

MeTEOR Performance Task

Third Grade

Mathematics
Snow Cones



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CONNECTING THE DOTS

Performance Task Item: Snow Cones

Grade Level: Third Grade

Focus Area: Operations and Algebraic Thinking; Fractions and Money

Essential Questions:

- What information and strategies will help me solve a multi-step word problem?
- How do I use concrete materials and drawings to understand and show understanding of fractions (from $\frac{1}{4}$ to $\frac{1}{2}$)?
- How can I model and solve problems by representing, adding and subtracting amounts of money?

Core Ideas:

- Understands that numbers enable us to use place value of digits to comprehend quantities, sequences, and estimation.
- Understands strategies that are most useful in solving problems.
- Understands the value of money.

Learning Targets:

- Students will use four operations to solve multi-step problems.
- Students will find the unknown.
- Students will apply the concept of fractions (part/whole) to solve a problem.
- Students will add and subtract money amounts.
- Students will use a variety of solution strategies.

STANDARDS

Domain: Operations and Algebraic Thinking

Content Standards:

- Interpret products of whole numbers, e.g., interpret 5×7 as the total number of objects in 5 groups of 7 objects each.
- Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.
- Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

Domain: Number and Operations– Fractions

Content Standards:

- Understand a fraction $\frac{1}{b}$ as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction $\frac{a}{b}$ as the quantity formed by a parts of size $\frac{1}{b}$.

Domain: Number and Operations – Base Ten

Content Standards:

- Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.

Supporting Standards:

Speaking and Listening:

- Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grade 3 topics and texts*, building on others' ideas and expressing their own clearly.
- Come to discussions prepared, having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussion.
- Follow agreed-upon rules for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion).
- Ask questions to check understanding of information presented, stay on topic, and link their comments to the remarks of others.

Math Practice Standards:

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

MP 2: Reason abstractly and quantitatively.

MP 3: Construct viable arguments and critique the reasoning of others.

MP 5: Use appropriate tools strategically.

Materials:

- Performance Task
- Pencil
- Paper
- Computer

Scenario: Your class has discussed all the cool places to go for a class trip. Ideas generated were the children's museum, zoo, theme park, performing arts center and even the race track arcade. However, the cost of all these cool locations are expensive. Therefore, your class has decided to operate an after school Snow Cone Shack one day a week for three weeks to raise money for this class trip. Your teacher decided you should sell each snow cone for \$2.00.

Task/Question 1:

DOK Level 1: Recall & Reproduction

Math Practice Standards:

- MP 1: Make sense of problems and persevere in solving them.
 - MP 2: Reason abstractly and quantitatively.
- A.** Week 1 your class sold 100 snow cones total. Half of them were SpongeBob flavored, $\frac{1}{4}$ were strawberry and a $\frac{1}{4}$ were blueberry. How many snow cones did your class sell in each flavoring?
- B.** Write an equation explaining your answer. Show your work.

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 5: Use appropriate tools strategically.

A. Week 2 there was a greater demand for snow cones. Ms. Miller, Ms. Hampton and Ms. Rodriguez each wanted 25 SpongeBob snow cones for their students. The school principal wanted 25 strawberry snow cones to give away to students being helpful around school and your class sold 25 blueberry and 25 strawberry snow cones to students after school. How many snow cones did your class sell week 2?

B. Make a model to represent the total number of snow cones sold in week two.

C. How many snow cones has your class sold all together from week 1 and week 2?
Show your work.

Task/Question 3:

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 5: Use appropriate tools strategically.

The local grocery store is helping supply all the items needed to operate the Snow Cone Shack. Their prices are listed in the table below:

<u>Snow Cone Machine</u> (cost for renting per week)	<u>Cups</u> (100)	<u>Ice – 10 lbs.</u> (10 lbs. of ice makes 25 snow cones)	<u>Strawberry Flavoring - Quart</u> (1 quart makes 50 snow cones)	<u>Blueberry Flavoring - Quart</u> (1 quart makes 50 snow cones)	<u>SpongeBob (pineapple) Flavoring - Quart</u> (1 quart makes 50 snow cones)	<u>Spoons</u> (100)
\$25.00	\$ 4.40	\$1.79	\$3.00	\$3.00	\$3.80	\$2.50

- How much does your class owe the local grocery store for supplies for week 1 (based on information in Task/Question 1)?
- How much does your class owe the local grocery store for supplies for week 2 (based on information in Task/Question 2)?
- After two weeks of selling Snow Cones, how much profit has your class made for the class trip?
- How would you organize the information to show the correct amounts? Show your work on a separate piece of paper.

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 3: Construct viable arguments and critique the reasoning of others.
- MP 5: Use appropriate tools strategically.

A. Week 3 your class sold a total of 135 snow cones but your teacher forgot to write down what flavors were sold. Create two different ways you could have sold 135 snow cones.

B. With your math partner discuss your two possible ways your class might have sold the 135 snow cones. Be prepared to share out “I agree with (student name) because...”

Task/Question 5: Science Connection Task

DOK Level 4: Extended Thinking

Imagine if you could freeze water instantly to make your snow cones faster!! Everyone knows that water freezes at 0 °C - or does it? When water freezes, it needs a nucleus in order for the solid crystals to form and become ice. Water is typically full of particles and impurities which have no problem kicking off the crystallization process. However, purified water by definition doesn't have those impurities. With nothing for the water molecules to latch onto, purified water can be super cooled as far as -40°C.

- A.** Watch the following Video <http://www.iflscience.com/chemistry/turn-water-ice-instantly/>

- B.** Locate two additional resources that support your solution to making snow cones more efficiently.

- C.** On a separate piece of paper write your reaction to how the ideas of super cooling would help your fund raising efforts.

Complete Performance Task Scoring Rubric *Snow Cones*

41-50 Proficient 31-40 Good 21-30 Satisfactory 10-20 Poor 0-9 Unsatisfactory

	Depth of Knowledge Level	Points	Total Possible Points for Task	Total Points Earned by Student
Task 1: A. 25 strawberry snow cones, 25 blueberry and 50 SpongeBob flavored B. 25 strawberry snow cones + 25 blueberry + 50 SpongeBob flavored = 100 snow cones	1 1	2 2	4	
Task 2: A. 150 snow cones B. Models will vary. (Example Models: graphs, tally marks, a drawing, etc.) C. 250 snow cones (100 snow cones week 1 + 150 snow cones sold week 2 = 250 snow cones)	1 2 1	2 5 3	10	
Task 3: A. \$45.86 B. \$56.29 C. 250 snow cones x \$2.00 = \$500.00, \$500.00 – \$45.86 - \$56.29 = \$397.85 profit D. Student responses will vary on how to organize the information to show the correct amounts.	1 1 1 2	3 3 3 5	14	



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