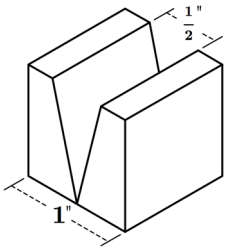


4. What is the average of the first 99 positive integers?

   (A) 49.00
   (B) 49.50
   (C) 49.75
   (D) 50.00
   (E) 50.25

5. A wedge is removed from the center of a cube as shown. How much of the original volume of the cube remains?

   (A) $\frac{3}{5}$
   (B) $\frac{1}{2}$
   (C) $\frac{3}{4}$
   (D) $\frac{\sqrt{2}}{2}$
   (E) $\frac{4}{5}$



6. If you take two ordinary decks of cards (minus the jokers, for a total of 104 cards), thoroughly shuffle them, and then divide them into two equal piles, what are the chances that the number of red cards in pile 1 equals the number of black cards in pile 2?

   (A) 100%
   (B) 75%
   (C) 50%
   (D) 25%
   (E) 0%

7. Inside one of three boxes is a unique gem. To help you find the gem there is an inscription on each box. The gold box says, "The gem is in this box." The silver box says, "The gem isn't in this box." The lead box says, "The gem isn't in the gold box." One, and only one, of these inscriptions is true. Which box contains the gem?

(A) silver

(B) gold

(C) lead

(D) none of the boxes

(E) Not enough information

8. The two legs of a right triangle measure 9 in and 12 in. What is the perimeter?

(A) 15 in

(B) 21 in

(C) 25 in

(D) 30 in

(E) 36 in

9. Which is equal to 153×10^{-4}?

(A) 0.000153

(B) 0.0153

(C) 0.153

(D) 1.53

(E) 1 530 000

10. In the square $ABCD$, point A is located at $(-6, 1)$ and point C is located at $(-4, 7)$. If the square is rotated around point M so that the new position of point A is $(-8, 3)$, what is the new position of point C?

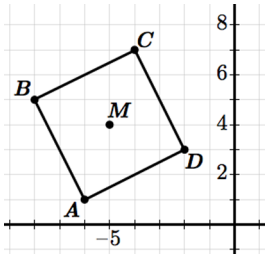
(A) $(-4, 7)$

(B) $(-2, 5)$

(C) $(-2, 9)$

(D) $(-5, 5)$

(E) $(-6, 9)$



11. Amber drew a scale drawing of a game room. In real life the pool table is 4 feet wide. It is 8 inches in the drawing. What scale did Amber use for the drawing?
1 inch = _____ feet.

(A) $\frac{1}{4}$

(B) $\frac{1}{3}$

(C) $\frac{1}{2}$

(D) 1

(E) 2

12. You roll a die and flip a coin. How many outcomes are possible?

(A) 6

(B) 8

(C) 10

(D) 12

(E) 14

13. For the given data, what are the lower quartile, the median, and the upper quartile?

12 20 22 28 29 58 63

	Lower Quartile	Median	Upper Quartile
(A)	21	28	50
(B)	12	29	63
(C)	20	28	45.5
(D)	16	29	50
(E)	20	28	58

14. What is the area shared by two intersecting circles of radius 1 passing through each other's center?

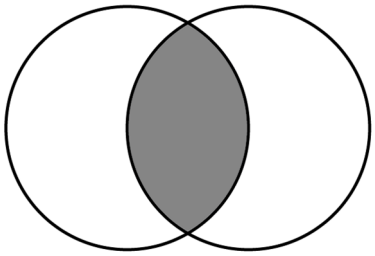
(A) $\frac{\sqrt{3}}{2}$

(B) $\frac{2\pi}{3} - \frac{\sqrt{3}}{2}$

(C) $\frac{\sqrt{3}}{2} + \frac{\pi}{18}$

(D) $\frac{\pi}{4}$

(E) $\frac{\pi}{3}$



15. In a recent election for student body president, Linus received 3/5 of the total votes, Charlie received 2/7 of the total votes, and Lucy received the remaining 24 votes. How many votes did Charlie receive?

(A) 24
(B) 60
(C) 75
(D) 100
(E) 126

16. A triangle has sides of lengths 8.1 and 1.4. What is the length of the third side, if it is an even integer?

(A) 2
(B) 4
(C) 6
(D) 8
(E) 10

17. If the radius of a circle is increased by 1, by how much is the circumference increased?

(A) 1
(B) 2
(C) 3
(D) π
(E) 2π

18. What is the product of the greatest common divisor of 9633 and 4693 and the least common multiple of the same numbers?

(A) 183 027
(B) 2 379 351
(C) 3 477 513
(D) 45 207 669
(E) 3 722 098 081

19. Ms. Pham writes 2 tests, each with 25 problems. If the tests have 12 problems in common, how many problems does she write?

(A) 24
(B) 26
(C) 37
(D) 38
(E) 49

20. Four hat-wearing friends sat at a table discussing practical jokes for April Fool's Day. Over speaker-phone hatless Tim learned that the person wearing the cowboy hat sat on Frosty's left, and Rudolph sat opposite the person wearing the top hat. The Grinch was not wearing the beret and would not be caught dead in a cowboy hat. The person wearing the cowboy hat sat opposite from Charlie. Who was wearing the sombrero?

(A) Charlie
(B) Frosty
(C) Grinch
(D) Rudolph
(E) Tim