

# 2019 - 2020 TH Rogers Gr 4-5 Mathclub Qualifying Test

Name: \_\_\_\_\_  
(first name) (Last name)

Grade: \_\_\_\_\_

Email: \_\_\_\_\_

## Instructions to the contestants:

1. Answer ALL Questions.
2. Enter your answers inside the box on the right side. You **MUST** put your answer in the box. *(If you circle your answer, but not put in the box, then your answer will be marked as invalid even if you circle the correct answer)*
3. For the multiple choice questions (1-10), choose one of the letters A/B/C/D/E as answer.
4. For questions 11 to 30, write your answer.
5. Each questions carries 1 point.
6. No calculators are allowed.
7. Answers must be fully simplified and, where appropriate, given in the format asked for in the question.
8. Units are not required unless it is asked.
9. There are 30 questions and the test duration is 60 minutes.
10. Your answer sheets won't be returned back to you. You will be notified whether you are selected for the mathclub or not.

***I have read and followed the instructions*** \_\_\_\_\_  
(put your initials here)

\_\_\_\_\_  
(Don't write below this line)

Scorer 1: _____ (initials )		Scorer 2: _____ (initials )	
Total			





- 23 Sita is standing next to a tree. Sita's shadow is 4 feet long and she is 6 feet tall. How tall is the tree if its shadow is 8 feet?
- 24 The five interior angles in a pentagon are in the ratio of 2:3:4:5:6. What is the measure of the pentagon's largest angle?
- 25 Adil and Bianca each think about a number. The product of Bianca's number and square of Adil's number is  $128\sqrt{2}$ . While the product of Adil's number and square of Bianca's number is 512. What is the product of Adil's and Bianca's numbers?
- 26 Half of a third of  $x$  equals a fourth of  $y$  plus a fifth of  $y$ . If  $x = 27$ , what is the value of  $y$ ?
- 27 Marla can cut the lawn in 2 hours, and her brother Sid can cut it in 3 hours. If they work together, each with a mower, how **many minutes** will it take them to cut the lawn? ***(don't express your answer in hours. Even if your answer is correct, but expressed in hours it will mark as incorrect)***
- 28 In the decimal expansion of three-sevenths, what is the hundredth digit to the right of the decimal point?
- 29 A five-digit number  $6a7a5$  is divisible by 9. What is the sum of all possible values of  $a$ ?
- 30 A state creates license plates that each contain two letters followed by three digits. The first letter must be a vowel (A, E, I, O, U), and duplicate letters and digits are allowed. How many different license plates are possible?

# 2019 - 2020 TH Rogers Gr 2-3 Mathclub Qualifying Test

Name: \_\_\_\_\_  
(first name) (Last name)

Grade: \_\_\_\_\_

## Instructions to the contestants:

1. Answer ALL Questions.
2. Enter your answers inside the box on the right side. You **MUST** put your answer in the box. *(If you circle your answer, but not put in the box, then your answer will be marked as invalid even if you circle the correct answer)*
3. For the multiple choice questions (1-10), choose one of the letters A/B/C/D/E as answer.
4. For questions 11 to 30, write your answer.
5. Each questions carries 1 point.
6. No calculators are allowed.
7. Answers must be fully simplified and, where appropriate, given in the format asked for in the question.
8. Units are not required unless it is asked.
9. There are 30 questions and the test duration is 60 minutes.
10. Your answer sheets won't be returned back to you. You will be notified whether you are selected for the mathclub or not.

***I have read and followed the instructions*** \_\_\_\_\_  
(put your initials here)

\_\_\_\_\_  
(Don't write below this line)

Scorer 1: _____ (initials )		Scorer 2: _____ (initials )	
Total			





23. If 9 candy bars cost \$7.20, how much do 15 candy bars cost?
24. What is the value of  $\left(1 - \frac{1}{3}\right)\left(2 - \frac{4}{5}\right)$ ?
25. Two numbers sum to 49. If their difference is 15, what is the greater of the two numbers?
26. Joe multiplies three one-digit numbers together and gets 105. If one of the numbers is 3, what is the sum of the all the three numbers?
27. Abhi, Bose, Charlie, Dave, and Elisabeth all shake hands with one another exactly once. How many handshakes take place?
28. A palindrome is a number that reads the same when the order of its digits is reversed. For example, 949 and 1551 are palindromes. What is the first year after 2019 that is a palindrome?
29. The ratio of boys to girls in a class is 6:5. If there are 33 students in a class, how many girls are in the class?
30. Joel is building a structure, which needs 200 wooden blocks, and there are 24 blocks in a bundle. If he wants to build 6 structures according to this plan, how many bundles of wooden blocks should he order?



