LETTER HOME

Addition Properties Using Volume

Dear Family Member:

This unit will help your child develop spatial visualization skills while exploring the concept of volume. Volume is the amount of space that an object occupies. It is usually measured in cubic units. In these lessons, students find volume by finding the number of cubes that make up an object, either by counting or addition. They see that different shapes can have the same volume.
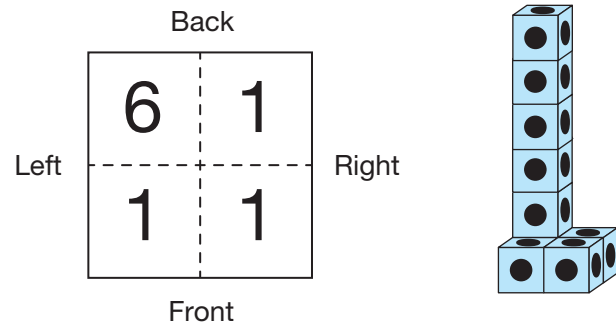
Students construct buildings and draw building plans to tell others how to construct the same structure. They create strategies for finding the volume of their structures.

The building plan on the right shows students how to construct a building. The picture is a building that matches the building plan. Notice that one of the towers is six units high, while the other three are one unit high.

The volume of this building is 9 cubic units. A possible number sentence for finding the volume of this building is $6 + 1 + 1 + 1 = 9$ where the 6 represents the number of cubes in the tallest tower, and the 1s represent the rest of the first layer of the building.

$$6 + 1 + 1 + 1 = 7 + 2$$

Building plan used to construct a building

These volume experiences motivate students to explore the properties of addition. For example, does $6 + 1 + 1 + 1 = 7 + 2$?

Students then apply these addition properties to solve problems involving the volume of the buildings and the shapes of the buildings. For example, if the volume of the building is 12 cubic units, how tall is the tallest tower if I know the rest the building has a volume of 3 units?

Math Facts and Mental Math

Students' fluency with the subtraction facts related to the addition facts in Group B will be assessed in this unit.

Group B: $3 - 0, 4 - 0, 5 - 1, 5 - 4, 6 - 1, 6 - 5, 7 - 1, 7 - 2, 7 - 5, 7 - 6, 8 - 1, 8 - 2,$
$8 - 3, 8 - 5, 8 - 6, 8 - 7, 9 - 1, 9 - 8$

You can help your child review these facts using the flash cards the teacher sent home or by making a set of flash cards from index cards or scrap paper. Study the facts in small groups each night. As your child goes through the flash cards, put the cards in three stacks: Facts I Know Quickly, Facts I Can Figure Out, and Facts I Need to Learn.

For Facts I Need to Learn, work on strategies for figuring them out.

For Facts I Can Figure Out, use the flash cards to practice the facts for fluency.

For Facts I Know Quickly, help your child use strategies to solve problems like these using mental math: $80 - 20$ (practices $8 - 2$), $900 - 800$ (practices $9 - 8$).

Thank you.

Unit 10: Home Practice

Part 1 Triangle Flash Cards:
Group B Subtraction Facts

Take home your *Triangle Flash Cards: Group B Subtraction Facts.*
Ask a family member to choose one flash card at a time for you to
solve. Sort the flash cards into three piles: Facts I Know Quickly,
Facts I Can Figure Out, and Facts I Need to Learn. Update your
Subtraction Facts I Know chart. Clip the cards in the Facts I Know
Quickly pile together and place them back into the envelope.
Practice the facts in the last two piles again.

Part 2 Subtraction with Base-Ten Pieces

1. Think of base-ten pieces as you solve each problem.

A.

10s	1s
4	6
− 2	7

B.

