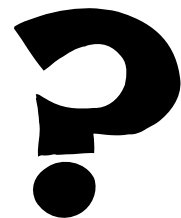


Memo

Should I tell the teacher
what I *really* think of
Objective 25?



To: Grade Four Teachers
From: Tina Della Bernarda
Date: February 26, 2001
Re: Practice Packets for Math CMT (Grade 5)
Cc: Elementary Principals
Carolyn Cistulli
Denise Carabetta



The enclosed practice problems are for the Grade 5 (3rd Generation) Math CMT – Objective 25 (Solve extended numerical and statistical problems).

They follow the format of the sample problems released by the State Dept. of Education between November, 1999 and April, 2001 for the Grade 4 and 6 CMT.

I have tried to simply those Grade 6 sample problems into these enclosed problems that I hope will be more in line with the Grade 5 Math CMT (3rd Generation). Having never seen the new Grade 5 test, I can only hope that I succeeded. Some of the problems may, however, seem too difficult for your students. Feel free to simply these problems accordingly.



Help! Objective 25 is
trying to mess with me
big time!

Connecticut Mastery Test
THIRD Generation
Math Test Grade 5

Content Standard:
Integrated Understandings

Strand:
Mathematical Applications

Objective 25: Solve extended
numerical, spatial, and
statistical problems.

CMT (3rd Gen.) Strand 25: Mathematical Applications

Strand 25 of the 3rd Generation of the Connecticut Mastery Test is called **Mathematical Applications**. The items that assess this strand are 4-point open-ended items that require students to

- ♦ solve a complex problem,
- ♦ show their work, and
- ♦ explain their reasoning.

4th graders are given one numerical and one statistical problem.

6th and 8th graders are given one numerical, one statistical, and one spatial problem.

These items are designed to assess integrated understanding of key mathematical problems as well as students' ability to communicate their understanding and demonstrate their reasoning.

The generic rubric used to create task specific rubrics for these items is:

Score of 3: Student shows a correct and/or appropriate answer and shows work and/or an explanation that demonstrates full and complete understanding.

Score Of 2: Student has minor flaws in the answer, but the work and/or explanation is acceptable and the reasoning is appropriate.

Score of 1: Student does not have a reasonable answer or does not provide a reasonable explanation or show sufficient work, resulting in a demonstration of only limited understanding.

Score of 0: Student shows no understanding of the problem or how to arrive at a solution.

Grade 5 (3rd Gen) – Obj. 25: Solve extended numerical, spatial, and statistical problems.



Name _____ Date _____

Paul and his family have \$40 to spend in a restaurant. The members of his family are listed below:

Paul
Matthew
Luke
Sabrina

The menu at the restaurant is as follows:

ENTRÉES	
Chicken Dinner	7.50
Hamburger and Fries	4.50
Cheeseburger and Fries	4.95
Pasta Dinner	5.95
DRINKS	
Large Soda	1.50
Small Soda	1.25
Coffee	1.25
Milk	1.00
DESSERTS	
Cake	1.95
Pie	1.95
Ice Cream Sundae	1.50

Each member of Paul's family orders at least 1 entrée, at least 1 drink, and only 1 dessert. Each person's order must be different by at least 1 item.

Determine an order for the family that is under \$40, and explain your mathematical thinking below.

Grade 5 (3rd Gen) – Obj. 25: Solve extended numerical, spatial, and statistical problems.

Name _____ Date _____

Antonio and his friends have about \$50 to spend in a restaurant. The members of the group are Antonio, Erica, Colin, and Miranda.



The menu at the restaurant is as follows:

<u>ENTRÉES</u>	
Chicken Dinner	7.95
Roast Turkey	6.95
Fish and Chips	5.95
<u>Pasta with Meatballs</u>	<u>4.95</u>
<u>DRINKS</u>	
Soda	1.50
Milk	1.00
Tea	.95
<u>Coffee</u>	<u>1.25</u>
<u>DESSERTS</u>	
Cake	1.10
Pie	.90
Ice Cream	1.00

Each member of the group orders at least 1 entrée, at least 1 drink, and only 1 dessert. Each person's order must be different by at least 1 item.

Show what each person could have ordered. Show how much each person spent if the group spent ABOUT \$50.00 in all.

Grade 5 (3rd Gen) – Obj 25: Solve extended numerical, spatial, and statistical problems.

Name _____ Date _____

Mrs. Johnson has 7 children. The chart below shows how much milk her children drink each day.

Three Teenagers	$1\frac{1}{2}$ gallons of milk per day ($\frac{1}{2}$ gallon each)
11-Year Old Twins	1 gallon of milk per day ($\frac{1}{2}$ gallon each)
5-Year Old Twins	$\frac{1}{2}$ gallon of milk per day ($\frac{1}{4}$ gallon each)

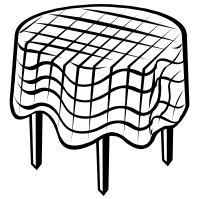


How many gallons of milk should Mrs. Johnson buy for 1 week? _____

If milk costs \$5.00 per gallon, how much will the 1-week supply cost? _____

Show or explain how you arrived at your answer in the space below.

Grade 5 (3rd Gen) – Obj. 25: Solve extended numerical, spatial, and statistical problems.



Name _____ Date _____

The Sewing Club is sewing tablecloths for the cafeteria at the Retired Teacher's Home. The chart below shows how many yards of cloth each table needs. It also shows how many tables of each size the cafeteria has.

Size of Table	Number of Tables	Yards of Cloth Needed per Table
Large	8	$2\frac{1}{2}$ yards
Medium	5	2 yards
Small	10	$1\frac{1}{2}$ yards

How many yards of cloth should be purchased for the 23 tables? _____

If the cloth costs \$1.00 per yard, how much will the cloth for 23 tables cost? _____

In the space below, show or explain how you arrived at your answer.

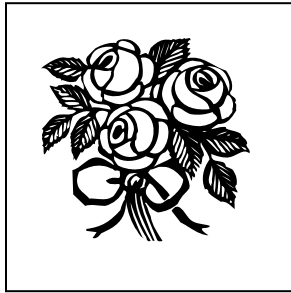
Grade 5 (3rd Gen) – Obj. 25: Solve extended numerical, spatial, and statistical problems.



Name _____ Date _____

Sabrina is selling flowers. She sells two sizes: small bouquets for \$3.00 and large bouquets for \$8.00.

\$3.00



\$8.00



At the end of the day, Sabrina had sold the same number of small bouquets as large bouquets. She collected a total of \$55.

How many small bouquets and large bouquets did Sabrina sell?

