



## M2C3 Project

# Popcorn Sharing Movie Night Task

## Student Work

This file includes summaries of the “Warm-Up” discussions for grades 3 and 5 and sample solution paths for grades 3, 4 and 5. You will also see how the problem was changed to accommodate the different grade levels.

# Factors that Students Considered

- What is a serving of popcorn?
- How many servings are in a bag of popcorn?
- How many people will be sharing the popcorn?

# Connections to Students' Experiences

- Students have shared a bag of popcorn.
- Students know that one large bag of popcorn can serve many people.

# What do you notice or wonder?

- It says "fresh popcorn" / bag of popcorn
- How many kernels to make it
- It's a rectangle
- How much is inside the bag of popcorn
- A knot on the top of the bag
- Seeds inside them
- It says the weight 8ozs
- the popcorn is yellow
- How many cups of butter they put in
- In a see through bag

- How much popcorn is inside the bag
- Counting how many kernels in each bag  
(count by 3s)
- How many seeds are left
- How fresh it is
- If it is actually that much weight
- How many white kernels and how many  
butter kernels

Questions that  
could be answered by math

3<sup>rd</sup> Grade  
Warm-up  
Discussion

## 3<sup>rd</sup> Grade

• servings per container  $12$   $12 + 12 = 24$   
• that the 24 kids in our class and  
• every Bobby gets 1 scoop  
• each bag has 12 scoops each person 1 scoop  
• there's two bags and each person gets 1  
• scoop

This group of 3<sup>rd</sup> graders used their plan to explain why they need 2 bags of popcorn. There are 24 students in the class and one bag of popcorn gives 12 scoops.  $12 + 12 = 24$ . “...two bags of popcorn will give each person 1 scoop.”

## 3<sup>rd</sup> Grade

9  
3

Group thinking popcorn

1. There are 25 students in the class.
2. how many scoops are we going to serve one person.
3. 4 scoops
4. 12 people for one bag.
5.  $12 + 12 = 24$  but we need one more bag so we have 4 cups for every body.
6. All the people have even cups of popcorn.

12 in EACH Bag

4 bags Each person

$$\begin{array}{r} 12 \\ +12 \\ \hline 24 \end{array}$$

12 People can eat in a bag

~~3 bags~~

3 bags Answer

12 People in each bag

12

$$\begin{array}{r} 24 \\ +12 \\ \hline 36 \end{array}$$

12

This group of 3<sup>rd</sup> graders clearly explain why they need 3 bags of popcorn. There are 25 students in their class and one bag of popcorn serves 12 people.  $12 + 12 = 24$  which is not quite enough. So they will need one more bag. They will have 36 servings of popcorn.

Grade  
4

200 pepol will come  
and 100 pepol take their  
own and 100 pepol will  
eat the school popcorn  
we need to buy 5 bags  
of popcorn.

