# LETTER HOME

Measurement and Patterns

Dear Family Member:
In this unit, students first learn to locate objects on a map and plot points on a graph using coordinates. Then, your child will use a two-pan balance to find the mass of classroom objects. He or she will use the TIMS Laboratory Method to investigate how the mass of a group of identical objects is related to the number of objects. The mass of the objects is recorded in a data table and then graphed. Your child will draw a best-fit line, similar to the one in the illustration. Finally, he or she will use the line to make predictions. For example, using the best-fit line shown in the illustration, your child will be able to predict that the mass of 5 oat bran bars is 90 grams. These tools will be used to solve multiplication problems involving mass.
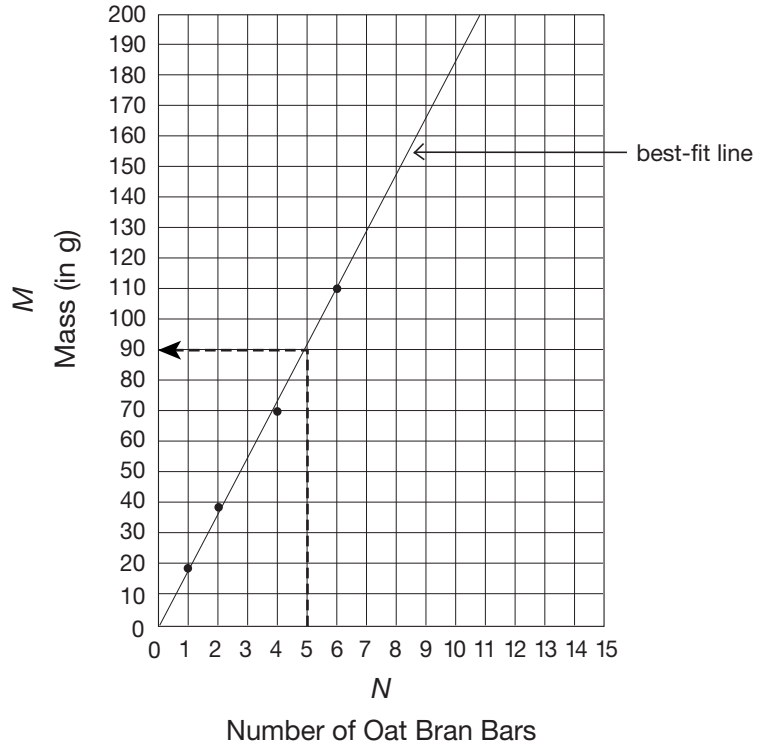
You can provide additional support at home by doing activities such as the following:

A graph with a best-fit line

- **Weigh Yourselves in Kilograms.** Some bathroom scales include kilograms as well as pounds. If you have access to such a scale, find the weight of several family members in kilograms.
- **Where Are You in Your Town?** Have your child find the approximate location of your home on a local map. When planning a trip in town, use the same map to help your child find where you are going.
- **Play Find the Panda.** In this game students use coordinates to find a panda the other player has hidden on a coordinate grid. Directions and game boards are in the *Student Activity Book.*

Panda's Game Board

Go left and front.

Chris
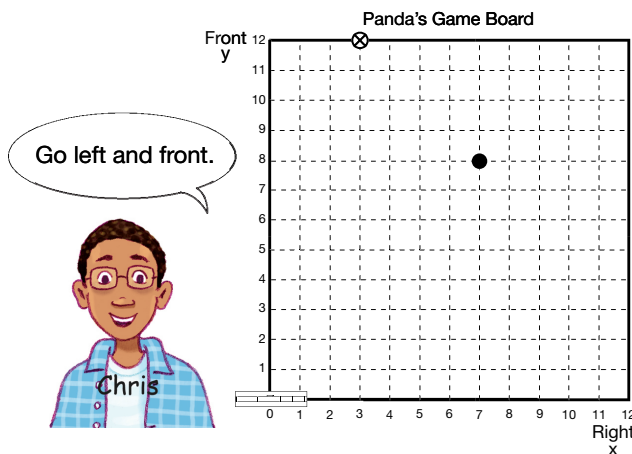
Location

|	(Right, Front) (x, y)
Panda	(3, 12)
Guess 1	(7, 8)
Guess 2	
Guess 3	
Guess 4	
Guess 5	
Guess 6	

Math Facts and Mental Math

This unit continues the systematic review and assessment of the multiplication facts.