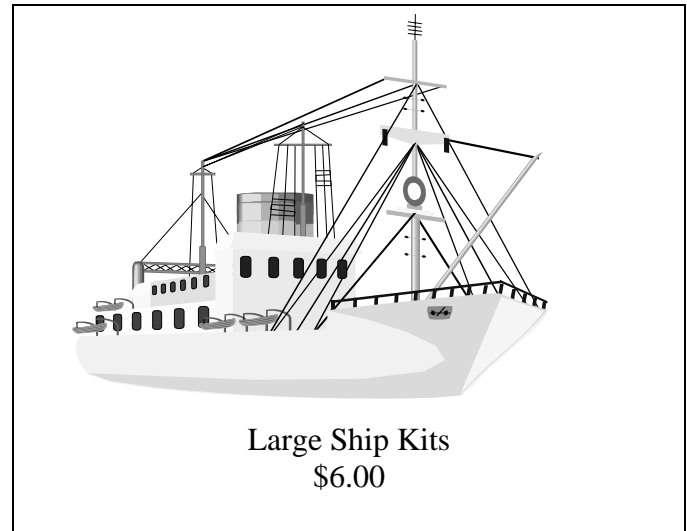
Sabrina sold _____ small bouquets and _____ large bouquets.

Show how you got your answer in the space below.

Grade 5 (3rd Gen) – Obj 25: Solve extended numerical, spatial, and statistical problems.

Name _____ Date _____

Dominic sells kits to make models. He sells two sizes:



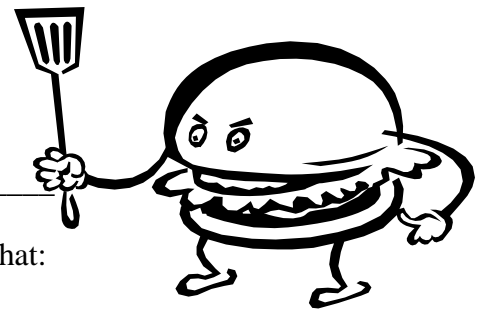
At the end of the day, Dominic had sold the same number of small model kits as large model kits. He had made a total of \$80 from the sale of the model kits.

How many of each size kit did Dominic sell?

Dominic sold _____ small model kits and _____ large model kits.

In the space below, show how you arrived at your answer.

Grade 5 (3rd Gen) – Obj. 25: Solve extended numerical, spatial, and statistical problems.



Name _____ Date _____

Debbie is planning a Fourth of July party for her family. She estimates that:

- 20 of the people who come will have one hamburger with a roll, and
- 10 of the people who come will have one hamburger without a roll.

She uses the chart below to buy her hamburgers and rolls:

Food	Number per Package	Cost per Package
Hamburgers	10	\$2.50
Hamburgers	6	\$1.75
Rolls	12	\$1.29
Rolls	8	\$.99

Use the information in the chart to determine how many packages of hamburgers and rolls Debbie needs to order for the people coming to the party.

- Show how many packages of each size she will purchase.
- Compute the total cost of these items.
- Show how you arrived at your answer.

Debbie's Order:

TOTAL COST: _____

_____ packages of hamburgers (10/package)

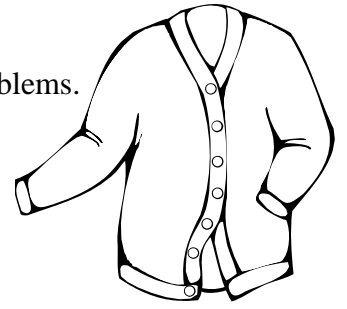
_____ packages of hamburgers (6/package)

_____ packages of rolls (12/package)

_____ packages of rolls (8/package)

Show your work in the space below or on another paper.

Grade 5 (3rd Gen) – Obj. 25: Solve extended numerical, spatial, and statistical problems.



Name _____ Date _____

The Super Sweaters Society is knitting sweaters to sell to raise money for families in need. They must buy buttons for the sweaters.

They have :

- ◆ 4 sweaters that need 5 large buttons each, and
- ◆ 3 sweaters that need 10 small buttons each.

Buttons are sold in

- ◆ packages of 10 large buttons for \$2.50 per package, and
- ◆ packages of 5 small buttons for \$1.00 per package.

Use this information to determine how many packages of large buttons and small buttons are needed for all the sweaters. Also, compute the total cost of these items. Show how you arrived at your answer.

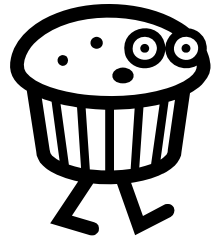
_____ packages of large buttons are needed.

_____ packages of small buttons are needed.

Total Cost: _____

Show your work in the space below.

Grade 5 (3rd Gen) – Obj. 25: Solve extended numerical, spatial, and statistical problems.



Name _____ Date _____

You are in charge of ordering muffins for the breakfast meeting. You estimate that

- ◆ 48 people will have blueberry muffins, and
- ◆ 20 people will have bran muffins.

You find that blueberry muffins come in packages of 12 for \$2.00 or 8 for \$1.50.

You also find that bran muffins come in packages of 6 for \$1.25 and packages of 10 for \$1.50.

Use this information to determine an order. You need enough blueberry and bran muffins so that everyone may have 1 muffin.

- ◆ Show how many packages of each size you will need to purchase.
- ◆ Compute the total cost of these items.
- ◆ Show how you arrived at your answers.

TOTAL COST: _____

YOUR ORDER:

Grade 5 (3rd Gen) – Obj. 25: Solve extended numerical, spatial, and statistical problems.



Name _____ Date _____

A recipe for orange punch calls for the following ingredients:

club soda	1 pint
vanilla ice cream	1 quart
orange juice	2 quarts
Serves 4	

The chart below shows how you can purchase these ingredients and their cost.

club soda	\$1.00/quart
vanilla ice cream	\$3.00/quart
orange juice	\$4.00/gallon

You know that there are
2 cups in 1 pint
2 pints in 1 quart
4 quarts in 1 gallon.

In order to make enough orange punch for 8 people, how much of each ingredient will you need to buy, and how much will these ingredients cost?

Complete the table on the next page to show your answers.

In the space below the table, show how you arrived at your answer.

Name _____ Date _____



Ingredients	How much do you need to buy?	What will this cost?
club soda		
vanilla ice cream		
orange juice		

Show your work here:

Grade 5 (3rd Gen) – Obj. 25: Solve extended numerical, spatial, and statistical problems.



Name _____ Date _____

A recipe for Sparkling Cranberry Punch calls for the following ingredients:

Cranberry Drink	4 cups
Pink Lemonade	4 cups
Sparkling Water	2 cups
Serves 5	

The chart below shows the ingredients you have in your kitchen. It also shows how you can purchase these ingredients, and it shows their cost.

