

SOUTH PLAINS MATH & SCIENCE COMPETITION

MIDDLE SCHOOL MATHEMATICS

General Information:

- Check to see that you have written your name on the label and that the test name on the label matches the name on this booklet.
- **DO NOT** open the test booklet and **DO NOT** start until the proctor says "begin."
- Each individual exam period will be 45 minutes and each exam contains 40 multiple choice questions.
- Students are allowed to use a non-programmable battery operated calculator during the individual and team exams.
- Students are encouraged to write on the exam booklet. Scratch paper and pencils will also be provided.
- Students will not be permitted to leave the test room while the test is in progress. If a student finishes early, he/she must remain in the test room until the exam period is completed.
- If you need to ask a question during the test, raise your hand and the proctor will come to you.
- There is no penalty for skipping a problem. The exam scores will be determined by the number of correct answers. All ties will be broken by awarding the place to the contestant who has the most consecutive correct answers before a problem is missed.
- Students may NOT keep the test booklet.

MIDDLE SCHOOL MATHEMATICS

- Find the 17th number in the following pattern : **69, 77, 85, 93, . . .**
 - 197
 - 205
 - 189
 - 181
 - None of these
- Find the decimal approximation for $\frac{3}{16}$ to the nearest thousandth.
 - 0.187
 - 0.1875
 - 0.188
 - 0.19
 - None of these
- The sum of a number and 1 is doubled and the result is added to three times the difference of the number and 2. The result is 61. What is the number ?
 - 53
 - 13
 - 24
 - 12.4
 - None of these
- How many prime numbers are less than 40 ?
 - 12
 - 9
 - 10
 - 13
 - None of these
- How many pounds of cookies selling for 80¢ a pound must be mixed with 20 pounds of cookies selling for 75¢ a pound to make a mixture that will sell for 76¢ a pound ?
 - 15
 - 18
 - 8
 - 28
 - 5
- Linda is 23 years old and Patricia is 15 years old. How many years ago was Linda twice as old as Patricia ?
 - 8
 - 3
 - 7
 - 9
 - None of these
- What time is it in Los Angeles when it is 3:00 p.m. in Boston ?
 - 4:00 p.m.
 - 12:00 a.m.
 - 1:00 p.m.
 - 2:00 p.m.
 - 12:00 p.m.
- Mariana's scores on tests during this six weeks grading period were 85, 75, 80, 90, 80, 90, 85, 65, 85, 80, 75, 70, 100, 90, and 85. Find the mean of this set of scores.
 - 82.23
 - 80
 - 85
 - 90
 - 81.23
- One rectangle has a width of 6 m. and length of 8 m. Another rectangle has a width of 4 m. and length of 12 m. Determine the difference between the areas of the two rectangles.
 - 7 m^2
 - 25 m^2
 - 49 m^2
 - 35 m^2
 - 0 m^2

10. Which of the following decimal fractions is largest ?
- a. 2.0976 b. 2.9076 c. 2.9706 d. 2.97006 e. 2.976
11. $\sqrt{36+25} = \underline{\quad? \quad}$.
- a. 17 b. $\sqrt{14}$ c. 13 d. $\sqrt{11}$ e. 19
12. If $\frac{x^2 - 4}{x + 6}$ represents a real number, then x can't equal $\underline{\quad? \quad}$.
- a. 2 b. -6 c. -2 d. 4 e. 6
13. The denominator of a fraction is twice as large as the numerator. If 4 is added to both the numerator and denominator, the value of the fraction is $\frac{5}{8}$. Find the numerator of the original fraction.
- a. 12 b. 10 c. 16 d. 6 e. 8
14. Solve for x : $9x^2 - 16 = 0$
- a. $\{4/3, -4/3\}$ b. $\{3/4, -3/4\}$ c. $\{-4/3\}$ d. $\{-5/2, 5/2\}$ e. $\{5/2, -5/2\}$
15. $6 + 12 + 18 + 24 + 30 + \dots + 60 + 66 = \underline{\quad? \quad}$.
- a. 396 b. 360 c. 330 d. 386 e. 368
16. If $-|x - 5| + 4 = 20$, then $x = \underline{\quad? \quad}$.
- a. $\{-10, 20\}$ b. $\{-11, 21\}$ c. $\{-13, 21\}$ d. $\{-17, 15\}$ e. $\{-20, 10\}$
17. If one inch is equal to 2.54 cm., how many centimeters are there in one yard ?
- a. 7.62 b. 22.86 c. 91.44 d. 114.3 e. 30.48
18. Find the product of the number of quarts in two gallons and the number of ounces in a pound.
- a. 512 b. 384 c. 256 d. 128 e. 72

19. Find the volume of a spherical aquarium if the diameter is 2 feet in length.

- a. $\frac{8}{3} \pi \text{ ft}^3$ b. $\frac{32}{3} \pi \text{ ft}^3$ c. $\frac{4}{3} \pi \text{ ft}^3$ d. $\frac{2}{3} \pi \text{ ft}^3$ e. $9 \pi \text{ ft}^3$

20. Solve for x : $-4x + 9 - x = 7x + 33$

- a. {7} b. {11} c. {10} d. {8} e. {-2}

21. The base of a triangle is 15 inches and its area is 60 sq. in. Find the area of a similar Triangle whose altitude is 6 in.