Multiplication Facts. Students review the last six multiplication facts (4×6, 4×7, 4×8, 6×7, 6×8, 7×8) to increase fluency and to learn to apply multiplication strategies to larger numbers.

You can help your child review these facts using the flash cards that are sent home or by making a set of flash cards from index cards or scrap paper. Study 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. Good strategies include:

<u>Doubling.</u> To solve 4×6, think $2 \times 6 + 2 \times 6 = 12 + 12$, so $4 \times 6 = 24$.

$2 \times 6 = 12$
$2 \times 6 = 12$
$12 + 12 = 24$
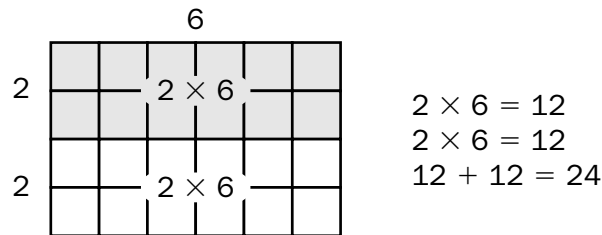
<u>Reasoning from known facts.</u> To solve 6×7, I used 6×6. $6 \times 6 = 36$ and 6×7 is 6 more. $36 + 7 = 42$, so $6 \times 7 = 42$.
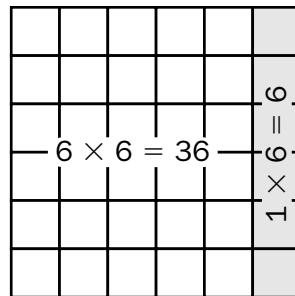
$6 \times 6 + 6 = 42$

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 mental math strategies to multiply 10s and 100s: $40 \times 8 = 3200$, $700 \times 8 = 5600$, $6 \times 700 = 4200$

Thank you for taking the time to talk with your child about what he or she is doing in math.

Sincerely,

Unit 12: Home Practice

Part 1 Triangle Flash Cards: Last Six Facts

Study for the quiz on the multiplication facts for the last six facts. Take home your Triangle Flash Cards: Last Six Facts and the list of facts you need to study. Ask a family member to choose one flash card at a time. He or she should cover the largest number. Solve the multiplication fact with the two uncovered numbers. Your teacher will tell you when the quiz on the last six facts will be.

**Part 2** Finding Locations

Give the location of each shape for this map.
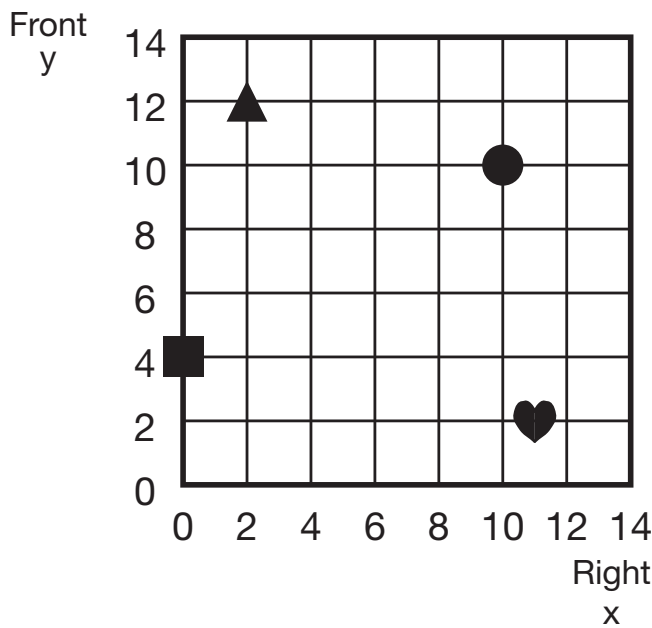
Shape	Right x	Front y	Right, Front (x, y)
▲			
■			
●			
♥			

Part 3 **Multiplication: Last Six Facts**

Use fact strategies, drawings, number lines, and number sentences to solve the following problems.

1. A + 7 constant hopper started at 0 and hopped 4 times. Use the number line below to show where it will land. Write a multiplication number sentence to show the constant hopper's trip.