What you have		How its sold and what it costs
Cranberry Drink	1 gallon	\$3.50/gallon
Pink Lemonade	$\frac{1}{2}$ gallon	\$2.00/quart
Sparkling Water	1 pint	\$1.00/pint

You know that there are
 2 cups in 1 pint
 2 pints in 1 quart
 4 quarts in 1 gallon.

gallon															
quart				quart				quart				quart			
pint		pint		pint		pint		pint		pint		pint		pint	
c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c

In order to make enough orange punch for 10 people, how much of each ingredient will you need to buy? How much will these ingredients cost?

Complete the table on the next page to show your answers.

In the space below the table, show how you arrived at your answer.

Name _____ Date _____



Ingredients	How much do you need to buy?	What will this cost?
Cranberry Drink		
Pink Lemonade		
Sparkling Water		

Show your work here:

Grade 5 (3rd Gen) – Obj. 25: Solve extended numerical, spatial, and statistical problems.

Name _____ Date _____



A recipe for onion dip calls for the following ingredients:

Sour Cream	1 quart
Mayonnaise	2 cups
Dry Onion Soup Mix	1 cup
Serves 10	

The chart below shows the ingredients you have in your kitchen. It also shows how you can purchase these ingredients and their cost.

What you have		How it's sold and what it costs
Sour Cream	2 pints	\$2.00/pint
Mayonnaise	1 quart	\$1.25/pint
Dry Onion Soup Mix	1 pint	\$1.50/pint

You know that there are:

- 2 cups in 1 pint
- 2 pints in 1 quart
- 4 quarts in 1 gallon

In order to make enough onion dip for 40 people, how much of each ingredient will you need to buy? How much will the ingredients cost?

Complete the table on the next page to show your answers.

Show how you arrived at your answers in the space below the table.

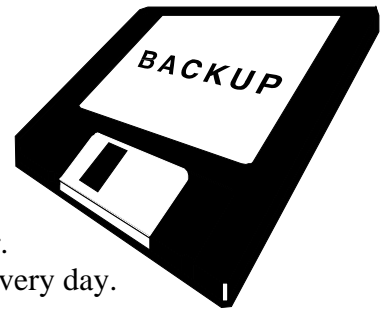
Name _____ Date _____



Ingredients	How much do you need to buy?	What will this cost?
Sour Cream		
Mayonnaise		
Dry Onion Soup Mix		

Show your work here:

Grade 5 (3rd Gen) – Obj. 25: Solve extended numerical, spatial, and statistical problems.



Name _____ Date _____

Lindsay wants to earn enough money to buy a new zip drive for her computer. She created the following table to show the hours she was available to work every day.

Day	Hours Available to Work
Saturday	6 hours
Sunday	3 hours
Monday	2 hours
Tuesday	1 hour
Wednesday	1 hour
Thursday	1 hour
Friday	2 hours

If Lindsay earns \$2 per hour and can work only 10 hours each week, how many weeks will it take her to earn the money necessary to purchase a zip drive that costs \$100?

Lindsay must work _____ weeks.

In the space below, create a schedule that shows the 10 hours Lindsay could work. Also, show how you arrived at your solution.

Grade 5 (3rd Gen) – Obj. 25: Solve extended numerical, spatial, and statistical problems.



Name _____ Date _____

Mrs. Fisher had a very busy day planned for her fourth graders. She could not afford to waste one minute.

Listed below are the facts and data Mrs. Fisher used to plan her day:

- Lunch at 12:00 – 30 minutes long
- PE class at 10:30 – 30 minutes long
- Assembly from 2:00 to 3:00
- Math – 60 minutes
- Computer Class- 30 minutes
- Language Arts – 1 $\frac{1}{2}$ hours
- Science – 60 minutes

In the space below, complete a schedule for Mrs. Fisher’s students.

Schedule	
Time	Event
8:55	School starts.
9:00	
3:00	School ends.

Grade 5 (3rd Gen) – Obj. 25: Solve extended numerical, spatial, and statistical problems.

Name _____ Date _____

Marissa, Zoe, and Jade are walking in the Memorial Day Parade side-by-side.

In how many different ways could they walk together? That is, one way could be Marissa on the right, Zoe in the middle, and Jade on the left.

Show all the different ways in which the girls could walk side by side.



Grade 5 (3rd Gen) – Obj. 25: Solve extended numerical, spatial, and statistical problems.

Name _____ Date _____

Ken and Marc were jogging around the track for exercise. In how many ways could the boys jog, assuming that they could jog side-by-side or with one boy in front of the other.

That is, one way could be Ken on the right with Marc on the left.
Another way could be Ken in front and Marc in back.

Show all the different ways in which the boys could jog.



Grade 5 (3rd Gen) – Obj. 25: Solve extended numerical, spatial, and statistical problems.

Name _____ Date _____



Jocelyn wants to plant a maple, oak, and an apple tree in her yard. She could plant the trees in her front yard, in her back yard, or in both the front and the back yard. There is no room for trees on the side of her house.

In the space below, show all the different places the trees could be planted.

Grade 5 (3rd Gen) – Obj. 25: Solve extended numerical, spatial, and statistical problems.

Name _____ Date _____

The Pizza House sells only 2 sizes of pizza: small and large.
They offer only two toppings for the pizzas: cheese and mushroom.

Make a list of all the different pizza that can be ordered from the Pizza House.



Grade 5 (3rd Gen) – Obj. 25: Solve extended numerical, spatial, and statistical problems.

Name _____ Date _____

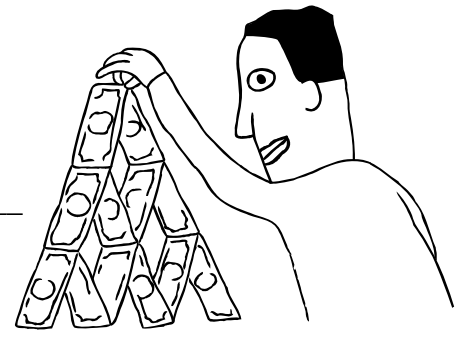
Ken is painting 2 kinds of tiles: squares and rectangle. He is using 3 colors: green, red, and blue. Show all the different tiles that Ken could paint. He will use more than one color on some tiles.



Grade 5 (3rd Gen) – Obj 25: Solve extended numerical, spatial, and statistical problems.

Name _____ Date _____

Jeffrey bought a pencil for 50¢ with a \$1.00 bill. Show all the different ways he could get his 50¢ change. Use only nickels, dimes, and quarters.



Grade 5 (3rd Gen) –Obj. 25: Solve extended numerical, spatial, and statistical problems.