10s	1s
7	2
− 5	6

2. Now solve each problem using a different method.

A. 46
   − 27

B. 72
   − 56

Part 3 Relate Subtraction and Addition

A. $7 - 1 = \boxed{}$

B. $7 - \boxed{} = 1$

C. $70 - \boxed{} = 60$

D. $70 - \boxed{} = 10$

E.
$$\begin{array}{r} 6 \\ + \ 2 \\ \hline \end{array}$$

F.
$$\begin{array}{r} 8 \\ - \ 6 \\ \hline \end{array}$$

G.
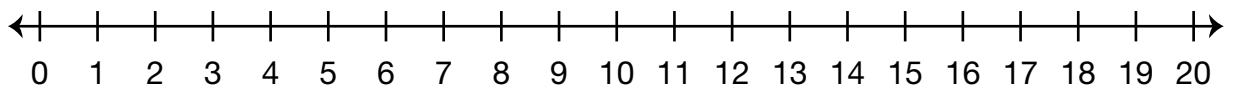$$\begin{array}{r} 50 \\ + \ 20 \\ \hline \end{array}$$

H.
$$\begin{array}{r} 70 \\ - \ 50 \\ \hline \end{array}$$

I.
$$\begin{array}{r} 6 \\ + \ 5 \\ \hline \end{array}$$

J.
$$\begin{array}{r} 11 \\ - \ 6 \\ \hline \end{array}$$

K. Show or tell how to use the problem in Question I to solve Question J.

L. Show or tell how to use counting back to solve Question J.

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◄─┼──┼──┼──┼──┼──┼──┼──┼──┼──┼──┼──┼──┼──┼──┼──┼──┼──┼──┼──┼──►
  0  1  2  3  4  5  6  7  8  9  10 11 12 13 14 15 16 17 18 19 20
```

Part 4   Just the Facts

1. Make each number sentence true.

   A. $9 - 1 = \boxed{} + 6$

   B. $1 + 6 = 8 - \boxed{}$

   C. $4 - \boxed{} = 4 + 0$

   D. $4 + \boxed{} = 6 - 1$

   E. $3 + \boxed{} = 5 - 2$

   F. $7 - 2 = \boxed{} + 4$