<----+---->
     0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30

_____
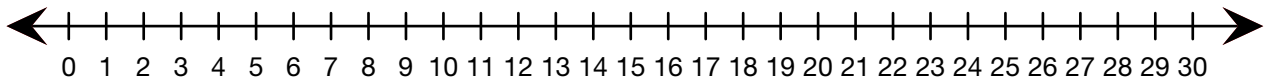
2. Show or tell how you can use 3×8 to help you solve 6×8.

3. Mara was having trouble finding the answer for $6 \times 7 = \boxed{}$. Explain how she can use 5×7 to help her find the answer.

4. Ms. Alfonso divided her class into 4 teams. There are 6 students on each team. Write a multiplication number sentence to show how many students are in Ms. Alfonso's class.

5. Miguel has a bookcase in his room that has 4 shelves. There are 8 books on each shelf. How many books are in Miguel's room?

6. Write a story and draw a picture about 8×7. Write a number sentence on your picture.

Part 4 Addition and Subtraction Practice

This is a review of things you learned earlier. Write your answers on a separate sheet of paper.

Building	City	Height (in feet)
John Hancock Tower	Chicago	1127
Willis Tower	Chicago	1454
Space Needle	Seattle	605
Empire State Building	New York	1250

Use the data in the table to help you solve the problems below. Show or tell how you solved each problem.

1. Write down the heights of the buildings in order from smallest to largest.

2. How many feet taller is the Willis Tower than the John Hancock Tower?

3. **A.** A three-story school building is about 50 feet tall. About how many times taller is the Space Needle?
   B. About how many times taller is the Willis Tower?

4. About how many times taller is the Empire State Building than the Space Needle?

5. The CN Tower in Toronto, Canada, is 361 feet taller than the Willis Tower. How tall is the CN Tower?

6. **A.** The Petronas Tower in Kuala, Malaysia, is 332 feet shorter than the CN Tower. How tall is the Petronas Tower?
   B. Is the Petronas Tower taller or shorter than the Willis Tower? By how many feet?

7. Solve the following problems. Estimate to be sure your answers are reasonable. Explain your estimation strategies.

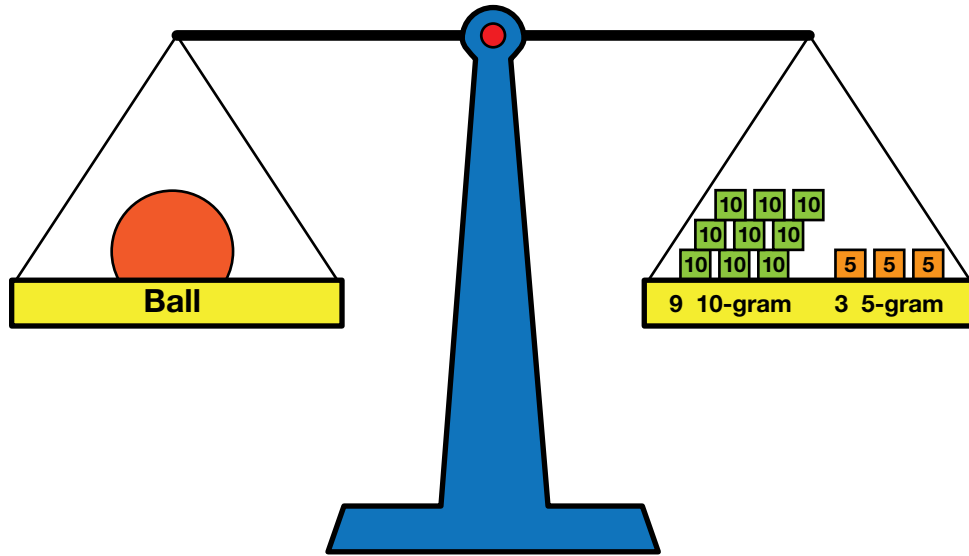   **A.** $\begin{array}{r} 7234 \\ + \ 3849 \\ \hline \end{array}$ **B.** $\begin{array}{r} 632 \\ - \ 485 \\ \hline \end{array}$

Part 5 **What is the Mass?**

Write a number sentence to show the mass of each object.

1. A ball balances nine 10-gram masses and three 5-gram masses.

   What is the mass of the ball?

