### 7<sup>th</sup> -8<sup>th</sup> Grade Regional Math Meet Tests 2019

- Individual Problems
  - Event 1: Problem Solving (No Calculator)
  - Event 2: Problem Solving (With Calculator)
  - Event 3: Mathematical Reasoning
  - Event 4: Mental Math
- Team Problems
  - Event 5: Team Problems
- Tie Breaker Question

Name:	School Team:

Event 1: Computations Without Calculator- 20 points total

Circle your final answer!

Part I (2 points each)

Give all answers in simplest form.

1. 
$$\frac{3-4|2-5|}{5-9 \div 3+8}$$

2. 
$$(0.11 + \frac{1}{2} \times 0.11) \div 2$$

3. 
$$-\sqrt{64} \times 8^2 - 39 \div 3$$

4. What percent of 14 is 18.2?

5. We know 
$$6(x+4) - 7 = -7$$
. Find the value of  $-3x^3 - 2x$ 

Name:	School Team:

Circle your final answer!

#### **Event 1: Computations Without Calculator**

Part II (2 points each)

Give all answers in simplest form.

- 1. Write 5,694.2% as a simplified mixed number.
- 2. Find  $\frac{2}{3}$  of 680% of 27.

3. 
$$\left[ \left( \frac{2}{7} + \frac{2}{5} \right) \div \frac{1}{2} \right] \times \frac{5}{6}$$

$$4.\left(1\frac{3}{4}+1\frac{4}{5}\right)\div71$$

5. Find the value of x. 6x - 18(2 + x) - 10 = 5(x + 1)

Name:S	chool Team:
vent 2: Computations With Calculator- 25 points	Circle your final answer!

### Event 2: Computations With Calculator- 25 points total Consumer Math (5 points each)

- 1. A 12 ounce can of green beans costs 69 cents and a 20 ounce can of green beans costs \$1.17. Which is the better buy?
- '2. A man decides to go into business selling vacuum cleaners. He purchases 53 vacuum cleaners for \$47.79 each. He marks up their price by 132% to sell. After selling 18 of the vacuum cleaners, he discounts the rest by 25%. Find his total profit or loss. Be sure to label if it is a profit or loss. Round to the nearest cent.
- 3. Ian's paycheck is \$168.04. He knows that his deductions were \$35.26 during this pay period. If he makes \$10.70 an hour, how many hours did he work?
- 4. Suppose that you want to purchase a laptop for \$617.89 and a printer for \$134.57. You have a coupon for \$10 off the printer, which will be applied before tax. Additionally, the store offers a 5% discount for purchases on laptops on Tuesdays. If you buy everything on a Tuesday and sales tax is 5.7%, find the total cost. Round to the nearest cent.
- 5. An entrepreneur spends \$18.71 on each craft he creates. He wants to sell 35 crafts and make at least \$400. Find the smallest percent markup that he must use to reach this profit. In calculations, round to the nearest cent. Round your percent to the nearest tenth.

Name:	School Team:
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Event 3: Mathematical Reasoning W	ith Calculator- 35 points total
	Clude years final
	Circle your final answer!
Geometry (7 points each)	
Remember to use labels when appr	opriate

1. Find the measure of the acute angle made by the hands of a clock at 3:20.

2. Amber is thinking of an angle. The complement of the angle is  $\frac{4}{9}$  of its supplement. Find the measure of the angle that Amber is thinking of.

3. Two men start at the same point, walk in opposite directions for four meters, then turn left and walk another 3 meters. What is the distance between them now?

7<sup>th</sup>-8<sup>th</sup> grades 2019

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Name:	School Team:
Event 3: Mathemati	cal Reasoning With Calculator- 35 points total
Consider Dark II (7 a	Circle your final answer!
Geometry Part II (7 p	oints each)
Remember to use	labels when appropriate

4. Ben is thinking of a rectangle with a perimeter of 216cm. The length of every side of the rectangle he's thinking of is a multiple of 3. The area of the rectangle he's thinking of is between 1000cm<sup>2</sup> and 1800cm<sup>2</sup>. Find the dimensions of all possible rectangles that Ben might be thinking of.