2. Complete the fact families.

   A. $5 + 1 = 6$ **B.** $5 + 3 = 8$ **C.** $1 + 8 = 9$

   _____   _____   _____

   _____   _____   _____

   _____   _____   _____

3. Solve the addition and subtraction problems.

   A. $4 + 1 = \boxed{}$

   $40 + 10 = \boxed{}$

   B. $60 - 20 = \boxed{}$

   $6 - 2 = \boxed{}$

   C. $10 + \boxed{} = 80$

   $1 + \boxed{} = 8$

   D. $5 - 3 = \boxed{}$

   $50 - 30 = \boxed{}$

Part 5 **Checking with Addition**

1. Kim's solution to some subtraction problems are below. She made some mistakes. Use addition to check her answers and find her mistakes. If an answer is wrong, rewrite the problem and solve it correctly.

	Check with Addition	**Solve the Problem**
A. 93 −49 56		
B. 49 −27 22		
C. 67 −39 32		

2. Solve by making both sides equal.

A. $8 + 12 = 18 + \boxed{}$ **B.** $9 + 16 = 19 + \boxed{}$

C. $6 + 14 = 16 + \boxed{}$ **D.** $5 + 23 = 15 + \boxed{}$

E. $17 + 3 = 7 + \boxed{}$ **F.** $21 + 7 = 11 + \boxed{}$

Part 6 Comparing Masses
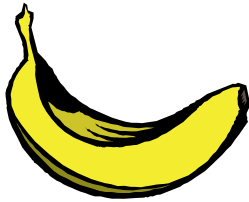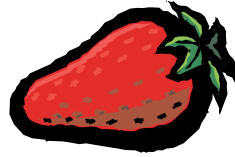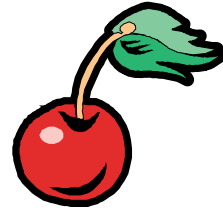
100g	**50g**	**20g**	**5g**