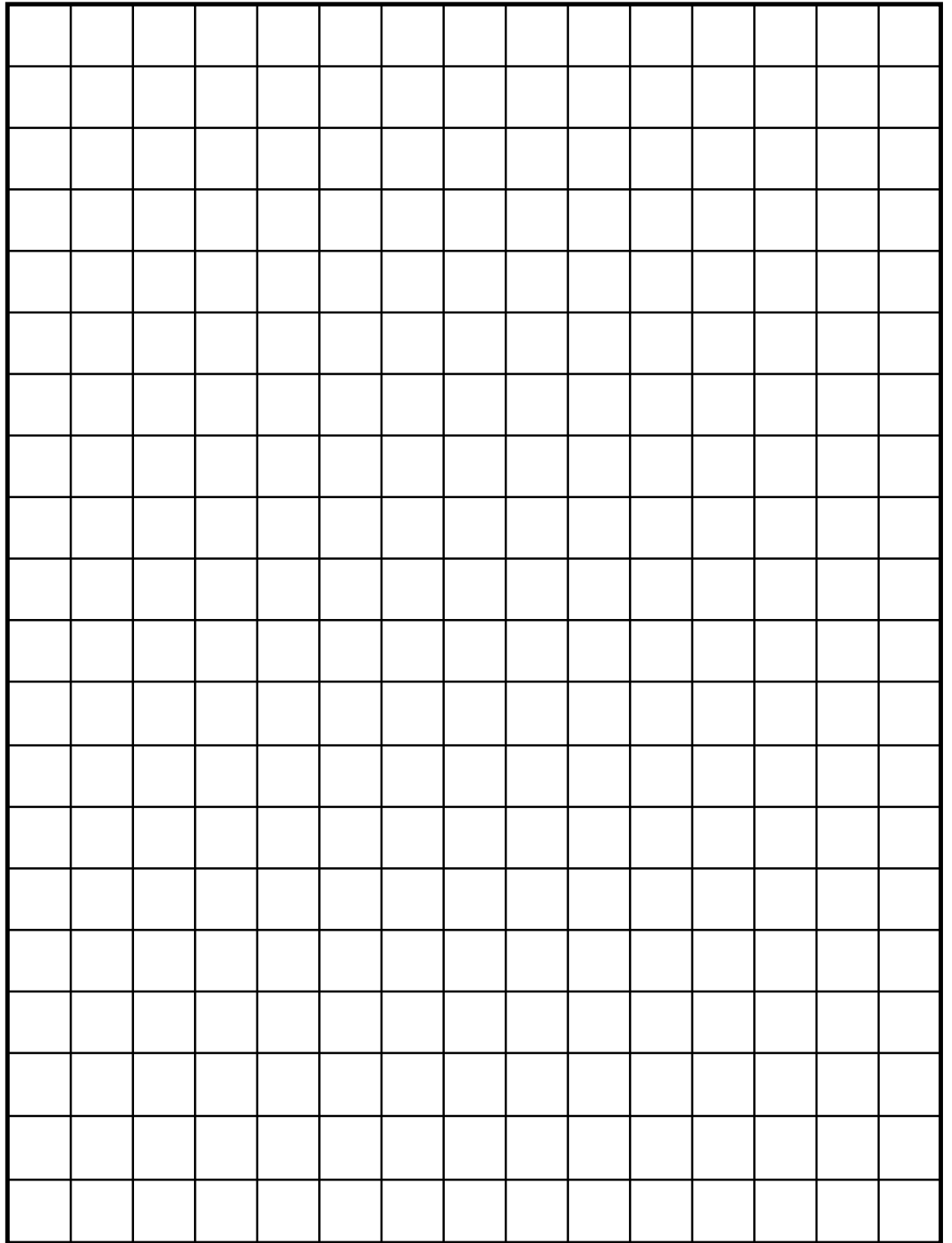|	
Ball	10 10 10 / 10 10 10 / 10 10 10 / 5 5 5
	9 10-gram 3 5-gram

   _____

2. A marker balances three 10-gram masses, nine 5-gram masses, and three 1-gram masses. What is the mass of the marker?

3. A box that has 3 crayons in it has a total mass of 60 grams. What is the mass of one crayon?

Name _____   Date _____

_____

Multiplication Facts I Know

- Circle the facts you know well.
- Keep this table and use it to help you multiply.
- As you learn more facts, you may circle them too.