Name _____ Date _____

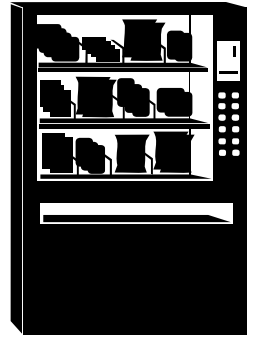
Makayla wants a soda from the soda machine. The soda costs 65¢ and accepts only exact change. Show all the different combinations of nickels, dimes, and quarters that Makayla could use to buy a soda.



Grade 5 (3rd Gen) – Obj. 25: Solve extended numerical, spatial, and statistical problems.

Name _____ Date _____

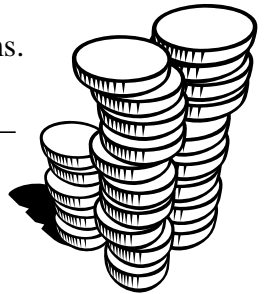
You want a snack from the candy machine. The snack you want costs _____¢. The candy machine accepts only nickels, dimes and quarters. Show all the different combinations of coins you could use to buy a soda.



Grade 5 (3rd Gen) – Obj. 25: Solve extended numerical, spatial, and statistical problems.

Name _____ Date _____

You want a snack from the candy machine. The snack you want costs _____¢. You put a dollar bill into the machine. The machine gives back only nickels, dimes, and quarters for change. Show all the different combinations of coins you could get back for your _____¢ in change..



Grade 5 (3rd Gen) – Obj. 25: Solve extended numerical, spatial, and statistical problems.

Name _____ Date _____



The bookstore sells both paperbacks and hard-cover books. The chart below shows the number of books in stock and the price for both types of books.

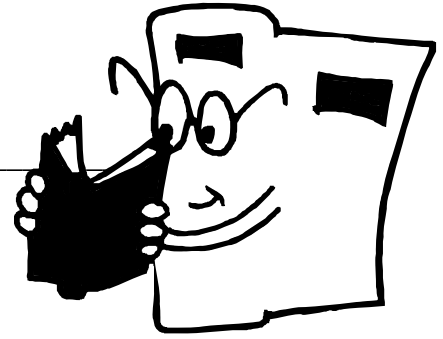
TYPE OF BOOK	PRICE
paperback	\$4
hard cover	\$10

Yesterday, the store sold \$66 worth of books in one hour. Show how many of each type of book could have been sold in that hour.

Show how you arrived at your solution.

Grade 5 (3rd Gen) – Obj. 25: Solve extended numerical, spatial, and statistical problems.

Name _____ Date _____



The bookstore buys paperbacks and hard-cover books for one price and sells them for a higher price. The chart below shows the number of books in stock (ready to sell), the price paid to buy the books, and the selling price of the books.

TYPE OF BOOK	NUMBER IN STOCK	COST OF BOOKS	SELLING PRICE
Paperback	25	\$2	\$4
Hardcover	10	\$5	\$10

One day last week, the store made a profit (the difference between the selling price and the cost of the books) of ABOUT \$20.

- Show how many of each type of book could have been sold that day.
- Show or explain how you arrived at your solution.
- Show how you calculated the profit.

Grade 5 (3rd Gen) – Obj. 25: Solve extended numerical, spatial, and statistical problems.

Name _____ Date _____

A potter makes vases, mugs, and bowls. The chart below show the number of items made, the cost of the materials, and the selling price for each piece of pottery.



TYPE OF POTTERY	NUMBER MADE	COST OF MATERIALS	SELLING PRICE
Vases	10	\$4	\$8
Mugs	10	\$1.50	\$3
Bowls	5	\$3	\$6

One day last week, the potter made a profit (the difference between the selling price and the cost of the materials) of ABOUT \$30.

- Show how many of each type of pottery could have been sold that day.
- Show or explain how you arrived at your solution.
- Show how you calculated the profit.



TIME	ACTIVITY
8:50	Arrive at the school gym
3:00	Depart from school gym

Grade 5 (3rd Gen) – Obj. 25: Solve extended numerical, statistical, and spatial problems.

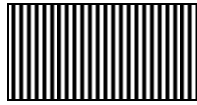
Name _____ Date _____



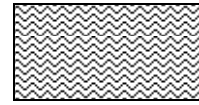
Marcy has three kinds of boxes:



5 of these



7 of these



3 of these

She wants to put all 15 boxes on her display case. It has five shelves, and three boxes fit on each shelf.

She also wants the 1st, 3rd, and 5th shelves to be congruent to each other. Shelves 2 and 4 must also be congruent to each other.

Use the grid below to draw a design that Marcy could use.

In the space below the grid, explain how shelves 1, 3, and 5 are all congruent to each other and how shelves 2 and 4 are congruent to each other.

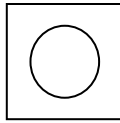
Grade 5 (3rd Gen) – Obj. 25: Solve extended numerical, spatial, and statistical problems.

Name _____ Date _____

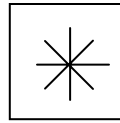
Cole is making a design for a patio with some blocks. The 3 kinds of blocks he wants to use and the number of blocks he has is shown below.



10 of these



9 of these



8 of these

The patio will hold only 20 blocks. He wants his finished 5x4 design to use an even number of each block. There cannot be two blocks alike sharing a complete side next to each other either across or up-and-down. Use the grid below to draw a design that Cole could use. Be sure to use all 3 kinds of blocks.

Grade 5 (3rd Gen) – Obj. 25: Solve expanded numerical, spatial, and statistical problems.

Name _____ Date _____



A potter displays some of the items she wants to sell in a 6x3 rectangular display case. The potter wants to display several of each of the following items that she has ready to sell:

- Vases (V) that cost \$6 each
- Pots (P) that cost \$4 each
- Bowls (B) that cost \$8 each
- Mugs (M) that cost \$2 each

The display must follow these rules:

- There are at least 2 of each item.
- The total cost of items in the display is more than \$50.
- No two display boxes that share a side can have the same item.

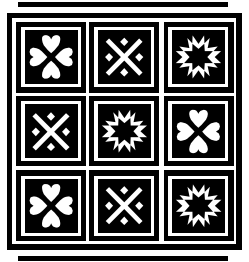
Show how the pottery can be displayed in the 18 display boxes.

Show the total cost of the items in the display.

Show how you arrived at the total cost.

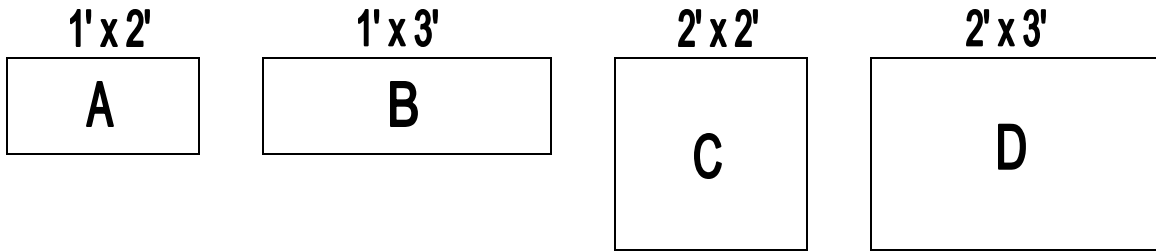
TOTAL COST OF THE ITEMS DISPLAYED: _____

Grade 5 (3rd Gen) – Obj. 25: Solve extended numerical, spatial, and statistical problems.