## 2019 - 2020 TH Rogers Gr 4-5 Mathclub Qualifying Test

### Answer Keys

1.	What is the value of $2019 + 200 + 19 + 9$ ? A) 2047    B) 2298    C) 2247    D) 4247    E) 2238	(C) 2247
2.	Solve $3((3 + 2)2 - 5 + 4) - 7$ . A) 22    B) 20    C) 11    D) 32    E) 24	(B) 20
3	What is the value of $22 + 2.2 + 0.22 + 0.022$ A) 24.442    B) 26.244    C) 22.442    D) 24.444    E) 24.222	(A) 24.442
4	What is the Greatest Common Divisor (GCD) of 84 and 126. A) 14    B) 21    C) 42    D) 7    E) 2	C
5	What is the units digit of $7^5$ ? A) 1    B) 3    C) 5    D) 7    E) 9	D
6.	Which one of the following is the largest? A) 0.5    B) $\frac{1}{2}$ C) 0.09    D) $\frac{5}{7}$ E) $-0.99$	D
7	What is the 2019 <sup>th</sup> letter in the sequence <i>ROGERSROGERSROGERS ...</i> ? A) R    B) O    C) G    D) E    E) S	C (G)
8	A bag has 8 red marbles, 7 blue marbles, 6 green marbles and 5 yellow marbles. What is the least number of marbles that Tom must pull out from the bag to guarantee that he received 4 marbles of the same color? A) 8    B) 9    C) 4    D) 13    E) 11	D
9	Simplify $\frac{1}{1 + \frac{1}{1 + \frac{1}{1 + \frac{1}{1}}}}$ A) $\frac{2}{5}$ B) $\frac{1}{2}$ C) $\frac{3}{4}$ D) 1    E) $\frac{2}{3}$	E
10	A circle has an area of 16. What is the circumference of the circle? A) $\frac{8}{\pi}$ B) 8    C) $8\pi$ D) $8\sqrt{\pi}$ E) $4\sqrt{2\pi}$	D
11	What is $x$ , if $2(4 - x) = 19 - 3x$ ?	11

12	How many fives are in fifty five fifteens?	165
13	In Staples one pencil costs 7¢, one book costs 17¢ and one gel pen costs 27¢. If Marla buys ten pencils, five books and three gel pens, how much does she need to pay?	\$2.36 or 236¢
14	The sum of five consecutive integers is 120. What is the largest of these integers?	26
15	Two squares, each with an area of $25 \text{ cm}^2$ , are placed side-by-side to form a rectangle. What is the perimeter of the rectangle?	30 cm
16	What is the smallest <i>two-digit</i> integer that has 8 factors?	24
17.	What is the remainder if $468970 \div 11$ ?	7
18	How many multiples of 8 are between 30 and 300?	34
19	Solve $100\sqrt{0.25}$	50
20	A triangle has integer side lengths. If the perimeter of this triangle is 8 cm, what is the area of this triangle? (express your expression in radical form $a\sqrt{b}$ or $\sqrt{c}$ )	$2\sqrt{2}$ or $\sqrt{8}$ $\text{cm}^2$
21	What is the largest integer $x$ for which $5x - 15 < 66$ ?	16
22	The width of a rectangle is five cm less than four times its length. If the perimeter of the rectangle is 60 cm, what is the area?	$161 \text{ cm}^2$
23	Sita is standing next to a tree. Sita's shadow is 4 feet long and she is 6 feet tall. How tall is the tree if its shadow is 8 feet?	12 feet
24	The five interior angles in a pentagon are in the ratio of 2: 3: 4: 5: 6. What is the measure of the pentagon's largest angle?	$162^\circ$
25	Adil and Bianca each think about a number. The product of Bianca's number and square of Adil's number is $128\sqrt{2}$ . While the product of Adil's number and square of Bianca's number is 512. What is the product of Adil's and Bianca's numbers?	$a = 4; b = 8\sqrt{2}$ $ab = 32\sqrt{2}$
26	Half of a third of $x$ equals a fourth of $y$ plus a fifth of $y$ . If $x = 27$ , what is the value of $y$ ?	10
27	Marla can cut the lawn in 2 hours, and her brother Sid can cut it in 3 hours. If they work together, each with a mower, how <b>many minutes</b> will	72 minutes

	it take them to cut the lawn? <b><i>(don't express your answer in hours. Even if your answer is correct, but expressed in hours it will mark as incorrect)</i></b>	
28	In the decimal expansion of three-sevenths, what is the hundredth digit to the right of the decimal point?	5
29	A five-digit number $6a7a5$ is divisible by 9. What is the sum of all possible values of $a$ ?	$a = 9$
30	A state creates license plates that each contain two letters followed by three digits. The first letter must be a vowel (A, E, I, O, U), and duplicate letters and digits are allowed. How many different license plates are possible?	130,000

