



Mission Math Utah

# Spring Competition

## Elementary School Division: Multiple Choice Test

March 16, 2019

Name: \_\_\_\_\_

### General Information

- **Do not open this test until you are instructed to do so.**
- This section contains **30 multiple choice questions**. You will have exactly **40 minutes** to work on them.
- Each question is followed by five answer choices. Only one of the answer choices is correct. On the provided answer form, circle the letter of the answer you think is correct.
- Electronic devices, including calculators, must be turned off.
- You may do any work you want on this test, and you may keep the test once you are finished.

### Grading

- Each correct answer will be worth 1 point.
- Each incorrect or blank answer will be worth 0 points.
- Only answers marked on the provided answer form will be scored.

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These problems are meant to be challenging. Don't worry if you are unable to solve a problem. Try to focus on the problems you think you may be able to solve. You are not penalized for guessing, so **take an educated guess on any problems you are not able to solve**. If you finish before the time is up, use the remaining time to check your work.

1. Noelle has two more marbles than Henry, who has one marble. How many marbles do Noelle and Henry have together?

(A) 1    (B) 2    (C) 3    (D) 4    (E) 5

2. How many more children does a class of 30 children have than a class of 20 children?

(A) 10    (B) 11    (C) 12    (D) 13    (E) 14

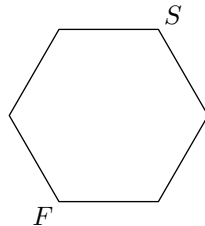
3. What is  $123+456+789$ ?

(A) 1366    (B) 1367    (C) 1368    (D) 1369    (E) 1370

4. What is the value of  $19 \times 3 + 11 \times 3$ ?

(A) 24    (B) 36    (C) 90    (D) 798    (E) 1881

5. Damir and Joao each walk around a park in the shape of a hexagon. Each side of the park is one mile long. They both start at point  $S$  and finish at point  $F$ . Damir walks clockwise, beginning to the right and down, while Joao walks counter clockwise, beginning to the left. Who walks further, and by how many miles?



- (A) Damir walks two more miles than Joao.  
(B) Damir walks one more mile than Joao.  
(C) Joao walks one more mile than Damir.  
(D) Joao walks two more miles than Damir.  
(E) Damir and Joao walk the same number of miles.

6. If Max makes \$20 per month mowing lawns, how much money does he make in a year?
- (A) \$40      (B) \$120      (C) \$160      (D) \$200      (E) \$240
7. Aza and Davis are looking at the moon. On Monday, the moon is 40% full. On Tuesday it is 60% full. If the moon continues to become full at a steady rate, on what day will it be completely full?
- (A) Wednesday      (B) Thursday      (C) Friday  
(D) Saturday      (E) Sunday
8. Together, Jupiter and Saturn have 141 moons, while Jupiter has 17 more moons than Saturn. How many moons does Saturn have?
- (A) 52      (B) 62      (C) 69      (D) 78      (E) 79
9. I have a whole number pair of shoes. Which of the following might be the total number of shoes I have?
- (A) 11      (B) 13      (C) 15      (D) 17      (E) 18
10. A motor shop has 21 bicycles (which have two wheels), 13 uni-cycles (which have one wheel), and 7 four wheelers. How many wheels are there in the shop in total?
- (A) 41      (B) 62      (C) 63      (D) 83      (E) 87
11. Pond A has 4 frogs and 7 goldfish. Pond B has 2 frogs and 8 goldfish. If ponds A and B are combined, how many more goldfish than frogs are there?
- (A) 7      (B) 9      (C) 11      (D) 13      (E) 15

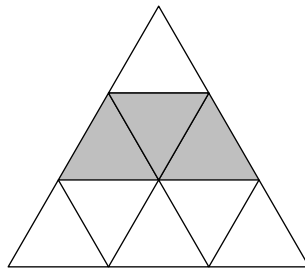
12. It takes Penelope 55 minutes to get ready for school and 10 minutes to walk to school. If Penelope wants to be at school at 7:40, at what time should she wake up?

(A) 6:15      (B) 6:25      (C) 6:35      (D) 6:45      (E) 7:05

13. Sweeney starts a 256-page book on Monday. If he reads 33 pages a day, on what day of the week will he finish the book?

(A) Monday      (B) Tuesday      (C) Wednesday  
(D) Thursday      (E) Friday

14. All of the small triangles in the figure have equal sizes. If the shaded region has area 6, what is the area of the whole triangle?



(A) 9      (B) 12      (C) 15      (D) 18      (E) 21

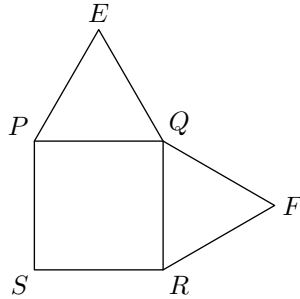
15. Andy has 5 black socks, 8 white socks, and 2 red socks in a drawer. If he pulls out socks randomly, how many socks does he have to pull out to guarantee a matching pair?

(A) 2      (B) 3      (C) 4      (D) 8      (E) 12

16. Allison takes half the candy out of a bag, and Beatrice takes a third of the remaining candy. If there are 4 pieces of candy in the bag now, how many were there to start with?