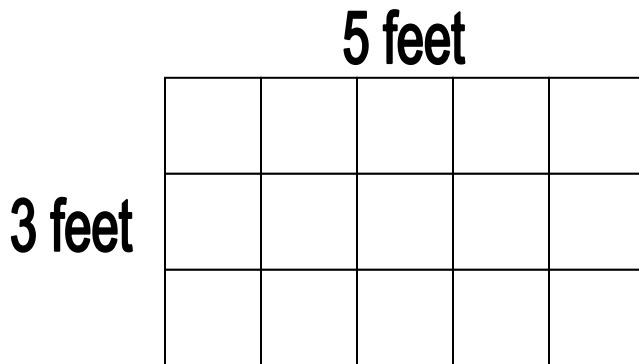


Name _____ Date _____

A quilt maker wants to sew together the 4 pieces of material shown below.

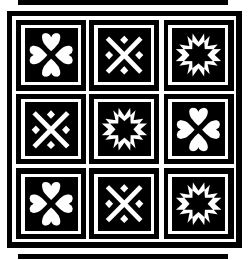


Draw on the grid below to show how the quilt maker could use all 4 pieces to make a quilt that is 3' x 5'. Label each piece with its letter.

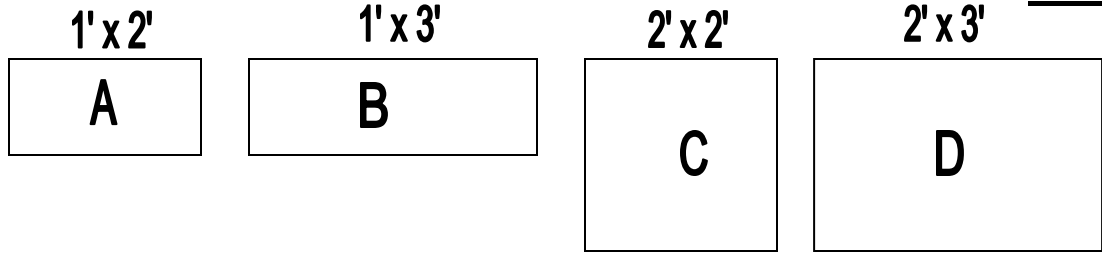


Date _____

ANSWERS



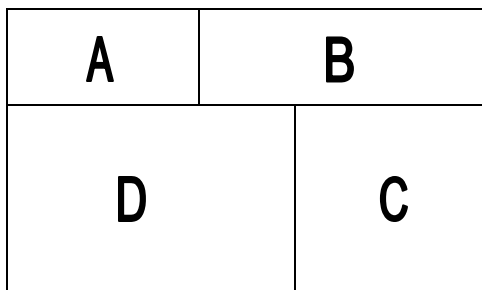
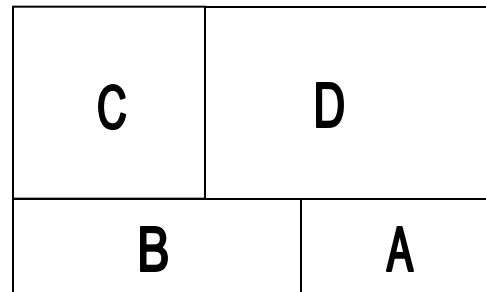
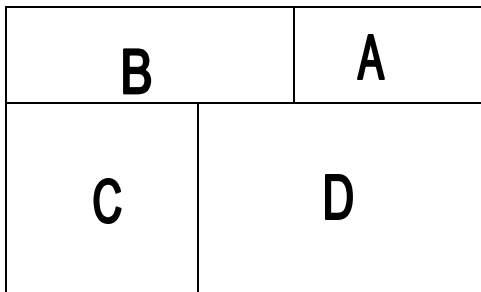
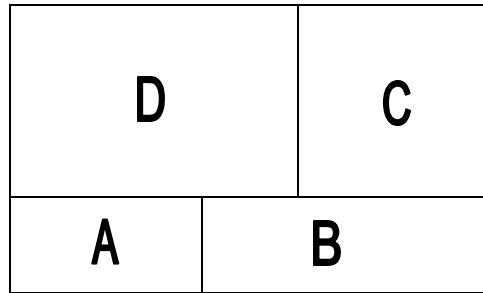
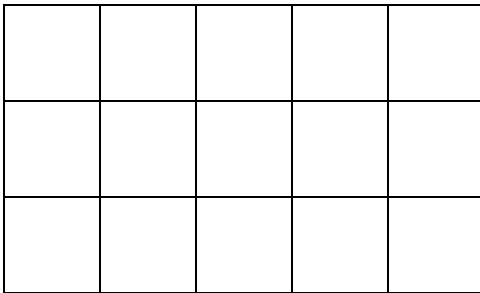
A quilt maker wants to sew together the 4 pieces of material shown below.



Draw on the grid below to show how the quilt maker could use all 4 pieces to make a quilt that is 3' x 5'. Label each piece with its letter.

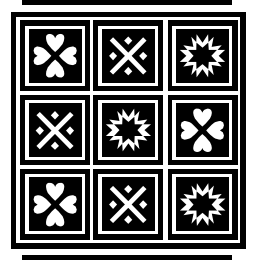
5 feet

3 feet

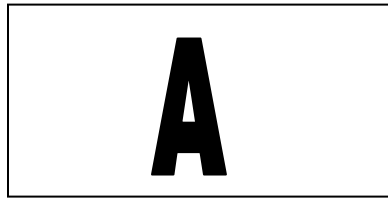


Are any students able to "explain their mathematical reasoning"? (Maybe relating this to multiplication arrays)

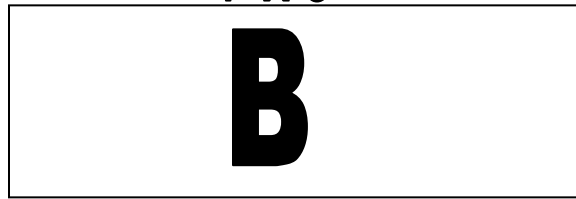
Name _____ Date _____



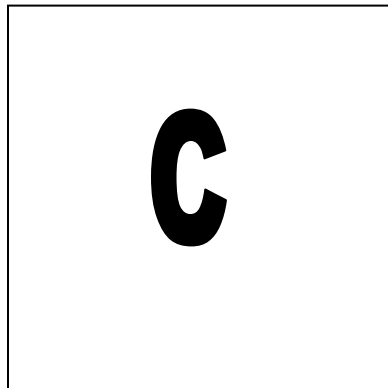
1' x 2'



