

2010 Orange County Math Circle All-Girls Tournament

Grade 7 - 8 Sprint Round

Name: _____

School: _____

Grade: _____

1. Increasing each of 64 numbers by 2 increases their sum by:

(A) 2 (B) 32 (C) 64 (D) 128

2. Of the following numbers, which has the greatest tenths digit?

(A) 0.3073 (B) 3.073 (C) 30.73 (D) 307.3

3. $88^2 \times (88 \times 88)^2 =$

(A) 88^5 (B) $88^2 \times 88^3$ (C) $88^2 \times 88^4$ (D) 3×88^2

4. How many numbers in the following list are even numbers?

$-5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5$

(A) 3 (B) 4 (C) 5 (D) 6

5. How many positive prime numbers are divisible by 17?

(A) 0 (B) 1 (C) 2 (D) 3

6. How many positive multiples of 4 are less than 100?

(A) 22 (B) 24 (C) 25 (D) 26

7. If the sum of two consecutive odd numbers is 1000, what is the smaller of the two numbers?

(A) 1 (B) 499 (C) 500 (D) 999

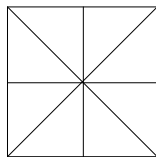
8. Lisa wears red hat. Elle and Sheen wear green hats. Arielle, Rhiannon, and Ainsley wear blue hats. The six girls came to the math tournaments together. How many of them could truthfully say *I have the same hat color as one or more of the other girls*.

(A) 3 (B) 4 (C) 5 (D) 6

9. If $\frac{2009}{x} + \frac{2010}{x} + \frac{2011}{x} = 1$, then $x =$

(A) 6030 (B) 6020 (C) 6010 (D) 6000

10. How many triangles are in the following figure?



(A) 8 (B) 12 (C) 14 (D) 16

11. Nikita and Hanna each pick a whole number between 1 and 2000. If the difference between their numbers is 10, which of the following may be the sum of their numbers?

(A) 2005 (B) 2010 (C) 2015 (D) It cannot be determined

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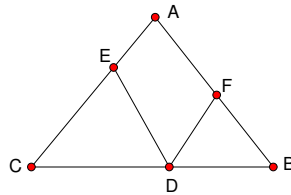
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12. A bus left Irvine with some passengers on it. At Laguna Niguel, $\frac{1}{8}$ of the passengers got off and 7 new passengers boarded it. There are now 63 passengers on board the bus. How many passengers were on the bus when it left the Irvine station?
 (A) 49 (B) 56 (C) 64 (D) 72
13. If the length of each side of a rectangle is an odd number, then the perimeter of the rectangle could be:
 (A) 15 (B) 17 (C) 19 (D) 20
14. In a soccer league, the ratio of the number of teams that wear red jerseys to the number of teams that wear blue jerseys is 7:13. What percent of the teams in the league wear red jerseys?
 (A) 70% (B) 49% (C) 35% (D) 20%
15. In $\triangle ABC$, $AB = AC$ and $\angle A = 80^\circ$. If points D , E and F lie on sides BC , AC and AB , respectively, and $CD = CE$ and $BF = BD$, then $\angle EDF$ equals



- (A) 30° (B) 40° (C) 50° (D) 65°
16. A bag contains 2 red, 2 blue, and 2 green stickers. Emily takes one sticker at a time from this bag randomly without replacement. What is the least number of stickers Emily must take from this bag to be sure that she has taken 2 stickers of the same color?
 (A) 2 (B) 3 (C) 4 (D) 6
17. Which of the following numbers is not a factor of 9876?
 (A) 2 (B) 3 (C) 4 (D) 7
18. $\frac{\frac{1}{x} + \frac{1}{y}}{x + y} =$
 (A) 1 (B) $\frac{1}{xy}$ (C) xy (D) $x + y$
19. The measure of the smallest angle in a triangle can never be
 (A) 1° (B) 10° (C) 45° (D) 61°
20. Chelsea paints twice as fast as Rachele. If it took Rachele 6 hours to paint a room, how long would it have taken if both had painted the room together?
 (A) 2 hours (B) 3 hours (C) 9 hours (D) 18 hours
21. If 24 chicken weigh the same as 18 ducks, then 24 ducks weigh the same as how many chickens?
 (A) 18 (B) 24 (C) 32 (D) 36

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22. Two sides of an isosceles triangle are 12 and 24. What is the perimeter of the triangle?
 (A) 36 (B) 42 (C) 60 (D) 72
23. What is the smallest possible difference between the sum of five consecutive positive integers and the largest of them?
 (A) 0 (B) 2 (C) 5 (D) 10
24. If n is a whole number, which of the following could equal n^3 ?
 (A) 2.7×10^{27} (B) 2.7×10^{28} (C) 2.7×10^{29} (D) 2.7×10^{30}
25. The sum of the first eighty positive odd integers subtracted from the sum of the first eighty positive even integers is:
 (A) 20 (B) 40 (C) 60 (D) 80
26. How many pairs of positive integers (a, c) satisfy $a^3 + 125 = c^3$?
 (A) 0 (B) 1 (C) 2 (D) 3
27. $\frac{1}{2 + \frac{3}{4 + \frac{5}{6}}}$ is equal to:
 (A) $\frac{29}{76}$ (B) $\frac{76}{29}$ (C) $\frac{20}{29}$ (D) $\frac{29}{20}$
28. The roots of the equation $x^2 + bx + c = 0$ are 4 and 5. What is $b + c$?
 (A) 9 (B) 11 (C) 19 (D) 21
29. A town's population increased by 1,200 people, and then this new population decreased by 11%. The town now had 32 less people than it did before the 1,200 increase. What is the original population?
 (A) 1,200 (B) 11,200 (C) 9,968 (D) 10,000
30. *A wise old owl climbed up a tree
 Whose height was exactly ninety plus three.
 Every day the owl went up eighteen.
 Every night the owl came down thirteen.
 If the owl did not pause or stop,
 When did its claws first reach the top?*
 (A) day 16 (B) day 17 (C) day 18 (D) day 19