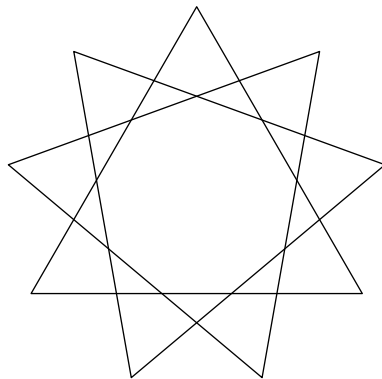
(A) 8      (B) 10      (C) 12      (D) 16      (E) 24

17. Points  $E$  and  $F$  lie outside square  $PQRS$  so that  $\triangle PQE$  and  $\triangle QRF$  are equilateral triangles. What is the degree measure of angle  $EQF$ ?



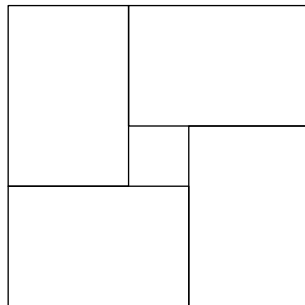
- (A)  $90^\circ$     (B)  $105^\circ$     (C)  $120^\circ$     (D)  $135^\circ$     (E)  $150^\circ$
18. Today is Florian's birthday. In 10 years he will be five times as old as he was 10 years ago. How old is Florian today?
- (A) 5    (B) 10    (C) 15    (D) 20    (E) 25
19. Each letter is assigned a score: A has a score of 1, B has score 2, C has score 3, and so on up to Z, which has a score of 26. The score of a word is the sum of the scores of the letters in that word. For instance, the score of MATH is  $13 + 1 + 20 + 8 = 42$ . Which of the following words has the *lowest* score?
- (A) HELLO    (B) LOW    (C) BANANA    (D) HIGH    (E) GOLD
20. There are a total of 70 Martians and Earthlings on a committee. 30 of them decide to meet on Saturday. If one-half of the Martians and one-third of the Earthlings on the committee participate in the Saturday meeting, how many Martians are at the meeting?
- (A) 10    (B) 15    (C) 20    (D) 25    (E) 40

21. At Raheem Middle School, 30 students are in the math club, 40 students are in the chess club, and 80 students are in neither. If Raheem Middle School has 136 students, how many students are in both the math club and the chess club?
- (A) 7    (B) 14    (C) 22    (D) 26    (E) 46
22. Farmer Bill is growing sunflowers. He starts with 125 sunflower seeds, which he plants. Each seed grows into a sunflower, and every 5 sunflowers that grow drop one seed. If he has less than 5 sunflowers, they do not drop any seeds. He picks up the seeds that drop and plants them. Once Farmer Bill runs out of seeds, how many sunflowers will he have?
- (A) 155    (B) 156    (C) 157    (D) 158    (E) 159
23. What is the maximum number of points of intersection when a line, a circle and a regular pentagon are drawn in the same plane?
- (A) 7    (B) 10    (C) 14    (D) 17    (E) 28
24. How many triangles are in the figure shown?



- (A) 21    (B) 27    (C) 30    (D) 36    (E) 39

25. 5 friends stand in a row from shortest to tallest. Carol is taller than Dan but shorter than Eric. Alice is taller than Bob, and there is 1 person between her and Eric. Bob is next to Dan. Who is in the middle of the line?
- (A) Alice    (B) Bob    (C) Carol    (D) Dan    (E) Eric
26. A river flows at 6 miles per hour. If it takes a boat, moving at a constant speed relative to the water, 6 hours to travel a certain distance upstream, and 3 hours to travel that same distance downstream, what is the boat's speed in miles per hour?
- (A) 8    (B) 10    (C) 12    (D) 16    (E) 18
27. Yvonne uses each of the digits  $0, 1, 2, \dots, 9$  to create two five-digit numbers which add up to 99,999. The first digit of each number is not 0. In how many ways can Yvonne do this, if the order of the numbers does not matter?
- (A) 96    (B) 1536    (C) 1920    (D) 3072    (E) 3840
28. A square is cut into 4 congruent rectangles and a smaller square, as shown. If each rectangle has 6 times the area of the smaller square, the longer side of the rectangle is how many times the shorter side?



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

29. The numbers  $1, 2, \dots, 9$  are randomly placed into the 9 squares of a  $3 \times 3$  grid. What is the probability that the sum of the numbers in each row of the grid is the same?

(A)  $\frac{1}{140}$     (B)  $\frac{1}{135}$     (C)  $\frac{1}{126}$     (D)  $\frac{1}{120}$     (E)  $\frac{1}{112}$

30. Aurora, Blythe, and Charlie are sitting around a table. Aurora says “Blythe and I are each thinking of a 3-digit perfect square with a tens digit of 2.” Charlie responds “There are six such numbers: they are 121, 225, 324, 529, 625, and 729.” Aurora and Blythe each tell Charlie the sum of the digits of their numbers, and Charlie says “Now I know Aurora’s number! I don’t know Blythe’s number, but I do know that the sum of Aurora’s number and Blythe’s number is a multiple of 9.”

What is Aurora’s number?

(A) 121    (B) 324    (C) 529    (D) 625    (E) 729