×	0	1	2	3	4	5	6	7	8	9	10
0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10
2	0	2	4	6	8	10	12	14	16	18	20
3	0	3	6	9	12	15	18	21	24	27	30
4	0	4	8	12	16	20	24	28	32	36	40
5	0	5	10	15	20	25	30	35	40	45	50
6	0	6	12	18	24	30	36	42	48	54	60
7	0	7	14	21	28	35	42	49	56	63	70
8	0	8	16	24	32	40	48	56	64	72	80
9	0	9	18	27	36	45	54	63	72	81	90
10	0	10	20	30	40	50	60	70	80	90	100

Name _____   Date _____
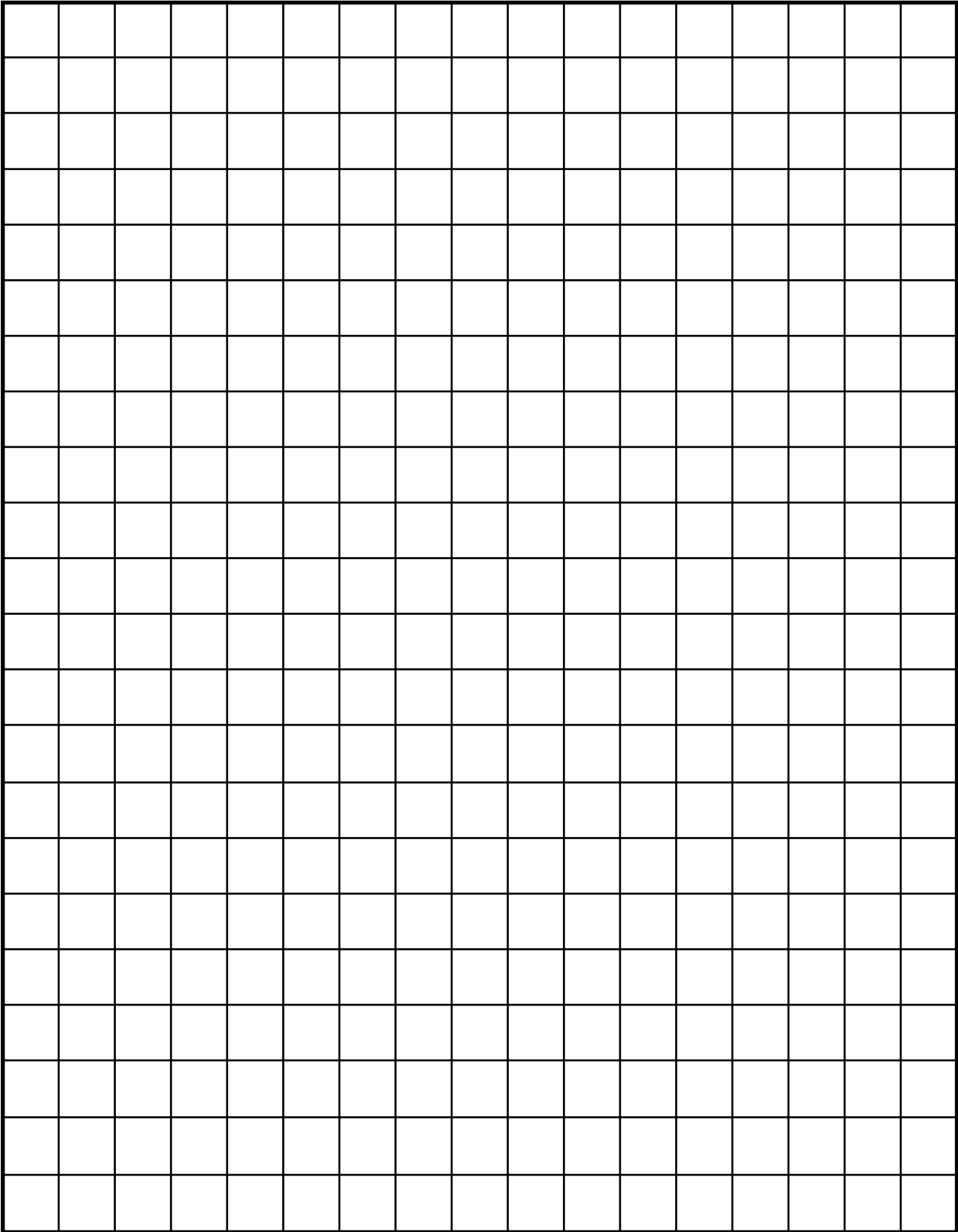
Triangle Flash Cards:
Last Six Facts

