PLACE LABEL BELOW

Name: _____ School: _____

SS/ID Number: _____ City: _____

Grade: 4   5   6   7   8   Classification: 1A 2A 3A 4A 5A 6A

Academic Excellence in Mathematics and Science through Competition
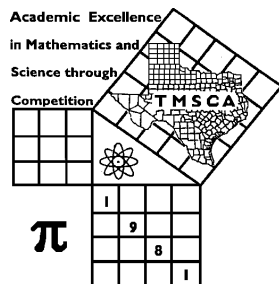
T M S C A   M I D D L E   S C H O O L
N U M B E R   S E N S E
T E S T # 6 ©

D E C E M B E R   1 1 ,   2 0 2 1

GENERAL DIRECTIONS

1. Write only the requested information on this coversheet. Do not make any additional marks on this cover sheet.
2. You will be given 10 minutes to take this test.
3. There are 80 problems on the test.
4. Write in ink only! It would be advantageous to use <u>non-black</u> ink.
5. Solve as many problems as you can in the order that they appear.
6. Problems that are skipped are considered wrong.
7. Problems that appear after the last attempted problem do not count either for or against you.
8. ALL PROBLEMS ARE TO BE SOLVED MENTALLY! [No scratch work!]
9. Only the answer may be written in the answer blank.
10. Starred [*] problems require approximate INTEGRAL answers that are within 5% of the exact answers. All other problems require exact answers.
11. All problems answered correctly are worth <u>FIVE</u> points. <u>FOUR</u> points will be deducted for all problems answered incorrectly or skipped before the last problem attempted.

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(1) $8765 - 5678 =$ _____

(2) $2029 + 7970 =$ _____

(3) $5.6 - 0.65 =$ _____ (decimal)

(4) $4256 \div 7 =$ _____

(5) $16^2 =$ _____

(6) $123 \times 5 =$ _____

(7) $12 + 18 \times 4 \div 9 =$ _____

(8) $3\dfrac{1}{8} =$ _____ (decimal)

(9) $72\% =$ _____ (fraction)

*(10) $77 + 603 + 5436 =$ _____

(11) $28 \times 88 =$ _____

(12) 15% of 60 is _____

(13) $121 \times 11 =$ _____

(14) $7\dfrac{2}{7} + 4\dfrac{2}{5} =$ _____ (mixed number)

(15) The LCM of 24 and 42 is _____

(16) $6\dfrac{1}{4} - 3\dfrac{7}{8} =$ _____ (mixed number)

(17) $48 \times 75 =$ _____

(18) $\dfrac{1}{16} =$ _____ (decimal)

(19) How many nickels are in $4.55? _____

*(20) $662244 \div 798 =$ _____

(21) $111 \times \dfrac{11}{37} =$ _____

(22) $7531 \times 11 =$ _____

(23) 2 quarts = _____ ounces

(24) $97^2 =$ _____

(25) $21 \times 1\dfrac{2}{3} =$ _____

(26) $1 + 3 + 5 + 7 + \ldots + 17 + 19 =$ _____

(27) 3 yards + 3 feet = _____ inches

(28) The sum of the prime
numbers between 50 and 60 is _____

(29) $0.363636\ldots =$ _____ (fraction)

*(30) $28 \times 30 \times 32 =$ _____

(31) $36 \times 44 =$ _____

(32) If the area of a square is
49, then the perimeter is _____

(33) $107^2 =$ _____

34) If $3x - 12 = 18$, then $x^3 =$ _____

(35) Round $\sqrt{3}$ to the nearest tenth. _____

(36) If $44^2 - 36^2 = 8k$, then $k =$ _____

(37) $\dfrac{4!}{6!} =$ _____ (fraction)

(38) 40 is what percent less than 50? _____%

(39) $\sqrt{729} =$ _____

*(40) $71.4285 \times 350 =$ _____

(41) If $\dfrac{4}{7} = \dfrac{3}{x}$, then $8x =$ _____

(42) $0.7555\ldots =$ _____ (fraction)

(43) $55 \times 35 =$ _____

(44) $234_5 + 111_5 - 222_5 =$ _____ ₅

(45) $\{1,3,6,10,15,21,m,36,n,55,...\}$ $m+n =$ _____

(46) $O = \{o,l,n,e,y\}$ and
     $C = \{c,u,b,s\}$. $O \cup C$ has _____ elements