Compare the two quantities in the balance pans. Circle the picture that shows what will happen.

A.

Picture 1   Picture 2   Picture 3

B.

Picture 1   Picture 2   Picture 3

C.

Picture 1   Picture 2   Picture 3

D.

Picture 1   Picture 2   Picture 3
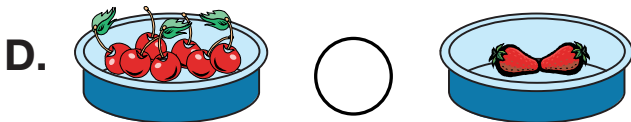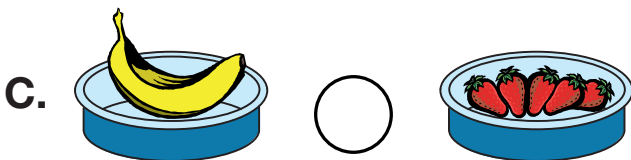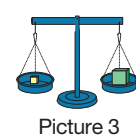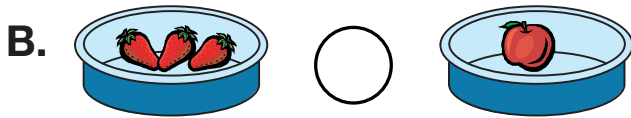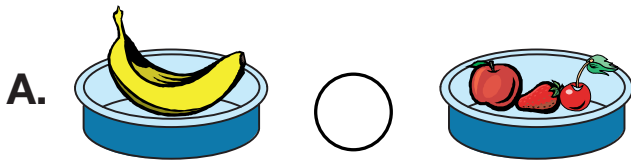
< less than
> greater than
= equal to

Triangle Flash Cards: Group B

- **To practice an addition fact, cover the corner with the highest number. Add the two uncovered numbers.**
- **To practice a subtraction fact, cover one of the smaller numbers and subtract from the highest number.**
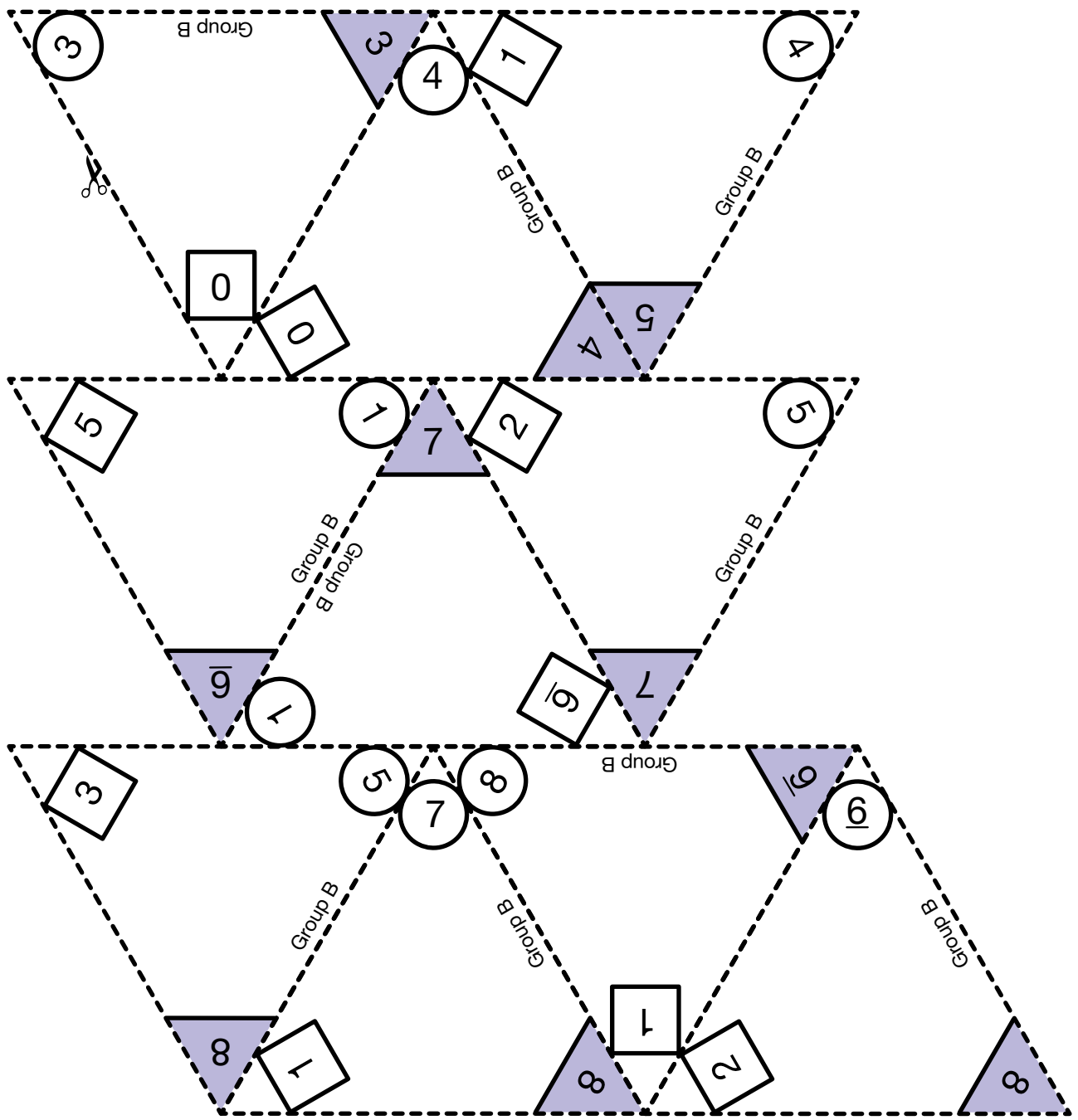
Subtraction Facts I Know

Circle the subtraction facts you know and can answer quickly.

|									
0 − 0 0	1 − 0 1	2 − 0 2	3 − 0 3	4 − 0 4	5 − 0 5	6 − 0 6	7 − 0 7	8 − 0 8	9 − 0 9
1 − 1 0	2 − 1 1	3 − 1 2	4 − 1 3	5 − 1 4	6 − 1 5	7 − 1 6	8 − 1 7	9 − 1 8	10 − 1 9
2 − 2 0	3 − 2 1	4 − 2 2	5 − 2 3	6 − 2 4	7 − 2 5	8 − 2 6	9 − 2 7	10 − 2 8	11 − 2 9
3 − 3 0	4 − 3 1	5 − 3 2	6 − 3 3	7 − 3 4	8 − 3 5	9 − 3 6	10 − 3 7	11 − 3 8	12 − 3 9