# 2019 - 2020 TH Rogers Gr 2-3 Mathclub Qualifying Test

## Answer Keys

1.	What is: $6 + 8 + 10 + 12$ ? A) 36      B) 40      C) 42      D) 38      E) 34	A
2.	Compute: $1 \times 3 \times 5 \times 7 \times 0$ A) 10      B) 105      C) 0      D) 25      E) 15	C
3.	Find the value of x: $19 - 8 = 10 + x$ A) 10      B) 0      C) 1      D) 8      E) 9	C
4.	What is: $1 \times 2019 \times 10$ ? A) 2030      B) 2029      C) 2019      D) 0      E) 20190	E
5.	What number makes this statement correct: <b><math>20 + 30 + 40 = 15 + 15 + 15 + \underline{\hspace{1cm}}</math></b> ? A) 40      B) 55      C) 50      D) 45      E) 60	D
6.	Which of the following will give an odd integer as answer? A) $137 + 109$ B) $54 + 8 + 80$ C) $6 + 8 \times 2$ D) $18 - 2 - 13$ E) $3 \times 2 \times 11$	D
7.	What is: $80 + 10 \times 2 - 40 \times 1$ ? A) 100      B) 80      C) 60      D) 40      E) 140	C
8.	(twenty tens) + (twelve ones) + (ten zeroes) = A) 2010      B) 212      C) 2012      D) 2212      E) 0	B
9.	What is the area of a rectangle with side lengths of 6 and 4? A) 10      B) 24      C) 2      D) 36      E) 20	B
10.	Four quarters, three dimes, four nickels, and two pennies are equal to how many cents? A) 13      B) 152      C) 167      D) 189      E) 170	B
11.	Six years ago, I was six years old. Two years from now, I will be <u>    </u> years old.	C

	A) 12      B) 8      C) 14      D) 10      E) 17	
12.	Joe has one dozen pairs of colorful socks and $\frac{1}{2}$ a dozen pairs of white socks. How many socks does Joe have? A) 36   B) 12   C) 6   D) 24   E) 18	A
13.	An oak tree is 1200 cm tall. A pine tree is 8 m tall. How much more meters is the oak tree taller than the pine tree? A) 1192   B) 5   C) 6   D) 7   E) 4	E
14.	A prime number is a natural number having factors 1 and itself. For example: 3, which has factors 1 and 3. Which of the following sums is a prime number? A) $(2 + 3)$ B) $(7 + 2)$ C) $(3 + 11)$ D) $(4 + 5)$ E) $(9 + 11)$	A
15.	It takes Sarah thirty minutes to walk her dog, Chloe, two minutes to clean her waste, ten minutes to feed Chloe, sixty minutes to play with her, and twenty minutes to give her a bath. If she starts at 3:30 p.m. and does the above things what time will Sarah be done taking care of Chloe? A) 5:30 AM      B) 4:32 PM      C) 5:32 PM      D) 4:32 AM      E) 5:30 PM	C
16.	If a hen lays 3 eggs every week, how many weeks would it take for the hen to lay six dozen eggs?	24 weeks
17.	Crystal has 10 more pencils than Ruby and Ruby has six packets of pencils. If each packet has 8 pencils, how many pencils do they have together?	106
18.	If today is Wednesday, what day of the week is 20 days from yesterday?	Monday
19.	How many even numbers are there between 5 and 55?	25
20.	What is the remainder when 1992 is divided by 8?	0
21.	In order to slay a dragon, Mathias has to cut off all of its heads. As soon as he has cut off 3 heads, a new one grows back immediately. After Mathias has cut off 13 heads the dragon is dead. How many heads did the dragon have initially?	9
22.	What whole number is five less than one hundred divided by four?	20
23.	If 9 candy bars cost \$7.20, how much do 15 candy bars cost?	\$12 or 120 cents
24.	What is the value of $\left(1 - \frac{1}{3}\right)\left(2 - \frac{4}{5}\right)$ ?	$\frac{4}{5}$
25.	Two numbers sum to 49. If their difference is 15, what is the greater of the two numbers?	32