

# MeTEOR Performance Task

## Fifth Grade

Mathematics  
Swim Meet

## **Performance Task Item: Swim Meet**

*Grade Level: Fifth Grade*

**Focus Area:** Number and Operations in Base Ten

### **Essential Questions:**

- How does understanding place value help you solve problems?
- How are place value patterns repeated in large numbers?

### **Core Ideas:**

- Understands how to use multiplication and division to solve everyday problems.
- Understands how to identify patterns in place value.
- Understands the impact of the placement of a decimal point.

### **Learning Targets:**

- Students will explain the patterns in the number of zeros of the product when multiplying a number by powers of 10.
- Students will write equations.
- Students will use expanded form, standard form, word form, and base ten blocks to show the value of a given number.
- Students will create visual representations to show mathematical thinking and reasoning
- Students will use strategies to solve real world problems.

## **STANDARDS**

**Domain: Number and Operations in Base Ten**

### **Content Standards:**

- Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.
- Read, write, and compare decimals to thousandths place.
- Compare two decimals to the thousandths place based on meanings of the digits in each place, using  $>$ ,  $=$ , and  $<$  symbols to record the results of comparisons.
- Fluently multiply multi-digit whole numbers using the standard algorithm.
- Add, subtract, multiply, and divide decimals to hundredths place, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

### **Supporting Standards:**

#### **Writing:**

- Provide logically ordered reasons that are supported by facts and details.

**Speaking and Listening:**

- Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grade 5 topics and texts*, building on others' ideas and expressing their own clearly.

**Math Practice Standards:**

MP 1: Make sense of problems and persevere in solving them.

MP 2: Reason abstractly and quantitatively.

MP 4: Model with mathematics.

MP 6: Attend to precision.

MP 7: Look for and make use of structure.

**Materials:**

- Performance Task
- Pencil
- Paper
- Calculator

**Scenario:** Your local swim club is excited to host the upcoming swim meet. The coach has asked team parents to help plan and prepare for this event. Your parents have agreed to help but are unsure about all the rules and regulations to host the meet. Be prepared they are going to need your help.

**Task/Question 1:**

**DOK Level 1:** Recall and Reproduction

**Math Practice Standards:**

- MP 1: Make sense of problems and persevere in solving them.
- MP 6: Attend to precision.
- MP 7: Look for and make use of structure.

The first rule your parents learned when hosting a Swim Meet is that they will be responsible for collecting swimmer registration fees from all the participating teams and submitting that money to the State Swimming Association.

- A.** There are 10 teams participating in the Swim Meet with 32 members on each team. What is the total number of swimmers participating?
- B.** The registration fee for a swim meet is \$10 per swimmer. How much would 1 swim team owe for registration?
- C.** What is the total amount of registration fees that your parents will collect and send to the State Swimming Association?

**Task/Question 2:**

**DOK Level 2:** Basic Application of Skills and Concepts

**Math Practice Standards:**

- MP 1: Make sense of problems and persevere in solving them.
- MP 2: Reason abstractly and quantitatively.
- MP 7: Look for and make use of structure.

Your swim club has decided to charge a \$5 admission fee for each adult.

- A.** The doors opened promptly at 8:00 am. From 8:00 to 8:15 ten adults paid an admission fee of \$5.00 each. From 8:15 to 8:30 ten times as many adults paid an admission fee then the first 15 minutes. Write a number sentence showing the number of admission fees paid from 8:00 to 8:15 and 8:15 to 8:30.
- B.** Your parents could not believe the number of people attending the swim meet. From 8:30 to 9:30 your parents collected \$5,000.00 in admission fees. How many adults paid \$5.00 from 8:30 to 9:30?
- C.** What is the total amount collected in admission fees from 8:00 to 9:30?

- D.** Does the following equation correctly represent the amount of money collected for admission tickets sold from 8:00 to 9:30:  $10^3 \times 5 = \$5,550.00$   
Explain why you think it is correct or incorrect.

