Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Unit 3 Math Pre-Assessment: Operations and Algebraic Thinking**

**Directions:** Your teacher will read all the questions and answer choices to you aloud. Circle or write the answer below each question.

1.a.) Sam has some Magic Markers on his desk. He lets his friend Kyle borrow 4 of the markers. Sam now has 9 markers left. Which equation below shows the number of markers Sam started with? (MGSE1.OA.1) (DOK 1) (2 pts.)

1. - 9 = 4
2. 4 + = 9
3. = 9 + 4
4. = 9 – 4

b.) How many Magic Markers did Sam have before he let Kyle borrow 4 of the markers?

Sam had \_\_\_\_\_\_\_\_ Magic Markers

2.a.) Kate likes cherry, grape, and apple flavored lollipops. She has a total of 18 lollipops in a bag. If she has 5 cherry flavored lollipops, how many lollipops could be grape flavored, and how many could be apple flavored? Show your work using pictures, numbers, or words. (MGSE1.OA.2) (DOK 2) (2 pts.)

My work:

Grape flavored lollipops \_\_\_\_\_\_\_\_\_\_\_

Apple flavored lollipops \_\_\_\_\_\_\_\_\_\_\_

b.) What is another possible answer?

My work:

Grape flavored lollipops \_\_\_\_\_\_\_\_\_\_\_

Apple flavored lollipops \_\_\_\_\_\_\_\_\_\_\_

1. Alex has some coins (pennies, nickels, and dimes) in his pocket. He has 3 nickels. He has 3 more pennies than nickels. He has 5 more dimes than pennies. How many coins does Alex have? Show your work below using objects or drawings. (MGSE1.OA.2) (DOK 2) (2 pts.)

My work:

 Alex has \_\_\_\_\_\_\_\_\_\_\_ coins

4.a.) Jasmine has some colored pencils on her desk, as shown below.



Write 2 equations using the same 2 addends to show the number of colored pencils she has in all. (MGSE1.OA.3) (DOK 1) (2 pts.)

Equation #1\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Equation #2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. When Jasmine goes to Art class, she takes her colored pencils with her. When she returns from class, she realizes she left 5 of her pencils on one of the Art tables.

To find out the number of pencils she now has, Jasmine writes the 2 equations below. Can she use both of these equations to help her solve how many pencils she now has? Why or why not? (MGSE1.OA.3) (DOK 3) (2 pts.)

17 – 5 = \_\_\_\_\_\_\_\_\_

5 – 17 = \_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Drew has the number of blocks shown below. To find the total number of blocks, he sorted them into 3 groups and added them:

 4 + 3 + 7 = \_\_\_\_\_\_



How can Drew sort the same number of blocks into 2 groups? Fill in the equation below and explain your thinking. (MGSE1.OA.3) (DOK 3) (2 pts.)

My work:

Equation: \_\_\_\_\_\_\_ + \_\_\_\_\_\_\_ = \_\_\_\_\_\_\_

My Explanation:

6.a.) There were 12 ducks in a pond. Some more ducks joined them in the pond. Now there are 19 ducks in the pond.

 Write an addition equation to show the number of ducks that joined the first 12 ducks. (MGSE1.OA.4) (DOK 1) (2 pts.)

 Equation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 b.) Write a subtraction equation to show the number of ducks

 that joined the first 12 ducks.

 Equation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Mrs. Winter put 18 cookies on a plate for her daughter to share with friends. On the plate were 3 chocolate chip cookies, 2 oatmeal raisin cookies, and 6 double chocolate chunk cookies. The rest of the cookies were sugar cookies. Which equations below would help you figure out the number of sugar cookies on the plate? (MGSE1.OA.4) (DOK 2) (1 pt.)
2. 11 – 18 = and 11 + = 18
3. = 18 – 11 and 18 = + 11
4. 18 = - 11 and 18 = 11 +
5. - 18 = 11 and = 11 + 18
6. Francesca has 6 small pebbles in her pocket. While walking in her backyard, she picks up 9 pebbles from the ground.

 Use the number line below to show how many pebbles Francesca has now. How many pebbles does she have? (MGSE1.OA.5) (DOK 2) (2 pts.)



 Francesca has \_\_\_\_\_\_\_ pebbles

1. Michelle told her classmate that the number line below represents 4 + 8 = 12. She said, “the box represents the number 4, and 12 must be the total.” Is Michelle correct in her thinking? If not, what equation is represented on the number line below? Explain your thinking. (MGSE1.OA.5) (DOK 3) (3 pts.)



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\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Solve: 15 – 7 =

What number goes in the blank? \_\_\_\_\_\_\_\_\_\_\_\_\_

I know my answer is correct because... (MGSE1.OA.6.a.) (DOK 1) (2 pts.)

1. - 15 = 7
2. 15 + = 7
3. 7 + = 15
4. = 7 - 15
5. Jocelyn wants to know what 6 + 4 equals. What are 2 ways that Jocelyn could solve this problem? Use numbers and words to show your thinking. (MGSE1.OA.6.b.) (DOK 3) (2 pts.)

1st Way:

2nd Way:

1. Mark the following equations TRUE or FALSE.

 (MGSE1.OA.7) (DOK 1) (4 pts.)

 8 + 2 = 6 + 1 + 3 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 7- 4 = 3 + 4 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 5 – 2 = 2 + 5 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. = 5 + 8 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Tyler has the following crayons below. One red crayon weighs 5 grams. All together, they weigh 17 grams. How much does each blue crayon weigh? (MGSE1.OA.7) (DOK 2) (1 pt.)

