



M2C3 – Making Bugs Task

Annotated Student Work

The following provides samples of student work and descriptions of the solution paths resulting from implementation of the Making Bugs Task.

Factors that Students Considered

- What bugs they wanted to make?
- How many legs and antennae their bugs would have?
- How many colors the body would be made out of?

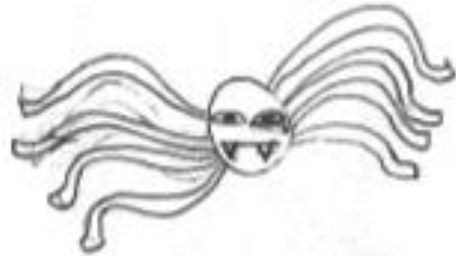
Connections to Students' Experiences

- Creating things out of play dough and fuzzy stems (i.e. pipe cleaners).
- Studying bugs.

Making "Bugs" for Reading Buddies: Warm Up!



Draw your bug here:



1. How many whole fuzzy stems do you need to make 1 bug? 4

Explain how you figured this out.

Show how much of a fuzzy stem you need for each part of your bug.

I need 4 pipes cleaners because
each one I can cut them all
in half.

2. How many containers of play dough do you need to make 1 bug? 2

Explain how you figured this out.

I need 2 pieces of dough because
1 dough is for the body and eyes &
other dough is for the teeth.

Warm-up - Making Sense of the Task – Grade 3

Grade 3 students were asked to draw a bug and then identify the number pipe cleaners and play dough they would need to create that bug and explain why.

Making Sense of the Task -Grade 5

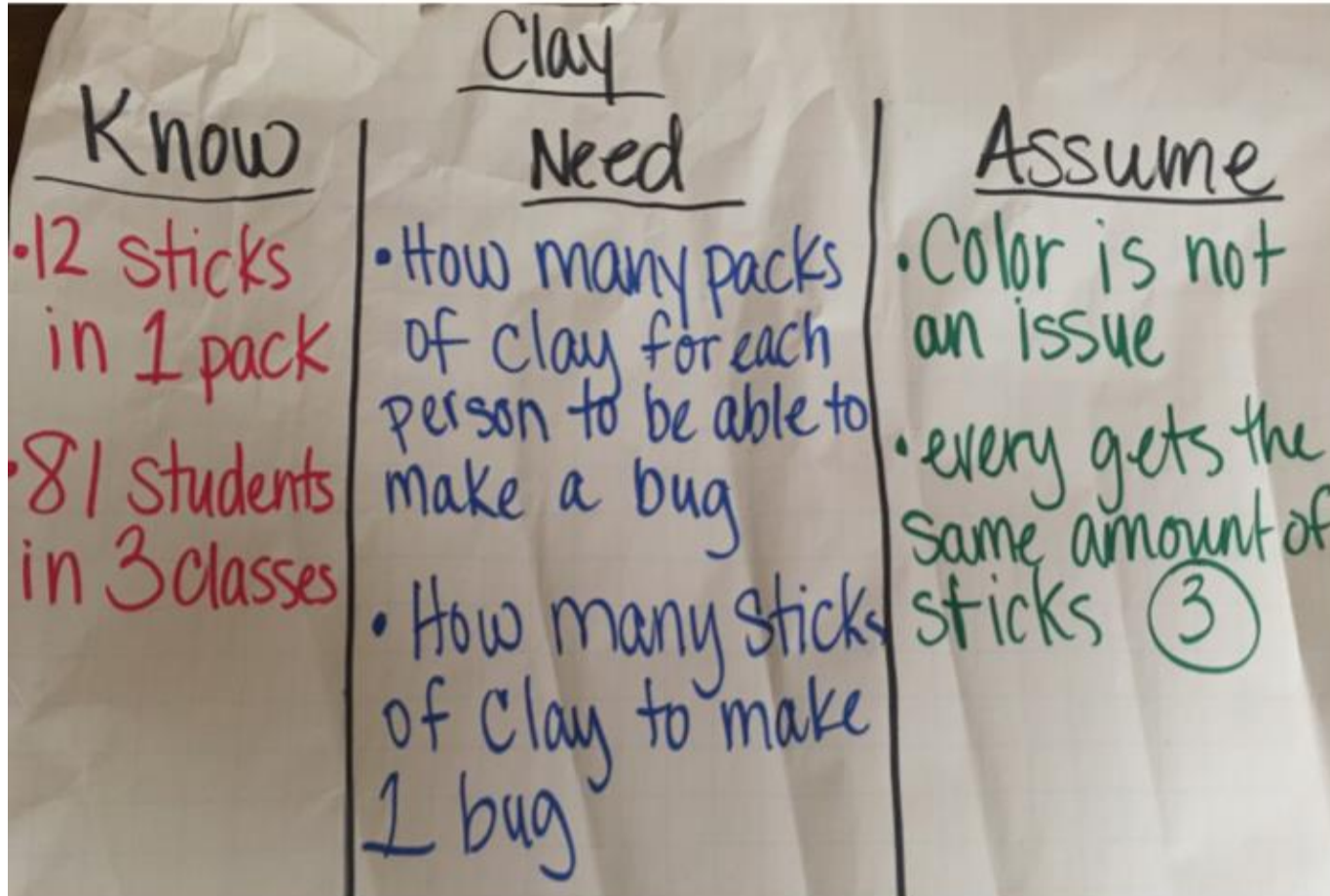
What do you Know, Need to Know, Assume?