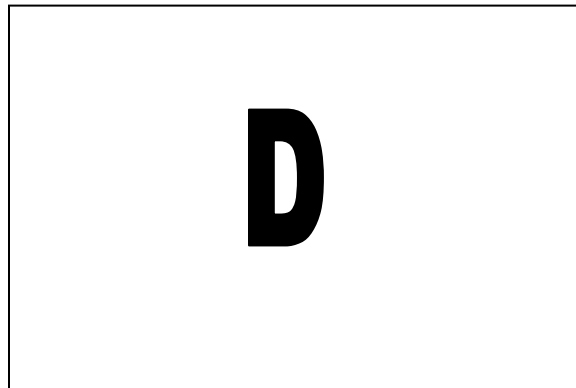
1' x 3'



2' x 2'



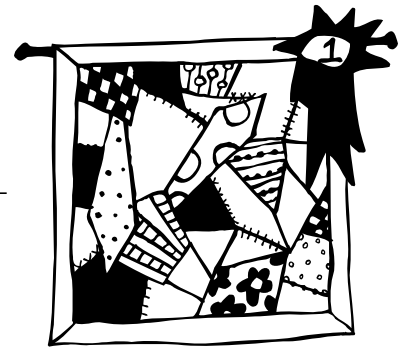
2' x 3'



5 feet

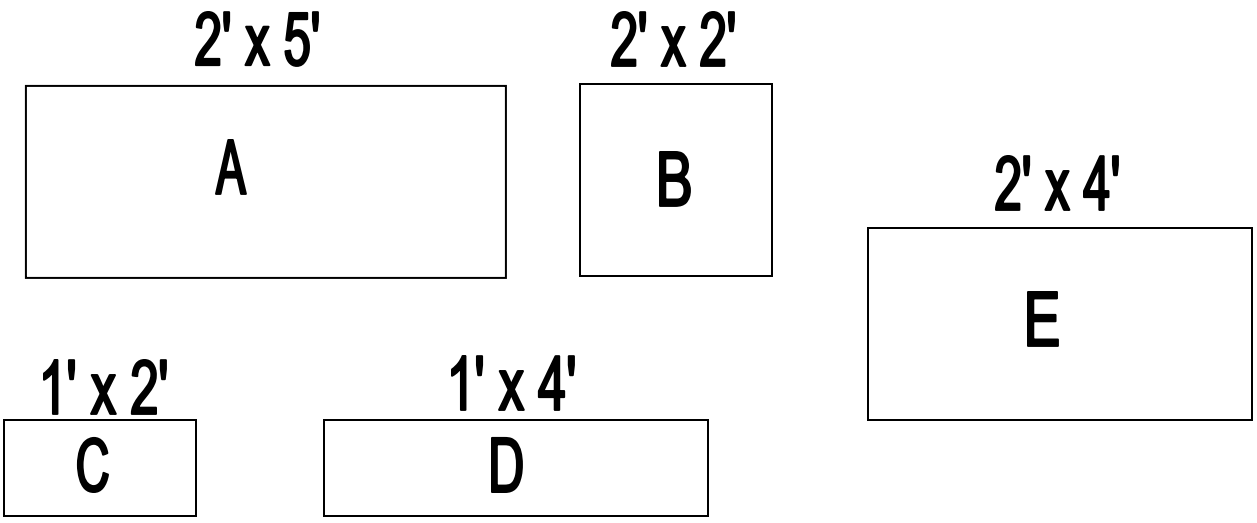
3 feet

Grade 5 (3rd Gen) –Obj. 25: Solve extended numerical, spatial, and statistical problems.

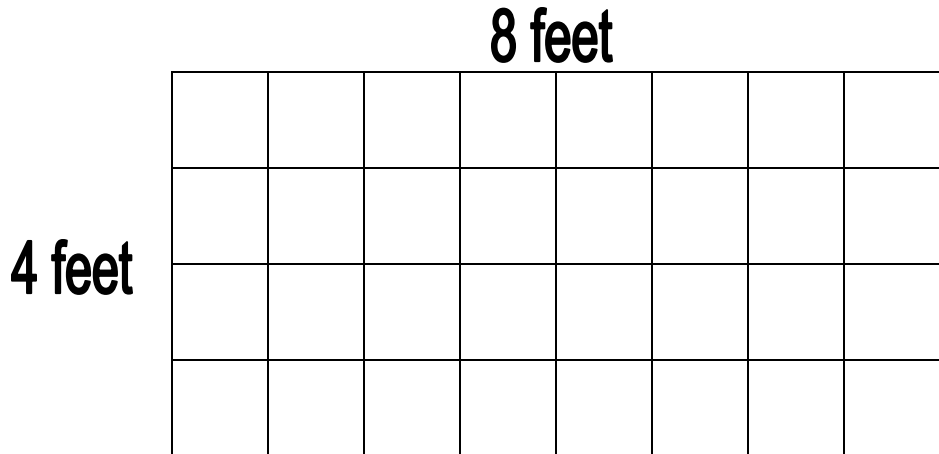


Name _____ Date _____

Paige is sewing a quilt made of left over pieces of cloth. She will use all 5 of the pieces of cloth shown below.



Draw on the grid below to show how Paige could use all 5 pieces to complete a quilt that is $4' \times 8'$. Label each piece with its letter.

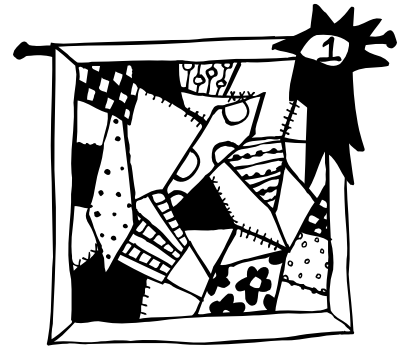


Grade 5 (3rd Gen) –Obj. 25: Solve extended numerical, spatial, and statistical problems.

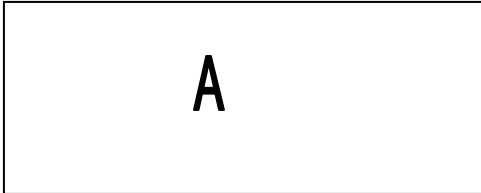
One possible solution

Name _____ Date _____

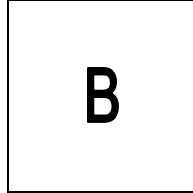
Paige is sewing a quilt made of left over pieces of cloth. She will use all 5 of the pieces of cloth shown below.



