Delta College Middle School Math Competition
Practice Test-2017

1) What value of the digit A will make the number 567,88A be divisible by 12?

a. 2 b. 8 c. 5 d. 0 e. 3

2) What is the smallest number of coins (pennies, nickels, dimes, and quarters are the only coins allowed) needed to represent any sum up to $1?

a. 10 b. 12 c. 15 d. 8 e. none of these

3) The product of the ages of three teenagers is 4590. How old is the oldest?

a. 18 b. 19 c. 15 d. 17 e. none of these

4) If rose bushes are spaced about 1 foot apart, approximately how many bushes are needed to surround a circular patio whose radius is 12 feet?

a. 12 bushes b. 38 bushes c. 48 bushes

d. 75 bushes e. 450 bushes

5) The ordered list of numbers 18, 21, 24, A, 36, 37, B has a median of 30 and a mean of 32. Find B – A.

a. 30 b. 32 c. 56 d. 24 e. none of these

6) Zorks measure angles in clerts. There are 500 clerts in a full circle. How many clerts are there in a right angle?

a. 100 clerts b. 90 clerts c. 150 clerts

d. 125 clerts e. none of these

7) The value of $3^3 = 27$. The units digit for 3^3 is 7. What is the units digit for 3^{122}?

a. 1 b. 9 c. 7 d. 3 e. 4

8) A math snail was born on January 1st, 2013 at midnight. It lived 3.07 years (assume it never lived through a leap year). Cite the date and time it died, round to the nearest minute.

a. April 2, 2013 at 2:13 pm
b. January 26, 2016 at 1:12 pm
c. April 26, 2016 at 4:02 am
d. February 13, 2016 at 4:13 pm
e. April 2, 2016 at 2:13 pm

9) A Palindrome is a whole number that reads the same forwards as backwards (121 or 1441). If we neglect the colon, certain times displayed on a digital watch are palindromes. Three examples are 1:01, 4:44, 12:21. How many times during a 12 hour period will there be palindromes shown on the face of the digital clock?

a. 60 b. 63 c. 93 d. 57 e. 97

10) What is the reciprocal of $(\frac{1}{2} + \frac{1}{3} + \frac{1}{4})$?

a. 12/13 b. 9 c. 3/13 d. 4 e. There is no reciprocal

11) If you jog 1 mile at 4 miles per hour and jog another mile at 8 miles per hour and then run the last two miles at 12 miles per hour, what is your average speed for the four miles?

a. 8 MPH b. 6 MPH c. 10 MPH

d. 9 MPH e. 7 MPH

12) If $10 < A < 20$ and $-6 < B < 8$ then $(A - B)$ is between what two integers?

a. 2 and 26 b. 4 and 28 c. -6 and 20

d. 8 and 10 e. -6 and 28

13) Paige averages 12 MPH riding her bicycle to school. Averaging 36 MPH by car takes her one-half hour less time. How far does she travel to school?

a. 12 miles b. 9 miles c. 15 miles d. 20 miles e. 36 miles

14) $(3-1)(5-3)(4-1)(2-1) - (4-1)(3-1)(2-1)$ is equal to

a. 72 b. 5 c. 9 d. 6 e. 18

15) A square is inscribed inside a circle. What percentage of the square's perimeter is the circle's circumference? Round your answer to the nearest whole percent.

a. 90% b. 110% c. 111% d. 101% e. 50%

16) What is the smallest natural number which is divisible by 3, 4, 5, 6, and 7 ?

a. 210 b. 840 c. 1 d. 420 e. none of these

17) The product of three consecutive natural numbers equals fifty-six times their sum. What is the middle number?

a. 12 b. -13 c. 0 d. -12 e. 13

18) How many natural numbers up to 1,000 contain at least one of the digits "8" or "9" ?

a. 488 b. 472 c. 422 d. 288 e. 388

19) A model of a statue is built to a scale of 1:5 from the same material as the real statue and weighs 4 pounds. How many pounds does the real statue weigh?

a. 100 b. 500 c. 20 d. 2000 e. 125

20) Determine the following: $[1 + 2 \div 3 \times 4] \times [9 \times (8 - 7) \div (6 + 5)]$

a. $\frac{36}{11}$ b. $\frac{9}{44}$ c. 9 d. $\frac{180}{33}$ e. 3

GRADE 6 STUDENTS SHOULD STOP

21) In a class of 30 students, each student falls into at least one of these categories:
Taller than 6 feet / Vanilla lover / Great singer

12 students love vanilla, 4 of whom are great singers. There are 2 great singers in the class who are taller than 6 feet, but only one of them loves vanilla. There are 14 great singers shorter than 6 feet who do not like vanilla. How many students are taller than 6 feet, dislike vanilla, and are not great singers?

a. 4 b. 3 c. 2 d. 7 e. 0

22) You lit a candle at 10:00 o'clock, and noticed that at 11:00 o'clock the candle was 2/3 of the size it was at 10:45. Assuming the candle burns at a constant rate, at what time will it be gone completely? Express your answer in the format HH:MM (hours: minutes)

a. 1:00 b. 11:30 c. 11:15 d. 12:00 e. 12:30

23) In 1993 Latasha's salary was x dollars. In 1994, business was good and she received a 10% raise. In 1995, business was bad and she received a 10% pay cut. How does her salary in 1995 compare to her salary in 1993?

a. It is the same b. It is 1% more c. It is 1% less

d. It is 10% more e. It is 5% less

24) When each side of a square was increased in length by 50% , its area increased by 180 square inches. How many square inches are in the original square?

a. 270 b. 90 c. 80 d. 100 e. 144

GRADE 7 STUDENTS SHOULD STOP

25) Sets A, B, and C all contain natural numbers that are less than 30 according to the definitions below:

Set A = {multiples of 4}
Set B = {Numbers that are 1 less than a prime}
Set C = {multiples of 3}

Find the sum of elements in the set $(A \cap C) \cup (B \cap C)$

a. 4 b. 5 c. 12 d. 60 e. 72

26) A circular racetrack is built inside a square field so that the diameter of the circle is the same as the length of a side of the square. What is the smallest diameter for which the part of the field outside of the circle is a natural number?

a. $\frac{1}{2} - \frac{\sqrt{\pi}}{\pi}$ b. $2 \cdot \sqrt{\frac{1}{4-\pi}}$ c. $\frac{2}{2-\sqrt{\pi}}$ d. 5 e. π

27) Each of the twenty students who took the most recent math test had a whole number score of 80% or above. No extra credit was given. The mode was 82%. If the median was 84% and the mean was 86%, what is the least number of students who scored 90% or above?

a. 0 b. 1 c. 2 d. 3 e. 4

28) A bag contains the letters K, L, M, N, O, P, Q, R, S, T. Letters are randomly removed (and not replaced) from the bag, one at a time. What is the probability that the first four letters drawn from the bag are K N O T, in this order?

a. $\frac{1}{10 \cdot 9 \cdot 8 \cdot 7}$ b. $\frac{1}{10} + \frac{1}{9} + \frac{1}{8} + \frac{1}{7}$ c. $\frac{1}{10000}$

d. $\frac{4}{10 \cdot 9 \cdot 8 \cdot 7}$ e. $\frac{1}{2500}$