Know	Need to Know	Assume
<ul style="list-style-type: none">• 100 Fuzzy Stems in 1 pack• 29 Students in the Shark rm.• 3 Classes that will make bugs/insects	<ul style="list-style-type: none">• # Fuzzy Stems for each Student to make 1 bug• # of Students in each buddy Class• Cost of 1 pack of Fuzzy Stems <p><i>Cardinals 29</i> <i>Dragonfly 23</i></p>	<ul style="list-style-type: none">• Fuzzy Stems can be cut• All Student will be here• each Student will get no more than 5 Fuzzy Stems

Grade 5 – Warm-Up
Students identified what they knew, what they would need to know and what they could assume about the materials and the number of students who would be making bugs.

Making Sense of the Task

What do you Know, Need to Know, Assume?



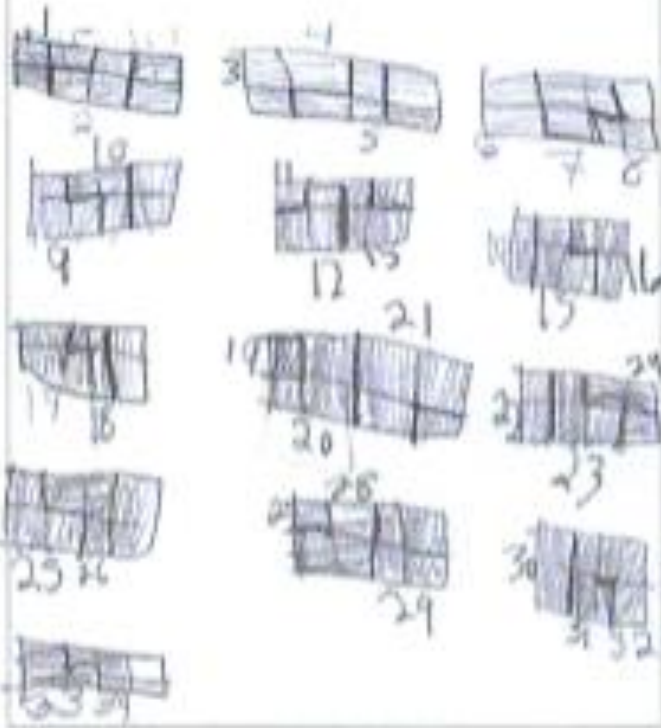
Grade 5 – Warm-Up
(continued).