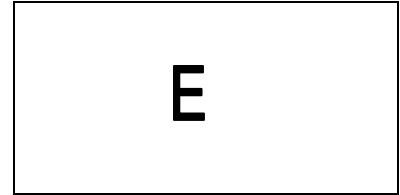
2' x 5'



2' x 2'



2' x 4'



1' x 2'

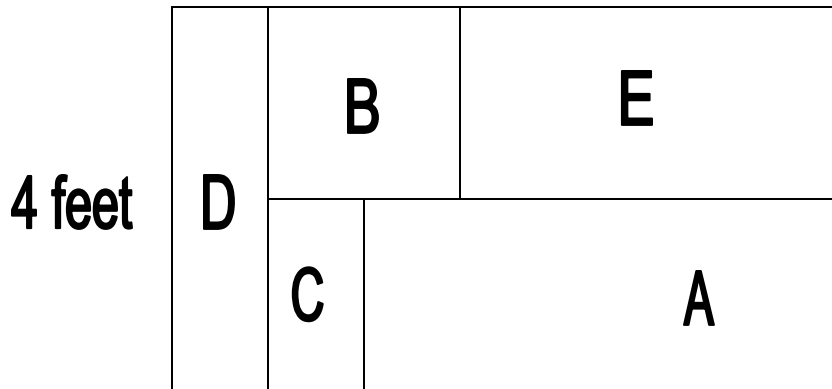


1' x 4'



Draw on the grid below to show how Paige could use all 5 pieces to complete a quilt that is 4' x 7'. Label each piece with its letter.

7 feet



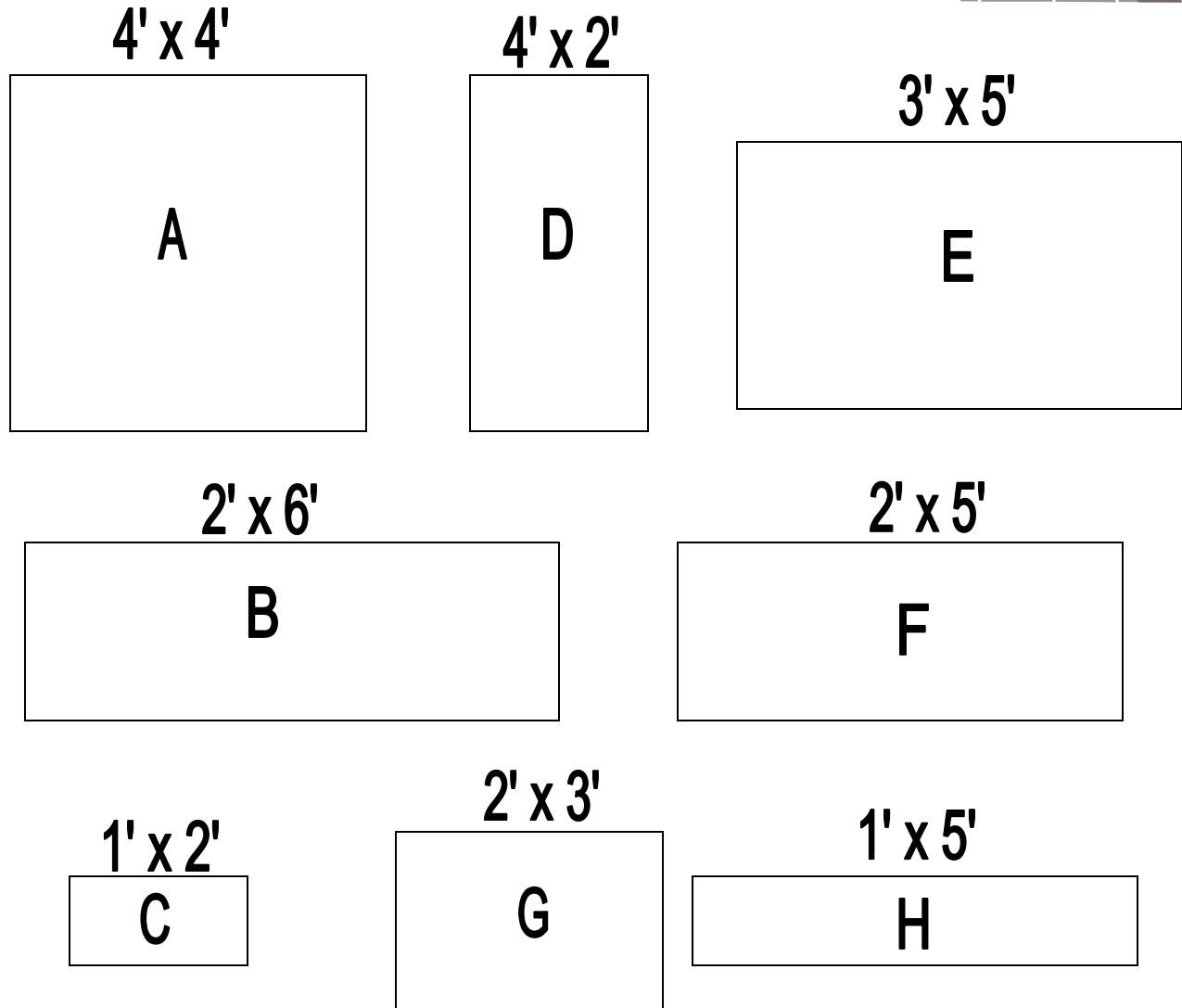
Encourage children to "explain their mathematical reasoning."

Grade 5 (3rd Gen) – Obj 25: Solve extended numerical, spatial, and statistical problems.



Name _____ Date _____

Jesse is building a patio for his back yard. He is going to use rectangular and square blocks. He has these 8 blocks shown below.



Draw on the grid on the next page to show how Jesse could use *some* of these blocks to build a patio that is $5' \times 8'$. Label each block with its letter.

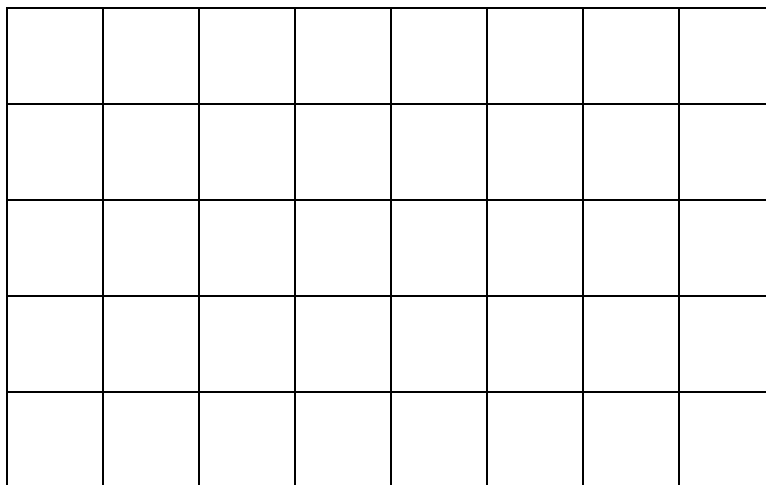
In the space below the grid, explain your mathematical reasoning.