**Blue**

**Blue**

**Red**

 Each blue crayon weighs \_\_\_\_\_\_\_\_\_\_ grams

1. Solve: (MGSE1.OA.8) (DOK 3) (3 pts.)

\_\_\_\_\_ = 12 + 4

12 = \_\_\_\_\_ - 4

What number(s) completes each of the blanks? How do you know?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Heather took a survey of 19 classmates to find out their favorite outside activities. Eight students said they like riding bikes. Five students enjoy jumping rope. The rest of the students said their favorite activity is playing soccer. Complete the chart below. (MGSE1.MD.4) (DOK 1) (3 pts.)

|  |  |  |
| --- | --- | --- |
| **Favorite Outside Activities** | **Tally Marks** | **Total** |
| https://encrypted-tbn2.gstatic.com/images?q=tbn:ANd9GcTGzXl9cUMjy2v9UgXfdpoOIQcKr-WyldHl4Amz1wA-BPpOdtrm2x0KsnLq Riding a bike |  |  |
| https://encrypted-tbn2.gstatic.com/images?q=tbn:ANd9GcTMe-j1aK1GrwXdVy7p5X93H7M49OXLlUk4XbD2GlXdEbWYmKp5  Playing soccer |  |  |
| https://encrypted-tbn1.gstatic.com/images?q=tbn:ANd9GcQTFCuTbd-zuvPdmxcQntJ5C90eaPdJ-iW6mD6i8ymrXGg71DaA  Jumping rope |  |  |

Use the information in the chart to answer questions 16-18.

1. Which 2 activities did more students enjoy? (MGSE1.MD.4)

 (DOK 2) (1 pt.)

* 1. Riding a bike and playing soccer
	2. Riding a bike and jumping rope
	3. Playing soccer and jumping rope

17.) How many more children would rather ride a bike than jump rope? How do you know? (MGSE1.MD.4) (DOK 3) (1 pt.)

1. 2 children, because 8 – 6 = 2
2. 3 children, because 8 – 5 = 3
3. 8 children, because 19 – 11 = 8
4. 13 children, because 8 + 5 = 13
	* + 1. What conclusion can you make from looking at this chart? (MGSE1.MD.4) (DOK 2) (1 pt.)
5. Fewer students chose playing soccer than jumping rope
6. 3 more students chose riding a bike than playing soccer
7. More students chose jumping rope than riding a bike and playing soccer, combined
8. The number of students who chose jumping rope was 1 fewer than those who chose playing soccer

**Unit 3 Math Pre-Assessment: Operations and Algebraic Thinking**

**Answer Key**

1. a.) C (question addresses student misconception, as stated on p. 16 of the CCGPS

 Unit 5 Instructional Framework)

 b.) Sam had 13 Magic Markers

2.) a.) and b.) Many possible answers exist; grape & apple lollipops must add up to 13.

 Possible combinations: grape = 7 lollipops, apple = 6 lollipops

 grape = 10 lollipops, apple = 3 lollipops

1. Alex has 20 coins

4.) a.) Many possible answers exist, but answers should show understanding of the commutative property of addition. 2 sample responses:

Equation 1 sample response: 7 + 10 = 17

Equation 2 sample response: 10 + 7 = 17

Equation 1 sample response: 5 + 12 = 17

Equation 2 sample response: 12 + 5 = 17

 b.) Jasmine cannot use both equations because one cannot take 17 from 5. The

 idea that the commutative property cannot be applied to subtraction is a

 common misconception in first grade. (p. 16 CCGPS Unit 5 Instructional

 Framework)

 5.) Student work & equation should show evidence of grouping the blocks into 1 group of 10 and 1 group of 4 (10 + 4 = 14). Accept reasonable explanations for how students grouped the blocks

 6.) a.) 12+ = 19 b.) 19 – 12 =

 7.) B

 8.)

Francesca has 6 pebbles.

She now has 15 pebbles.

She adds 9 to her collection.



9.) No, Michelle is not correct in her thinking. The number line represents

 12 – 5 = 7. Begin at the number 12 and count backwards 5 spaces. The arrow is

 pointing to the number 7.

1. 15 – 7 = 8; C
2. Jocelyn could decompose the numbers into a set of 3 numbers, such as 3 + 3 + 4 to discover that the total is 10. Jocelyn could also take 1 from 6 to get 5 and add 1 to 4 to get 5. 5 + 5 = 10 (adding known sums). Student responses should show an understanding of fluently adding within 10.

 12.) True, false, false, true

 13.) Each blue crayon weighs 6 grams

 14.) Students should put the number 16 in both blanks. Rationale is that student can begin at 12 and count on 4 more to get 16. Student can also add 4 to 12 to get 16.

 15.)

|  |  |  |
| --- | --- | --- |
| **Favorite Outside Activities** | **Tally Marks** | **Total** |
| https://encrypted-tbn2.gstatic.com/images?q=tbn:ANd9GcTGzXl9cUMjy2v9UgXfdpoOIQcKr-WyldHl4Amz1wA-BPpOdtrm2x0KsnLq Riding a bike | IIII III | 8 |
| https://encrypted-tbn2.gstatic.com/images?q=tbn:ANd9GcTMe-j1aK1GrwXdVy7p5X93H7M49OXLlUk4XbD2GlXdEbWYmKp5  Playing soccer | IIII I | 6 |
| https://encrypted-tbn1.gstatic.com/images?q=tbn:ANd9GcQTFCuTbd-zuvPdmxcQntJ5C90eaPdJ-iW6mD6i8ymrXGg71DaA  Jumping rope | IIII | 5 |

16.) A

17.) B

18.) D