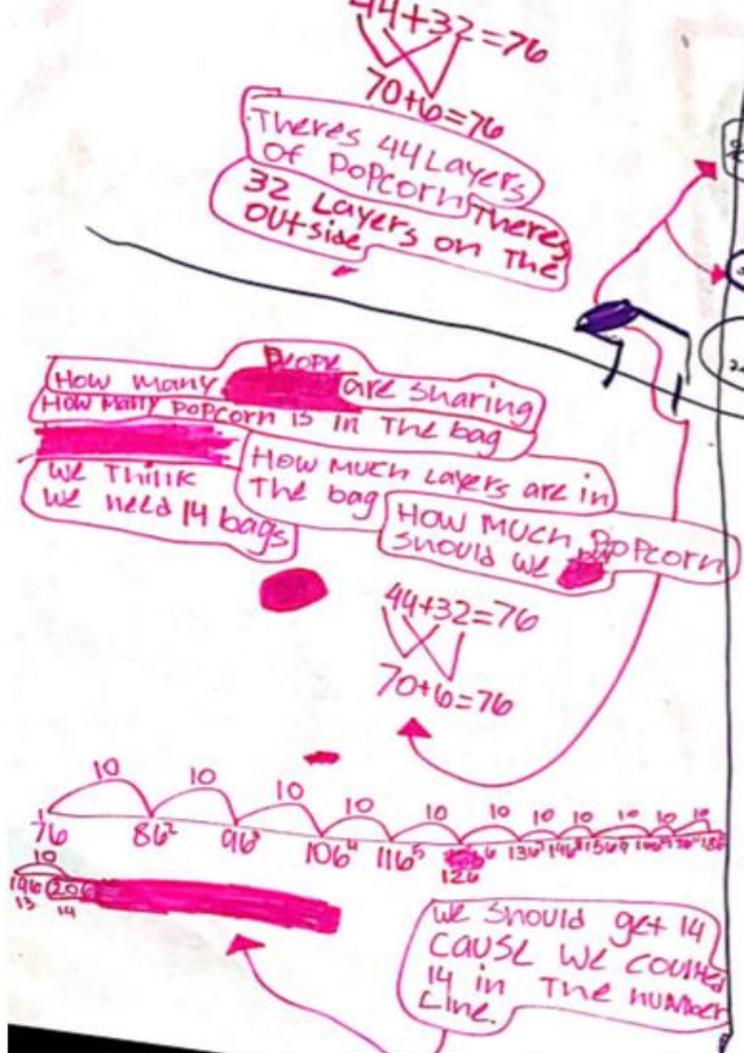


$$5 \times 22 = 110$$

This grade 4 popcorn sharing problem indicated that 200 people would be coming to movie night. This student used the “22 servings per bag” found on the package to help solve the popcorn problem. He also assumed that not all of the people coming to movie night would want the school’s popcorn but would “[take] their own”, so he wants to serve 100 people. Using an array of 22 servings of popcorn per bag he found that he needed 5 bags to serve more than 100 people.

Grade 4

We need to Find how many kids are coming?  
how much popcorn should the kids get?  
how many servings are there?  
how many people are sharing?  
how many people don't want it?  
how many layers of popcorn is in the bag?  
how much popcorn are in a layer?  
how long is the money?  
we would need 14 bags.  
not get 14.  
We think



These grade 4 students first describe their plan for solving the popcorn problem. They attempt to determine the number of servings in a bag by estimating how many "layers" are in a bag. Finding that there are 76 layers They count the number of 10s they can add to 76 to get a number over 200 --the number of people who are coming to Movie Night and will share the popcorn. That number is 14, thus the need 14 bags.

# Family Movie Night

## Notice

- The popcorn is white
- The Cheerios box
- The picture is in a kitchen
- The popcorn bag is tall
- Bag says "Naked"
- Bag is red, white, yellow
- Popcorn bag is "like" 2 boxes of cheerios

## Wonder

- How much popcorn is in the bag?
- How many bags would we need for our school movie night?
- How many inches tall is the cereal box?
- I wonder if cereal box is game cause its so tiny?
- How much does bag of popcorn cost?
- Why is there is the a cheerios?
- Does popcorn have h in it?
- Does it say "Naked" or nothing on popcorn?
- How much of the bag with air?

Grade 5  
Notice and Wonder

# Popcorn Sharing

• Serving Size 4 cups (Bag)

o Container 12

o Size cups

$$\begin{array}{r} 66 \\ -35 \\ \hline 2 \end{array} \begin{array}{r} \frac{1}{2} \\ \frac{1}{2} \\ \times 2 \\ \hline 10 \\ 10 \\ \hline 20 \end{array} \begin{array}{r} 22 \\ \times 4 \\ \hline 88 \\ 88 \\ \hline 176 \end{array} \begin{array}{r} 35 \\ \times 4 \\ \hline 140 \end{array}$$

2 bags  
140 cups of popcorn

$$\begin{array}{r} \$7.99 \\ -1.00 \\ \hline \end{array} \text{ - 1 Bag}$$

$$\begin{array}{r} 29 \\ \times 4 \\ \hline 116 \end{array} \text{ = cups}$$

\$16.00 is equal to 2 bags.

11 servings at each table

If we got three bags of popcorn there would be about 66 servings  
22 serving in each bag  
6 tables

$$\begin{array}{r} 8.00 = + \text{tax} \\ + 8.00 \\ \hline \$16.00 = 2 \text{ bags} \end{array}$$

$$\begin{array}{r} 22 = \text{serving} \\ + 22 \\ \hline 44 \end{array}$$

$$\begin{array}{r} + 22 \\ \hline 29 \text{ students} \\ + 6 \text{ teachers} \\ \hline = 35 \text{ all} \end{array}$$

$$\begin{array}{r} 344 \\ - 35 \\ \hline 09 \end{array} \text{ = serving left 2 bags}$$

These 5<sup>th</sup> graders were also asked to consider the price of the popcorn they would be sharing. The students wanted to serve 35 people and there were 22 servings per bag. They found that 2 bags would serve 44 people at an approximate cost of \$16.00 + tax. They also note that 3 bags would be about 66 servings.