- E.** A grand total of \$6,120.00 was collected in admission fees. Explain in writing the four ways you could represent the amount collected (expanded form, standard form, word form and visual representation using base ten blocks)

**Task/Question 3:**

**DOK Level 3:** Strategic Thinking and Complex Reasoning

**Math Practice Standards:**

- MP 1: Make sense of problems and persevere in solving them.
  - MP 4: Model with mathematics.
  - MP 6: Attend to precision.
- A.** You have been busy practicing for the upcoming swim meet by swimming 6 days a week. You swam a total of 321 minutes the first week. If you swam the same number of minutes each day, how many minutes each day did you swim?
- B.** You want to increase your practice time each day for the next six days. With your math partner develop a practice plan showing the increase of practice time. Display your plan using a chart or graph and write a description of your mathematical reasoning for the plan.

**Task/Question 4:**

**DOK Level 3:** Strategic Thinking and Complex Reasoning

**Math Practice Standards:**

- MP 1: Make sense of problems and persevere in solving them.
- MP 2: Reason abstractly and quantitatively.
- MP 6: Attend to precision.
- MP 7: Look for and make use of structure.

Your pool is considered a short-course pool that is 25 yards or 25 meters long. The 200 Medley Relay consists of four swimmers per team with eight teams competing at once. Each swimmer is given a different swim stroke; the butterfly stroke, the backstroke, the breaststroke, or free style. Read the chart below closely to determine how the teams ranked for the 200 Medley Relay.

Division 1		Division 2		Division 3	
Team	Time	Team	Time	Team	Time
A	1:30	A	1:30	A	1:30
B	1:40	B	1:41	B	1:34
C	1:37	C	1:27	C	1:33
D	1:51	D	1:33	D	1:30
E	1:27	E	1:27	E	1:27
F	1:29	F	1:29	F	1:29
G	1:31	G	1:31	G	1:22
H	1:33	H	1:26	H	1:26

- A.** What distance did each swimmer swim to complete the 4 person medley relay?
- B.** What are the top 4 teams in each division to receive an award? (the team with the best time)

- C. If the two slowest teams in each division increased their swim time by 4 second, how would that impact each division's scores? Compare the new times and explain the impact. Be prepared to share your justification with your classmates.

## Complete Performance Task Scoring Rubric *Swim Meet*

30-34 Proficient   23-29 Good   15-22 Satisfactory   8-14 Poor   0-7 Unsatisfactory

	Depth of Knowledge Level	Points	Total Possible Points for Task	Total Points Earned by Student
<b>Task 1:</b>			<b>3</b>	
A. 320 swimmers	<b>1</b>	<b>1</b>		
B. \$320.00	<b>1</b>	<b>1</b>		
C. \$3,200.00	<b>1</b>	<b>1</b>		
<b>Task 2:</b>			<b>12</b>	
A. $10 \times \$5 = \$50.00$ $100 \times \$5 = \$500.00$	<b>1</b>	<b>2</b>		
B. 1,000 adults	<b>1</b>	<b>2</b>		
C. \$5,550.00 was the total amount collected in admission fees	<b>1</b>	<b>2</b>		
D. $10^3 \times 5 = \$5,550.00$ does not represent the number of admission tickets sold because 10 to the third power is 1,000 then times \$5 is only \$5,000.	<b>2</b>	<b>2</b>		
E. Standard Form: \$6,120.00  Expanded Form: $6,000 + 100 + 20$  Word Form: Six thousand, one hundred twenty  Visual Representation: shows 6 One-thousand blocks, 1 hundred Block and 2 ten blocks)	<b>1</b>	<b>4</b>		

<p><b>Task 3:</b></p> <p>A. 53.5 minutes each day</p> <p>B. Full points for a practice plan, displays and written mathematical reasoning showing the increase of time will vary by small groups.</p>	<p><b>1</b></p> <p><b>3</b></p>	<p><b>1</b></p> <p><b>5</b></p>	<p><b>6</b></p>	
<p><b>Task 4:</b></p> <p>A. 50 meters or two laps</p> <p>B. Division 1: Teams E, F, A, G Division 2: Teams C, E, H, F Division 3: Teams G, H, F, E</p> <p>C. Individual responses will vary. However the overarching concept is that a 4 second improvement impacts the top 4 teams in division 1 and 3.</p>	<p><b>1</b></p> <p><b>1</b></p> <p><b>3</b></p>	<p><b>2</b></p> <p><b>5</b></p> <p><b>6</b></p>	<p><b>13</b></p>	
<b>TOTAL POINTS:</b>				



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