They used this information to determine how many packages of fuzzy stems (pipe cleaners) and clay (play dough) they would need for the task.

Part 2: Show your work using pictures, numbers and words below.

Pictures/Numbers

Equations



Words

We need 13 dough because when I
drawed the picture we get 2 extras
and I was counting by threes.

Grade 3

Students were encouraged to use pictures, equations and words to explain their solutions. Each stick of pay dough comes divided into 8 pieces. These students determined how many sticks of play dough are needed if each student gets 3-pieces by counting the number of 3-piece-sections needed for 34 students. They found that 13 sticks of play dough were needed for 34 students and 2 pieces would be left over. Note that the student is counting the number sticks needed to give each of 34 students $\frac{3}{8}$ of a stick but does not use this language.

Grade 4 This group determined that they needed 1 pipe cleaner to make 4 legs and 2 play dough pieces to make the body of one spider. 39 (21 +18) students will make spiders. They will need 78 (2 X 39) pipe cleaners for legs. Each container of play dough was divided into 8 pieces. Rounding 39 to 40 and doubling (2 pieces of play dough per student), they found 80 pieces of pay dough were needed for the two classes. They divided 80 pieces of play dough by 8 pieces per container and determined he needed 10 containers of play dough. It is not clear how they determined 3 packages of play dough and 2 packages of pipe cleaners were needed. The total number containers of play dough per package and number of pipe cleaners per package used in this example were not specified and may have differed from the slides provided with this task.

1 pipe cleaner = 4 legs
 2 play dough = 1 spider
 We need 78 pipe cleaners for both classes.
 We are going to need 10 packages of play dough for both classes to make one spider for each student

Total of play dough = 10
 They need to buy 3 packets of play dough
 Total of pipe cleaners = 2

$$\begin{array}{r} 21 \\ +18 \\ \hline 39 \end{array}$$

$$\begin{array}{r} 39 \\ \times 2 \\ \hline 78 \end{array}$$

78 pipe cleaners

$$\begin{array}{r} 10 \\ \times 8 \\ \hline 80 \end{array}$$


Grade 5

This 5th grade team provided more explanation for their solution path. They clearly justified why 5 packages of “fuzzy stems” were needed for each student to use 5 stems. They had difficulty determining the number of clay stick packages needed for the bug’s body. First, they divided 81 by 12 resulting in a quotient of 6 with a remainder 9. They interpreted the quotient 6 as the number of packages needed. Using multiplication they realized that 6 packages resulted in 72 sticks of clay and they would be short 9 sticks. They then found that 7 packages \times 12 sticks per package = 84 sticks, enough for each student to have a stick of clay.

How many fuzzy stems do we need?

29 Kids in Cardinal
29 in the Shark room
23 in the dragonfly room.

we need 2 sticks of clay for 1 person there is 12 pieces of clay in one box.
100 = 1 PK = 20 students each

100 = 1 PK = 20 students each
81 = students
12 = clay sticks

Each kid is going to get 5 fuzzy stems.
Need 5 packs of a 100 pack of fuzzy stems
we will have a remainder of 95 fuzzy stems.

How many clay sticks will we need?

we divided 81 by 12 and we got 6 remainder 9 and there was 9 left over and then we counted 1 more box of clay sticks and that was 7 remainder 3.
Each student will get 3 sticks of clay.
1 whole pack of clay can fit 4 people
So each kid can get 3 sticks of clay.

29 Cardinal
+ 29 Shark
23 Dragonfly

81

81
x 5

405

7 R3
12 $\overline{) 81}$
- 60

21
- 12

9

12
x 7

84

12
x 6

72
+ 9

81

12 \times 1 = 12
12 \times 2 = 24
12 \times 5 = 60
12 \times 10 = 120

The next result stating one package of 12 clay sticks will “fit 4 people” does not appear to have been explained or explored to determine how many total packages of clay would be needed for 81 students.