



3. Working with a partner, discuss the two ways to partition  $136 \div 2$ . Decide on a partitioning method and then complete the division using base-ten blocks. Record the partitioning as you go.

4. Working with a partner, solve the following problem. Be prepared to share your result with the class.

*How many 36-passenger buses would it take to carry 120 people?*

5. Working with a partner, solve the following problem. Be prepared to share your result with the class.

*As a side job, Nancy makes bracelets. It takes 14 beads to make one bracelet. Nancy has 300 beads, how many bracelets can she make?*

6. Whole Class Discussion: What are the similarities and differences between the previous two problems?

**Goals:**

- Develop the standard algorithm for long division
- Interpret remainders of quotients based upon context of problems

**Prerequisite Knowledge:**

- Understand types of partitioning with division
  - Know multiplication tables up to  $9 \times 9$
- 

**Activities:**

7. Working with a partner, discuss the two ways to partition  $324 \div 3$ . Decide on a partitioning method and then complete the division using base-ten blocks. Space provided below if you would like to take notes.

Two types of partitioning: One by taking 3 blocks and calling it a group. Continuing to do such until 324 is depleted. Then, counting how many groups.

Second way: Having 3 groups and splitting 324 objects equally between the three groups.

The second way (partitioning by groups) is easier to compute with blocks. It does not require the 100 flats to be broken into 100 individual small blocks.

8. Whole Class Discussion: For the problem above, was one partitioning method more efficient than the other? Why would that be? Also, how do we record (with writing) the division of  $324 \div 3$ ?

Record as actions occur. Suggest using the following two columns for recording purposes:

Total Number of Objects

$$\begin{array}{r} 324 \\ -300 \\ \hline 24 \\ - 24 \\ \hline 0 \end{array}$$

Objects in Each Group

$$\begin{array}{r} 100 \\ + 8 \\ \hline 108 \end{array}$$

Then, transfer into the standard algorithm by placing the long division bar around the 324, along with the divisor 3 to the left of the bar, and finally place the number of objects in each group directly above the bar (where the quotient goes!).

9. Working with a partner, discuss the two ways to partition  $136 \div 2$ . Decide on a partitioning method and then complete the division using base-ten blocks. Record the partitioning as you go.

Record as actions occur. Suggest using the following two columns for recording purposes:

<u>Total Number of Objects</u>	<u>Objects in Each Group</u>
$\begin{array}{r} 136 \\ -120 \\ \hline 16 \\ -16 \\ \hline 0 \end{array}$	$\begin{array}{r} 60 \\ +8 \\ \hline 68 \end{array}$
(can't place the rod into a group – need to break it into 10 ones).	

Then, transfer into the standard algorithm by placing the long division bar around the 136, along with the divisor 2 to the left of the bar, and finally place the number of objects in each group directly above the bar (where the quotient goes!).

10. Working with a partner, solve the following problem. Be prepared to share your result with the class.

*How many 36-passenger buses would it take to carry 120 people?*

Here, if students use blocks, then they will notice that 12 people do not have a bus. Therefore, the answer is 4 buses are needed. The context here means that the student will need to round up.

11. Working with a partner, solve the following problem. Be prepared to share your result with the class.

*As a side job, Nancy makes bracelets. It takes 14 beads to make one bracelet. Nancy has 300 beads, how many bracelets can she make?*

Here, if students use blocks, then they will notice that 6 beads remain. In this case, 6 beads is not enough to make a full bracelet. Therefore, the answer is 21 bracelets. The context here means that the student will need to round down.

12. Whole Class Discussion: What are the similarities and differences between the previous two problems?

Both have remainders. The context of the problem should provide the student with whether they round up or round down.



Day 05 Homework Solutions

1. Compute  $654 \div 6$ . **Answer:** 109

$$\begin{array}{r}
 654 = 6 \text{ groups of } 100 \rightarrow 100 \\
 654 - 600 = 54 \quad + \\
 54 = 6 \text{ groups of } 9 \rightarrow 9 \\
 \hline
 54 - 54 = 0
 \end{array}$$

$$100 + 9 = 109$$

2. A local high school cooking club is having a fried wonton sale. They are selling wontons by the dozen. To make sure that everyone gets a taste, they are only allowing one dozen wontons per customer. If the cooking club is frying 1500 wontons, how many customers will they serve?
- Determine the type of partitioning used in this situation. **Answer:** *Looking for the number of groups. The 12 wontons represent the number of objects in each group. A customer represent a group.*
  - Write an expression for this situation. **Answer:**  $1500 \div 12$
  - Find the result. **Answer:** 125

$$\begin{array}{r}
 1,500 = 12 \text{ groups of } 100 \rightarrow 100 \\
 1,500 - 1,200 = 300 \quad + \\
 300 = 12 \text{ groups of } 20 \rightarrow 20 \\
 300 - 240 = 60 \quad + \\
 60 = 12 \text{ groups of } 5 \rightarrow 5 \\
 \hline
 60 - 60 = 0
 \end{array}$$

$$100 + 20 + 5 = 125$$

3. Due to success of the wonton sale, the cooking club decided to have a brownie giveaway the following week. Eight lucky winners will receive a basket of brownies. They baked 912 brownies. How many brownies are in each basket?
- Determine the type of partitioning used in this situation. **Answer:** *Looking for the number of objects (brownies) in each group. A basket represent a group.*
  - Write an expression for this situation. **Answer:**  $912 \div 8$
  - Find the result. **Answer:** 114

$$\begin{array}{r}
 912 = 8 \text{ groups of } 100 \rightarrow 100 \\
 912 - 800 = 112 \quad + \\
 112 = 8 \text{ groups of } 10 \rightarrow 10 \\
 112 - 80 = 32 \quad + \\
 32 = 8 \text{ groups of } 4 \rightarrow 4 \\
 \hline
 32 - 32 = 0
 \end{array}$$

$$100 + 10 + 4 = 114$$

4. Compute  $12902 \div 12$ . **Answer:** 1,075 with a remainder of 2.

$$\begin{array}{r}
 12,902 = 12 \text{ groups of } 1,000 \rightarrow 1,000 \\
 12,902 - 12,000 = 902 \quad + \\
 902 = 12 \text{ groups of } 70 \rightarrow 70 \\
 902 - 840 = 62 \quad + \\
 62 = 12 \text{ groups of } 5 \rightarrow 5
 \end{array}$$

$$62 - 60 = 2$$

$$1,000 + 70 + 5 = 1,075, \text{ with a remainder of } 2$$

Additional Homework Assignment – Preparation for Day 06 – Fractions! :D

**Directions:** With the paper strips you received from your instructor today,

1. Fold each paper strip into equally sized regions so that you have:
  - $\frac{1}{2}, \frac{1}{4}, \frac{1}{8}$  separately on one color of the paper strips;
  - $\frac{1}{3}, \frac{1}{6}$  separately on another color of the paper strips; and,
  - $\frac{1}{5}, \frac{1}{10}$  separately on the remaining color of the paper strips.
2. Do not use rulers.
3. Do not tear, cut, or have excessive left-over on a strip.
4. The only marks allowed on the strips of paper are lines to show the folds (not required). No other markings allowed including your name or the fraction name. The way we will identify fractions is by counting the partitioning.
5. Bring all seven  $\frac{1}{2}, \frac{1}{4}, \frac{1}{8}, \frac{1}{3}, \frac{1}{6}, \frac{1}{5}, \frac{1}{10}$  strips of paper with you to class tomorrow.