4 − 4 0	5 − 4 1	6 − 4 2	7 − 4 3	8 − 4 4	9 − 4 5	10 − 4 6	11 − 4 7	12 − 4 8	13 − 4 9
5 − 5 0	6 − 5 1	7 − 5 2	8 − 5 3	9 − 5 4	10 − 5 5	11 − 5 6	12 − 5 7	13 − 5 8	14 − 5 9
6 − 6 0	7 − 6 1	8 − 6 2	9 − 6 3	10 − 6 4	11 − 6 5	12 − 6 6	13 − 6 7	14 − 6 8	15 − 6 9
7 − 7 0	8 − 7 1	9 − 7 2	10 − 7 3	11 − 7 4	12 − 7 5	13 − 7 6	14 − 7 7	15 − 7 8	16 − 7 9
8 − 8 0	9 − 8 1	10 − 8 2	11 − 8 3	12 − 8 4	13 − 8 5	14 − 8 6	15 − 8 7	16 − 8 8	17 − 8 9
9 − 9 0	10 − 9 1	11 − 9 2	12 − 9 3	13 − 9 4	14 − 9 5	15 − 9 6	16 − 9 7	17 − 9 8	18 − 9 9
10 − 10 0	11 − 10 1	12 − 10 2	13 − 10 3	14 − 10 4	15 − 10 5	16 − 10 6	17 − 10 7	18 − 10 8	19 − 10 9

Find the Twins

Homework

Look at the pictures of the buildings below. For each problem, circle the two buildings that have the same shape.
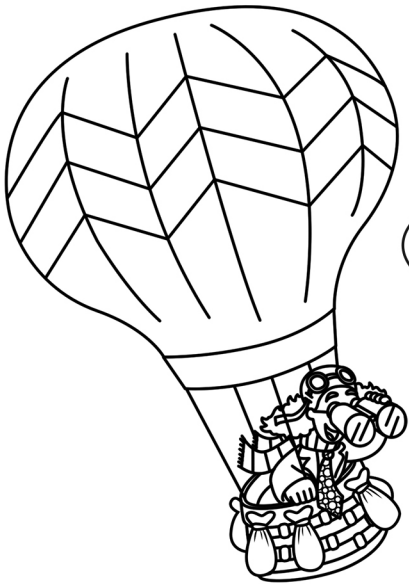
1.

2.
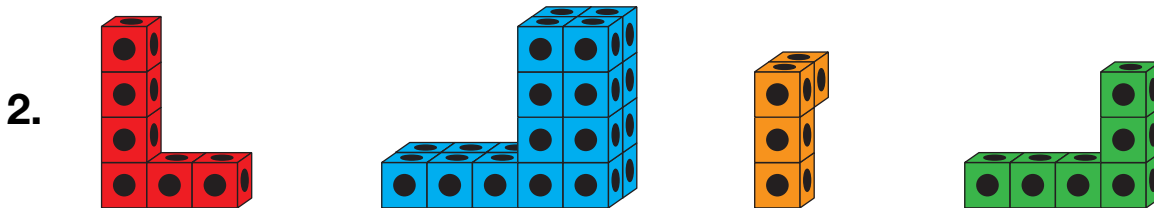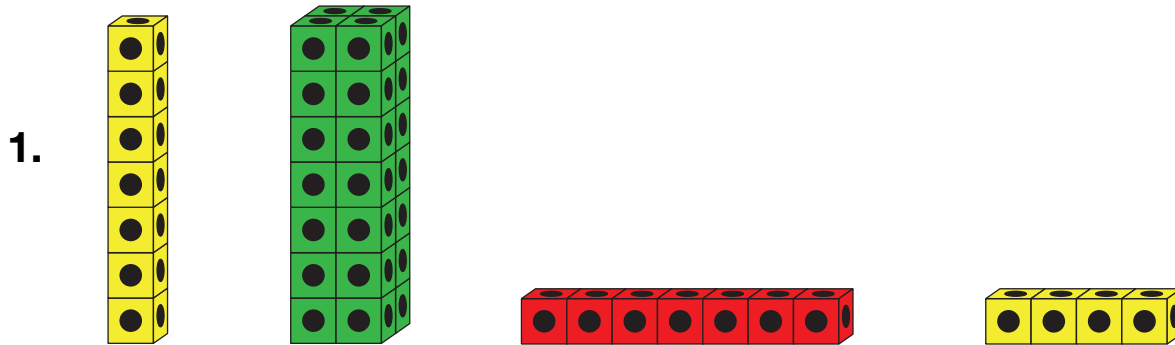
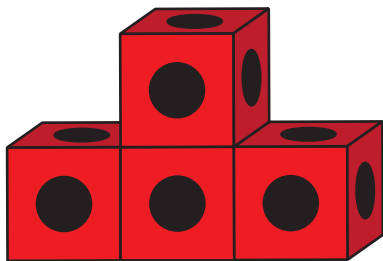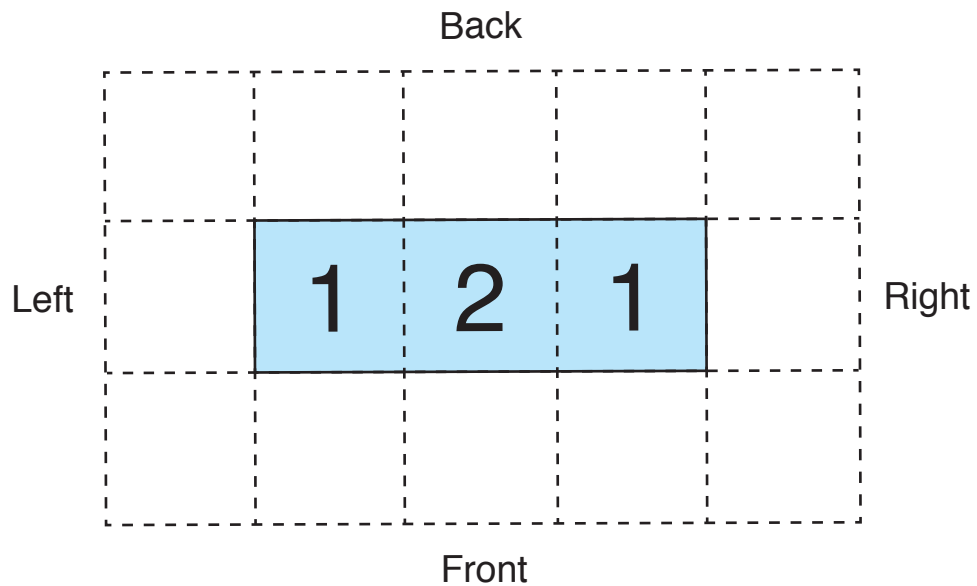**3.** Compare the two buildings.
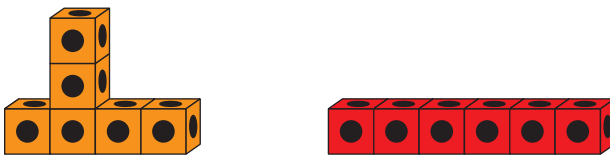
A. How are these two shapes alike? _____

B. How are they different? _____

Professor Peabody's Building Plan

I like to fly over the town and look down.