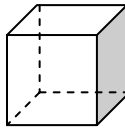
- a. 33.75 in^2 b. 45 in^2 c. 25.25 in^2 d. 67.5 in^2 e. 36

22. 18500 milligrams = ? kilograms.

- a. 18.5 b. .0185 c. 1,8500,000 d. 185,000 e. 185

23. If the following cube were thrown up and allowed to fall flat on *one* face, what surface area is not covered by the ground ?

Edge = 4 cm.



- a. 80 cm^2 b. 180 cm^2 c. 36 cm^2 d. 252 cm^2 e. 96

24. 72 is what percent of 120 ?

- a. 80% b. 60% c. 25% d. 30% e. 20%

25. If 8 ounces of flour can produce 48 cookies, how many cookies can be produced with 3 pounds of flour ?

- a. 81 b. 160 c. 288 d. 120 e. 192

26. Choose the false sentence.

- a. $-3 < |3|$ b. $-5.21 < -5.11$ c. $0 \leq 1$ d. $9 \geq |-9|$ e. $-.23 > -.13$

27. A simplified form of $7y - [2 - 3(2y - 1)]$ is ___?___.

- a. $13y + 1$ b. $13y + 5$ c. $13y - 5$ d. $y - 5$ e. None of these

28. The sum of three odd numbers is ___?__.
- a. always odd
 - b. sometimes odd
 - c. always even
 - d. always a prime number
 - e. None of these
29. If $2x = 13$, the value of $4x - 1$ is ___?__.
- a. 0
 - b. 19
 - c. 30
 - d. 25
 - e. 36
30. Which of the following is the least ?
- a. the number of which 16 is 30%
 - b. the number of which 16 is 10%
 - c. the number of which 16 is 60%
 - d. the number of which 16 is 100%
31. If $a < b$ and $b < 0$, then ___?__.
- a. $a < 0$
 - b. $a > 0$
 - c. $a = 0$
 - d. None of the above
32. If $2y - 1$ is an odd integer, what is the next consecutive odd integer ?
- a. $2y$
 - b. $2y - 3$
 - c. $2y + 1$
 - d. $2y + 3$
 - e. $4y$
33. If $-|a| = a$, then ___?__.
- a. $a = 0$
 - b. $a \leq 0$
 - c. $a \geq 0$
 - d. $a < 0$
 - e. None of these
34. Two-thirds of a number added to itself is 20. What is the number ?
- a. 12
 - b. $13 \frac{1}{3}$
 - c. 30
 - d. $33 \frac{1}{3}$
 - e. None of these

35. Which group of numbers is arranged from least to greatest ?
- a. - 8, - 10, $\frac{1}{3}$, 0.6, 1
 - b. 1, 0.6, $\frac{1}{3}$, - 8, - 10
 - c. - 10, - 8, 0.6, $\frac{1}{3}$, 1
 - d. - 10, - 8, $\frac{1}{3}$, 0.6, 1
36. If Jacob can type a word every 1.5 seconds, how many words can he type in $\frac{1}{2}$ hours ?
- a. 36
 - b. 40
 - c. 360
 - d. 3600
 - e. 400
37. A box contains one red, one white, one blue, and one green marble. One marble is drawn at random. Of the remaining three marbles, a second one is drawn at random. What is the probability that the blue marble was not drawn ?
- a. $\frac{1}{2}$
 - b. $\frac{1}{4}$
 - c. $\frac{3}{4}$
 - d. $\frac{7}{8}$
 - e. $\frac{5}{8}$
38. When a power is raised to a power, the exponents are ___?___.
- a. added
 - b. multiplied
 - c. subtracted
 - d. divided
 - e. None of these
39. The sum of two consecutive even integers is 32 more than their difference. Find the integers.
- a. 16, 14
 - b. 10, 12
 - c. 16, 18
 - d. 18,20
 - e. None of these
40. If $f(x) = 3x^2 - 5$, then $f(- 2) =$ ___?___.
- a. - 2
 - b. 4
 - c. - 8
 - d. - 12
 - e. 7

End of Test