5. A square has an area of  $36in^2$ . What is the area of a circle whose diameter is as long as the diagonal of that square? Use 3.14 for pi. Do not round any other numbers until the very end of the problem, then round your final answer to the nearest hundredth.

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Name:	School Team:
Event 4: Mental Math (no calc (2 points each)	culator)- 20 points total
Example:	
1)	
2)	
3)	
4)	
5)	
6)	
7)	
8)	
9)	
10)	

Name: School Team:	
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Circle your final answerl

#### Event 5: Team Problems (with calculator)- 100 points total

Part 1: Number Theory (3 points each)

1. Some aliens have entered your classroom. They work math problems differently than what you're used to. They seem to follow some strange rules when solving arithmetic problems. The rules do not change- they always stay the same. Assume that the aliens found the correct answers to each of the problems shown below.

$$1 \odot 3 = 6$$

$$1 \odot 3 = 6$$
  $2 \odot 8 = 19$ 

$$6 \Leftrightarrow 5 = -4$$
  $8 \Leftrightarrow 3 = 2$ 

$$9 \implies 2 = 5$$

Solve each of the problems below, using the same rules as the aliens.

- a) 7 \\$\frac{12}{2}
- b) 4 \\$3
- c) 8 © 7
- d) 12 © 6
- e) (4 © 8) ☆ 9
- f) 8 \(\phi\) (2 \(\omega\) 3)

Name:	School Team:	
	Circle your fin	al
	answerl	

## Event 5: Team Problems (with calculator)- 100 points total Part 2: Probability (9 points each)

#### Write all answers as a fraction. Remember to simplify!

- 2. Solve each of the problems below.
  - a) Celia rolls a pair of fair dice, multiplying the values shown. Find
    - i. The probability that the outcome is prime
    - ii. The probability that the outcome is even
    - iii. The probability that the outcome is greater than 10

- b) A fair coin is flipped 4 times. Find
  - i. The probability that the outcome will *not* be 4 heads
  - ii. The probability that the outcome is exactly 2 heads and 2 tails (any order)
  - iii. The probability that the coin landed heads up at least once

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Name:	School Team:	_
	Circle your final	\
	answerl	)

#### Event 5: Team Problems (with calculator)- 100 points total

Part 3: Problem Solving (8 points each)

#### Remember to simplify all fractions!

- 3. Solve each of the problems below.
- a) 10 years ago, Edwin was the same age that Falisha is now. In how many years will Falisha be as old as Edwin is now?

b) Gus has a drawer with socks in it. He knows that he has 8 red socks, 12 blue socks, 6 green socks, and 14 black socks. Gus wants to have a pair of blue socks to match his favorite shirt, but he can't turn on the lights. What is the smallest number of socks that Gus needs to pull out from the drawer in order to guarantee that he has a pair of blue socks?

c) Amber is thinking of an obtuse angle. The digits of the angle measure are all odd, no digits are the same, and the sum of the digits is 13. Find all possible angles that Amber could be thinking of.

d) Find the four digit number in which the first digit is five times the last, the second is four more than the first and three times the third, and the third is two more than the last and two less than the first.

Name:	School Team;
	Circle your final answer!
	Team Problems (with calculator)- 100 points total et 4: Rates (8 points each)
a)	During a basketball camp Hector and Joe keep track of the number of free-throw shots that they make. Before the last day of camp, Hector has made 100 of his 150 attempts. Joe has made only 99 of his 150 attempts. On the last day, Joe shoots and makes 12 more. Hector shoots 13 more but only makes 11 of them. Who was the better free-throw shooter over the entire basketball camp?
b)	Two typists can type two pages in two minutes. How many typists will it take to type eighteen pages in six minutes?
c)	A mile-long train traveling at 60mph enters a mile long tunnel. How long does it take for the entire train to pass through the tunnel?
d)	Kensie runs one lap around the track at a speed of 3mph and a second lap around the track at a speed of 6mph. Find her average speed for the two total laps run.

School Team:
Circle your final
answerl

1) If you find the product of the first 25 positive integers, how many zeros will be at the end of the number?

2) You roll 8 dice and find the product to be  $2^3 \times 3^3$ . What are all of the possible sums of the dice?

3) A rectangle has a perimeter of 40 centimeters. The length and the width are both integers. How many different rectangles are possible?