(47) $991 \times 997 =$ _____

(48) 45% of $122\dfrac{2}{9} =$ _____

(49) If $f(x) = x^2 - 2x + 1$, then $f(1.8) =$ _____

*(50) $4 \times \pi^4 =$ _____

(51) $7^{-2} + 7^{-1} =$ _____

(52) The reciprocal of -2.4 is _____

(53) $104^3 =$ _____

(54) 6 pints + 4 cups = _____ ounces

(55) $463524 \div 11$ has a remainder of _____

(56) 0.5666… = _____ (fraction)

(57) How many positive integers less
     than 36 are relatively prime to 36? _____

(58) The largest negative integral
     value of x such that $|x + 3| > 8$ is _____

(59) The probability of rolling a die
     and obtaining a prime number is _____

*(60) $5 \times e^5 =$ _____

(61) $\left(\dfrac{4}{9}\right)^{\frac{3}{2}} =$ _____ (fraction)

(62) If $222_b = 182$, then $137_b =$ _____

(63) The sum of three consecutive
     integers is 54. The smallest of these is _____

(64) If $\dfrac{1}{5} + \dfrac{1}{8} = \dfrac{1}{x}$, then $x =$ _____

(65) $1008 \times 1005 =$ _____

(66) $24 \times \dfrac{25}{27} =$ _____ (fraction)

(67) The leg opposite the 60° angle in a
     right triangle = $8\sqrt{3}$. The hypotenuse = _____

(68) The 6th hexagonal number is _____

(69) $1111 \times 35 =$ _____

*(70) $9 \times 18 \times 27 =$ _____

(71) The first 4 digits of the decimal for $\dfrac{17}{33}$
     are 0._____

(72) $\dfrac{2}{15} + \dfrac{2}{35} + \dfrac{2}{63} =$ _____

(73) If $f(x) = 3x^2 - 2$, then $f(f(2)) =$ _____

(74) $3 + 1 + 4 + 5 + 9 + ... + 157 + 254 =$ _____

(75) $15 + 10 + 6\dfrac{2}{3} + 4\dfrac{4}{9} + 2\dfrac{26}{27} =$ _____

(76) $(3)(7)(9)(13)(37) =$ _____

(77) The smallest angle formed by
     the hands of a clock at 2:30 is _____°

(78) 44 base 6 is _____ base 7

(79) If $3^{2x} = 900$, then $3^x =$ _____

*(80) The amount of interest on $2500 at a
     9% simple annual
     rate for 25 years is _____ dollars

(1) 3087

(2) 9999

(3) 4.95

(4) 608

(5) 256

(6) 615

(7) 20

(8) 3.125

(9) $\dfrac{18}{25}$

*(10) $5811 - 6421$

(11) 2464

(12) 9

(13) 1331

(14) $11\dfrac{24}{35}$

(15) 168

(16) $2\dfrac{3}{8}$

(17) 3600

(18) .0625

(19) 91

*(20) $789 - 871$

(21) 33

(22) 82841

(23) 64

(24) 9409

(25) 35

(26) 100

(27) 144

(28) 112

(29) $\dfrac{4}{11}$

*(30) $25536 - 28224$

(31) 1584

(32) 28

(33) 11449

(34) 1000

(35) 1.7

(36) 80

(37) $\dfrac{1}{30}$

(38) 20

(39) 27

*(40) $23750 - 26249$

(41) 42

(42) $\dfrac{34}{45}$

(43) 1925

(44) 123

(45) 73

(46) 9

(47) 988027

(48) 55

(49) .64 or $\dfrac{16}{25}$

*(50) $371 - 409$

(51) $\dfrac{8}{49}$

(52) $-\dfrac{5}{12}$

(53) 1124864

(54) 128

(55) 6

(56) $\dfrac{17}{30}$

(57) 12

(58) -12

(59) $\dfrac{1}{2}$

*(60) $705 - 779$

(61) $\dfrac{8}{27}$

(62) 115

(63) 17

(64) $\dfrac{40}{13}$ or $3\dfrac{1}{13}$

(65) 1013040

(66) $22\dfrac{2}{9}$

(67) 16

(68) 66

(69) 38885

*(70) $4156 - 4592$

(71) 5151

(72) $\dfrac{2}{9}$

(73) 298

(74) 664

(75) 45

(76) 90909

(77) 105

(78) 40

(79) 30

*(80) $5344 - 5906$