- Work with a partner. Each partner cuts out the flash cards.
- To quiz you on a multiplication fact, your partner covers the shaded number. Multiply the two uncovered numbers.
- Divide the used cards into three piles: Facts I Know Quickly, Facts I Can FIgure Out, and Facts I Need to Learn. Place the first pile in an envelope labeled "Facts I Know."
- Practice the last two piles again. Place these cards in an envelope labeled "Facts to Practice."
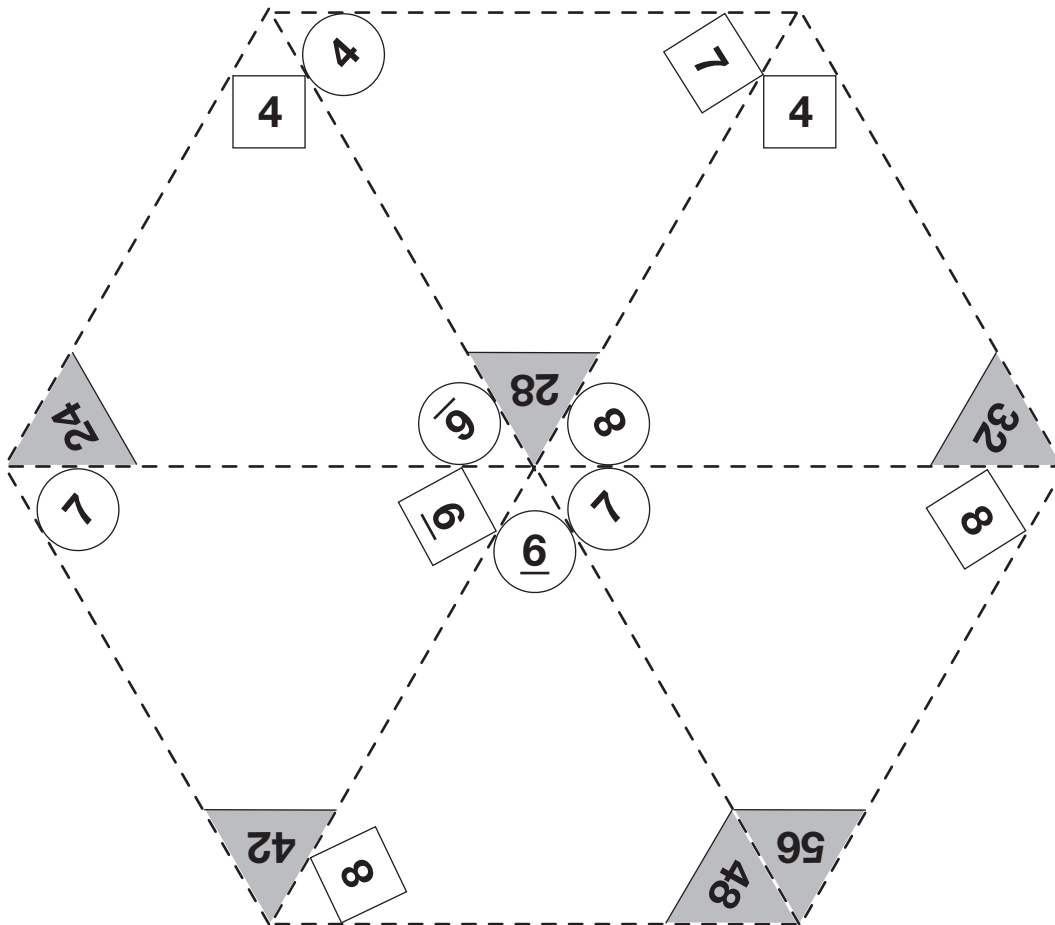
Treasure Hunt Note

Mates,

I hid treasure in your classroom at these coordinates:

(_____ , _____)

The King's men are also looking for the treasure. So I gave two more clues to your teacher that will help you find the treasure first.