Back

| | 1 | 2 | 1 | |

Left   Right

Front

Height = 2 units
Volume = 4 cubic units

Number sentences _____ cubic units

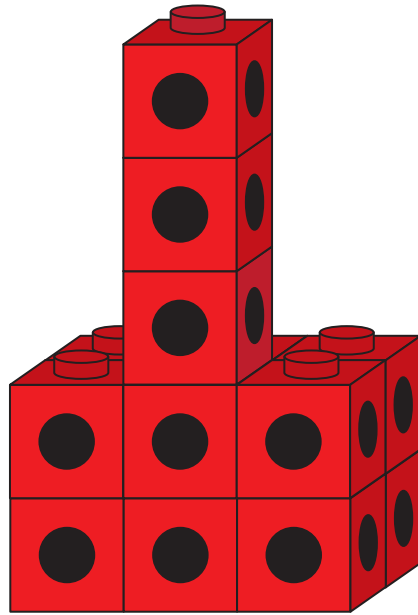_____ cubic units

Rules for Building Plans

Cube model plans work only if we stack cubes properly.
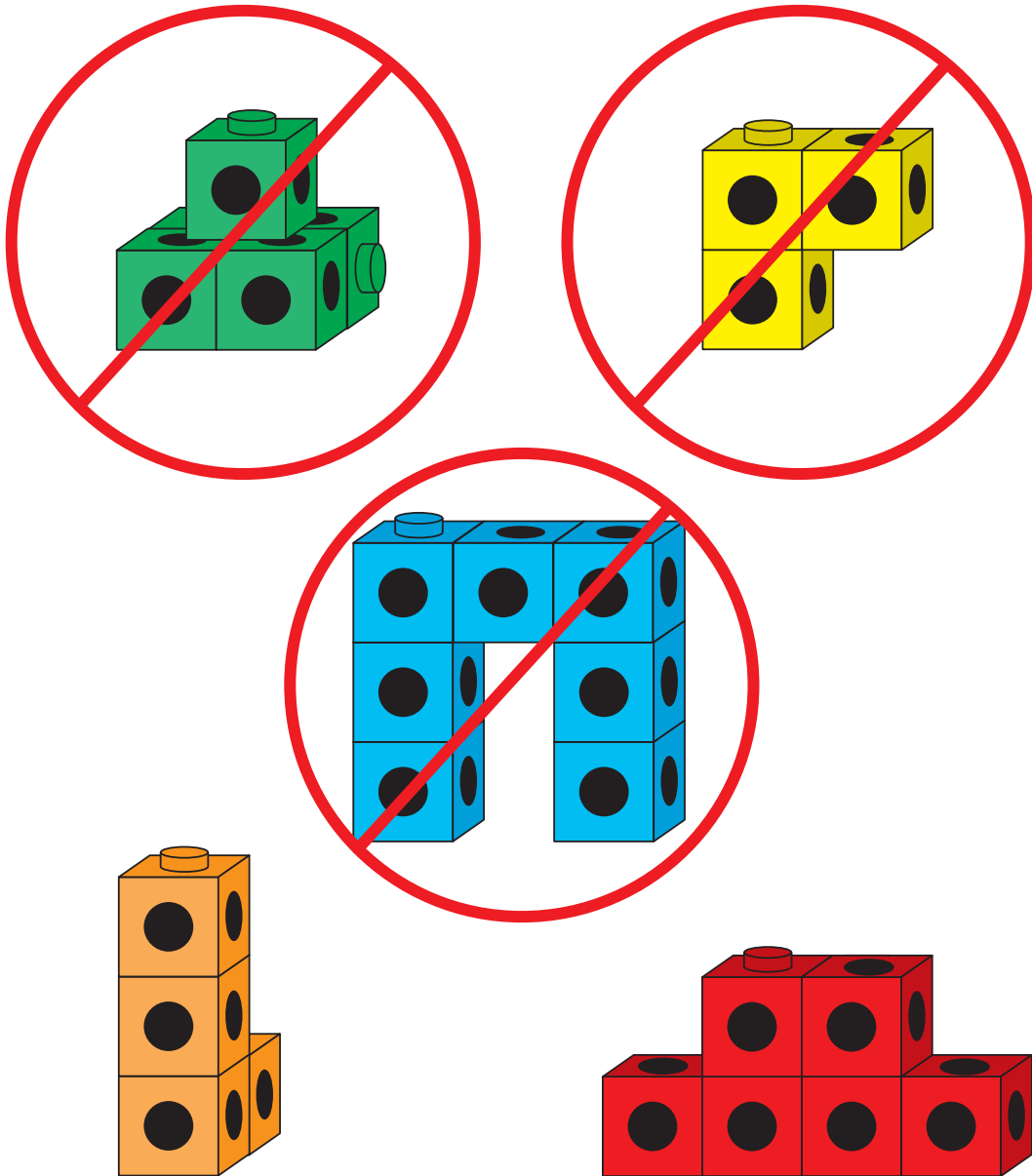
Can you explain why these rules are needed for cube model plans to make sense?

Professor Peabody Is Confused

Professor Peabody made a building and building plan that looked like this:

	Back	
2	**2**	**2**
2	**5**	**2**

Left … Right

Front

Then he wrote a number sentence about it like this:

$$1 + 1 + 1 + 1 + 6 + 3 + 2 = 15 \text{ cubic units}$$

Missing Columns

Show or tell how to find the height of the missing column in each building plan.

1.

5	5
5	?

$5 + 5 + 5 + \boxed{} = 18$ cubic units

2.

2	?	8
8	5	2

$2 + 8 + \boxed{} + 5 + 8 + 2 = 18$ cubic units

3.

?	3
9	6

$\boxed{} + 3 + 9 + 6 = 20$ cubic units

Name _____ Date _____

Building Plan Two Ways

Back

Left   **Right**

Front

Number sentence _____

Number sentence _____

Duet Towers

Match Up

Homework
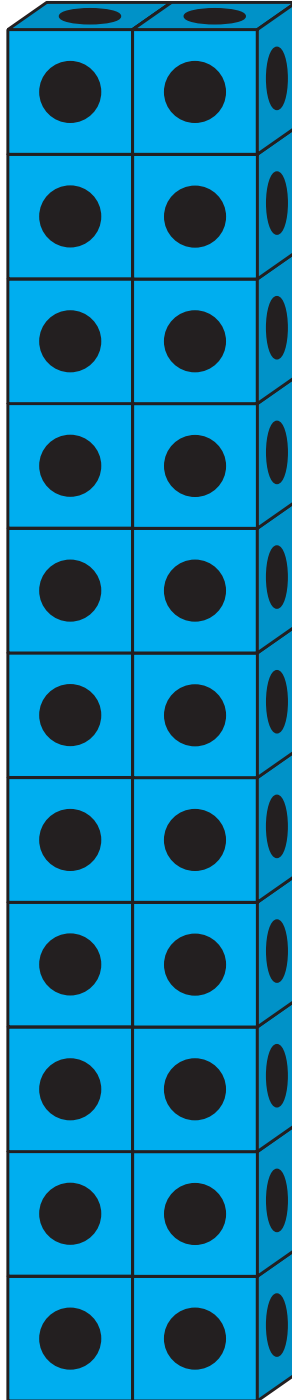