Name _____ Date _____



8 feet

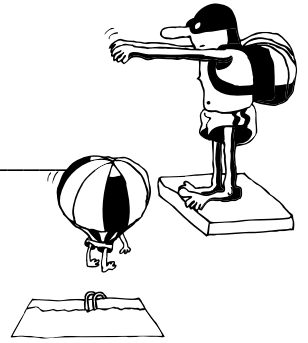
5 feet



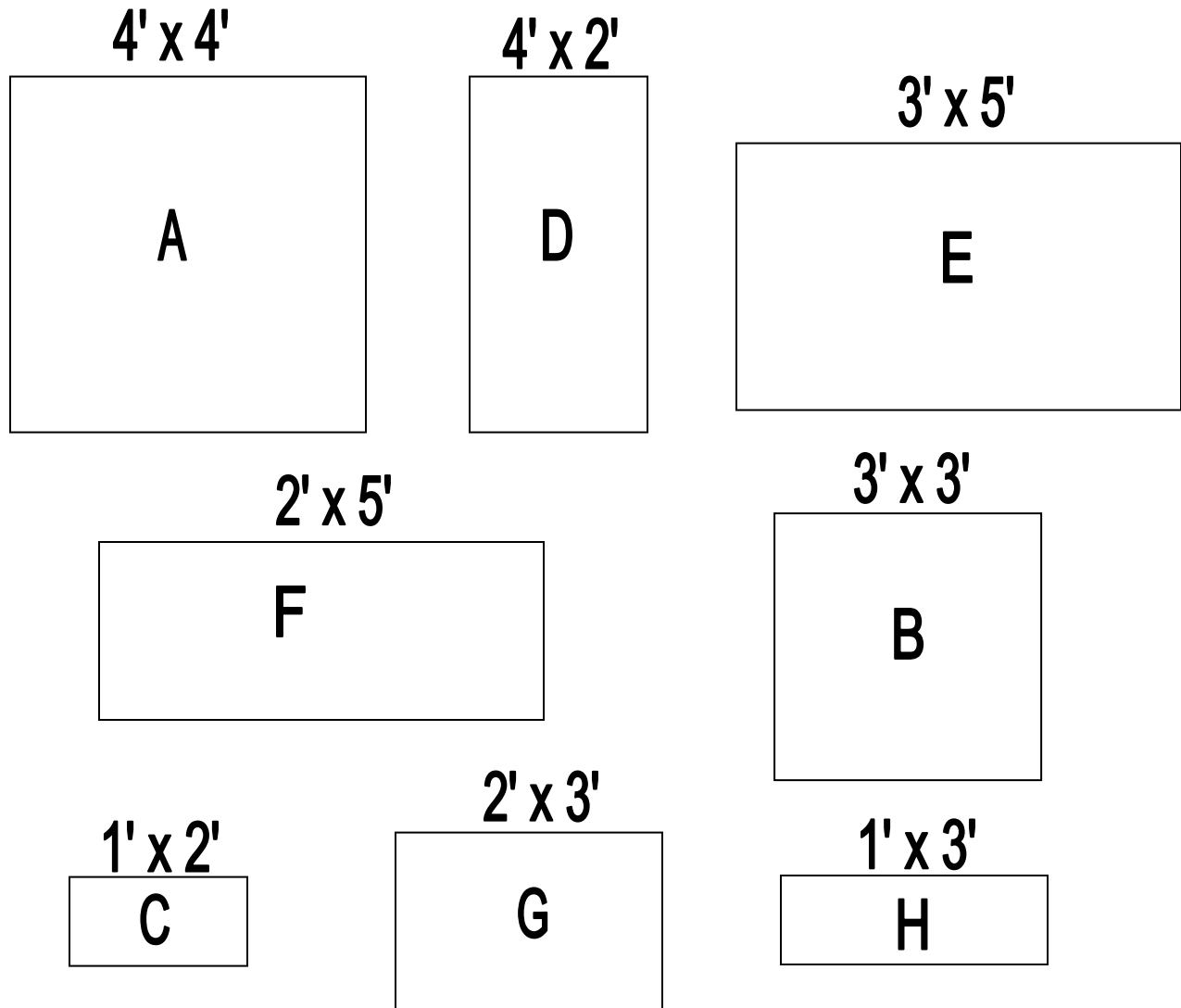
Explain your mathematical reasoning in the space below.

Grade 5 (3rd Gen) – Obj 25: Solve extended numerical, spatial, and statistical problems.

Name _____ Date _____



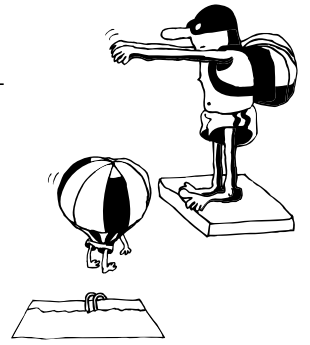
The Gomez family is building a very special wading pool for their grandchildren. The bottom of the pool will be covered with tiles. The pool maker has the 8 tiles shown below.



Draw on the grid on the next page to show how the pool maker could use *some* of these tiles to build the Gomez's pool that is $8' \times 4'$. Label each block with its letter.

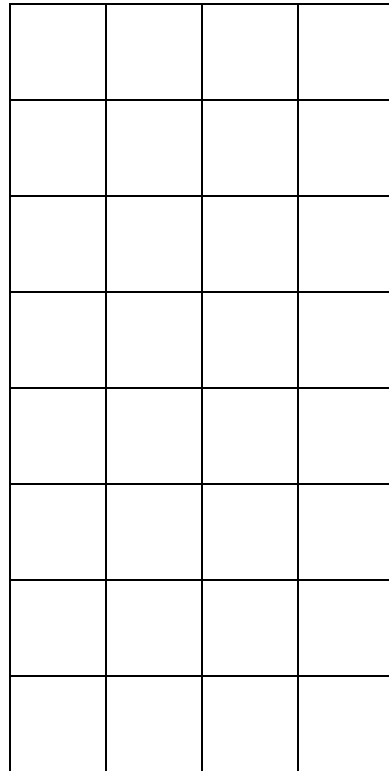
In the space below the grid, explain your mathematical reasoning.

Name _____ Date _____



4 feet

8 feet



Explain your mathematical reasoning in the space below.