Good Luck,
Pirate Jack Wren
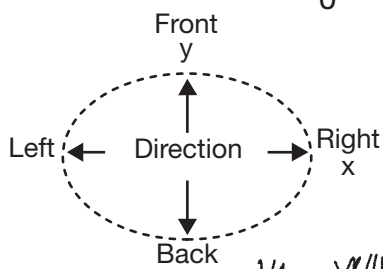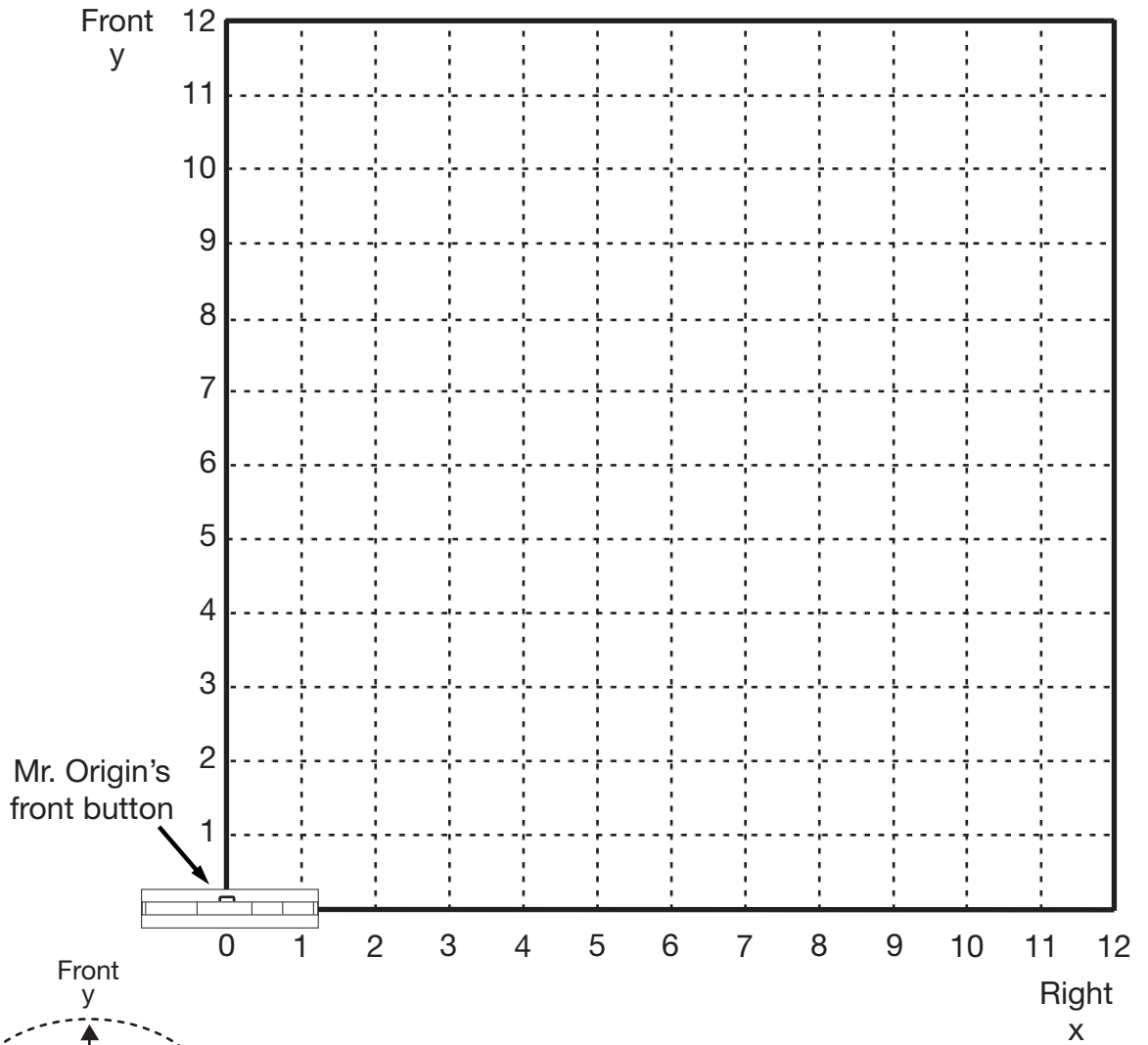
Pirate Jack's Message

Mates,

The King's men got too close to the treasure. I had to move it. It is now at these coordinates:

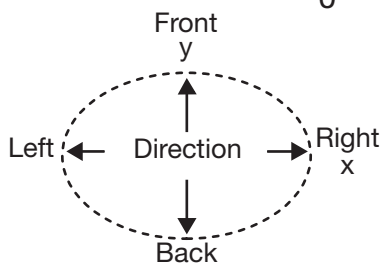(_____ , _____)

Farewell,
Pirate Jack Wren

Panda's Game Board

Front
y

(grid from 0 to 12 on both axes)

12
11
10
9
8
7
6
5
4
3
2

Mr. Origin's
front button

1

0 1 2 3 4 5 6 7 8 9 10 11 12

Right
x

Front
y

Left ← Direction → Right
x

Back

Location

	(Right, Front) (x, y)
Panda	
Guess 1	
Guess 2	
Guess 3	
Guess 4	
Guess 5	
Guess 6	