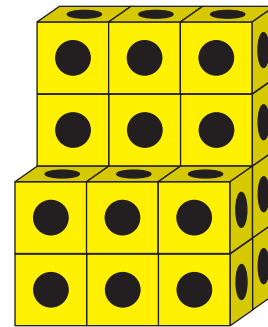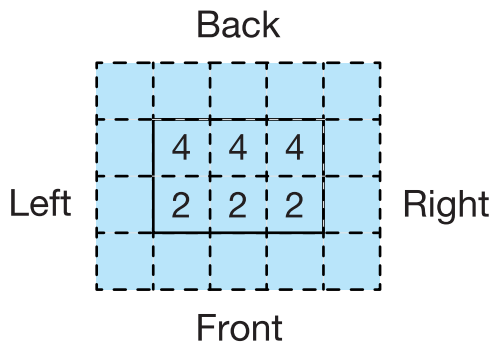**Match each building plan with the picture of the building and connect them with a line. Then tell what number sentence goes with each Building Plan.**
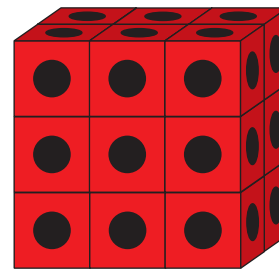
Back

| 3 | 3 | 3 |
| 3 | 3 | 3 |

Left ... Right

Front
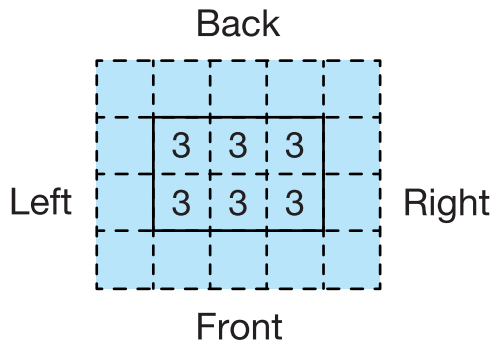
Building Plan 1

Chair Building

Back

| 4 | 4 | 4 |
| 2 | 2 | 2 |

Left ... Right

Front

Building Plan 2

Box Building

$3 + 3 + 3 + 3 + 3 + 3 = 18$

Building Plan _____

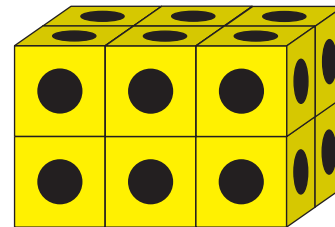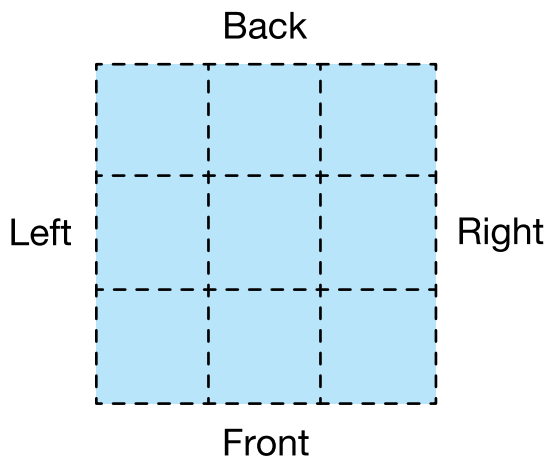$2 + 2 + 2 + 4 + 4 + 4 = 18$
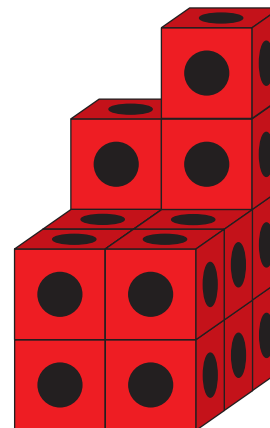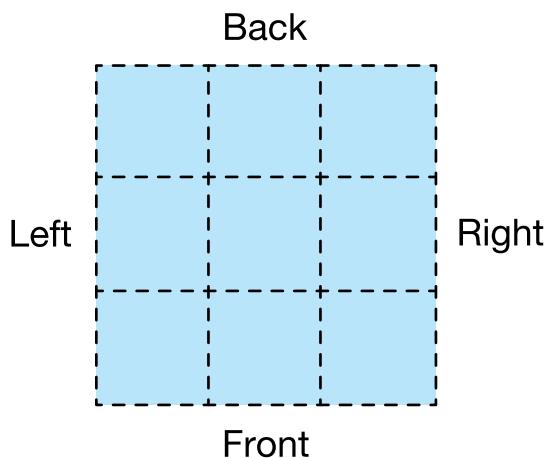
Building Plan _____

Building Challenge

Homework

Make a building plan from the picture of the building. Draw an outline or floor plan. Fill in the height for each square on the floor plan. Write a number sentence for the volume.

Back

Left   Right

Front

Volume _____ cubic units

Number sentence _____

Back

Left   Right

Front

Volume _____ cubic units

Number sentence _____

Contessa Is Confused

Confused Contessa made this building.

9	3
1	7
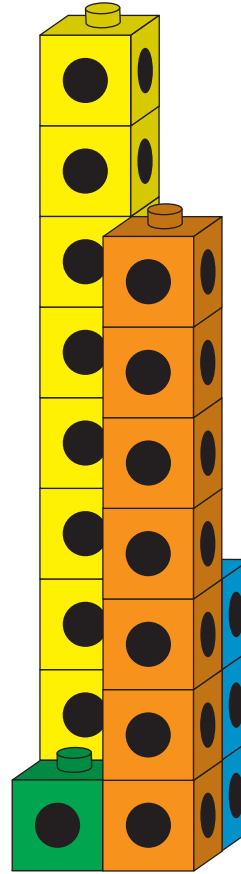
She wrote a number sentence to describe it.

$$1 + 3 + 7 + 9 = 9 - 7 - 3 - 1$$

Write true statements for Contessa's building.

_____ = _____

_____ = _____

_____ = _____

_____ = _____

Name _____   Date _____

Building Parts

Homework

Dear Family Member:

In class, students are learning that different partitions of a number have the same total. For example, $10 + 10 + 5 = 5 + 5 + 15$. Your child will use the building plans below to write 2 number sentences about the building and then combine them to create a number sentence with more than one addend on each side. See the example below.

Thank you.

Building Plan	Number Sentences
Example <table><tr><td>6</td><td>1</td></tr><tr><td>4</td><td>9</td></tr></table>	$10 + 10 = 20$ Number sentence 1 $6 + 4 + 1 + 9 = 20$ Number sentence 2 $10 + 10 = 6 + 4 + 1 + 9$ Combined number sentence

Name _____   Date _____

Building Plan	Number Sentences
A. 20 | 40 80 | 60	_____ _____ Number sentence 1 Number sentence 2 _____ Combined number sentence
B. 22 | 4 8 | 34	_____ _____ Number sentence 1 Number sentence 2 _____ Combined number sentence
C. Make your own building plan.	_____ _____ Number sentence 1 Number sentence 2 _____ Combined number sentence