Helper's Game Board

Front
y

12
11
10
9
8
7
6
5
4
3
2
1

Mr. Origin's
front button

0 1 2 3 4 5 6 7 8 9 10 11 12

Front
y

Left ← Direction → Right
x

Back
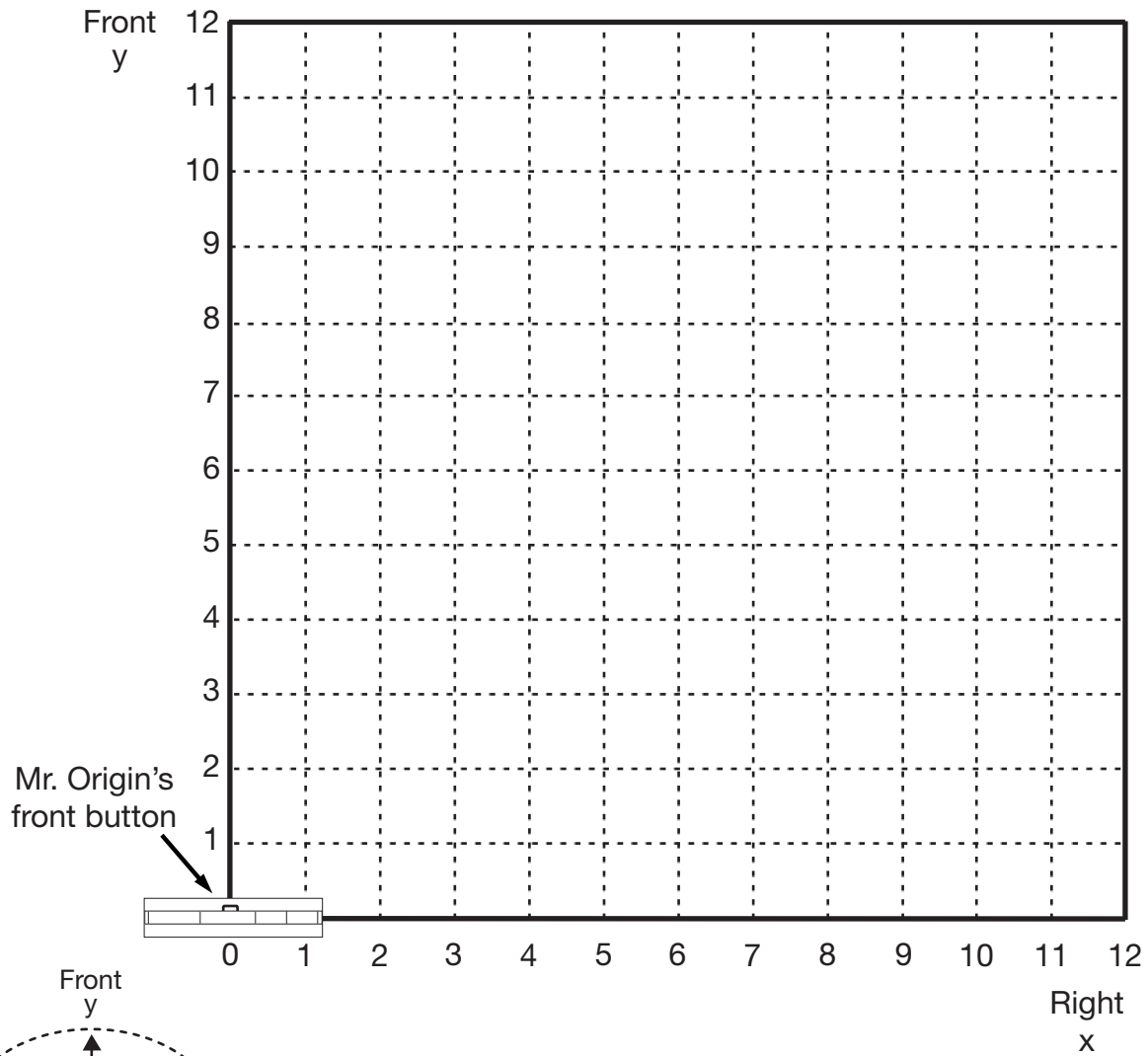
Right
x

Location

	(Right, Front) (x, y)
Guess 1	
Guess 2	
Guess 3	
Guess 4	
Guess 5	
Guess 6	

Name _____ Date _____

Maps

You will need a centimeter ruler to complete these pages.

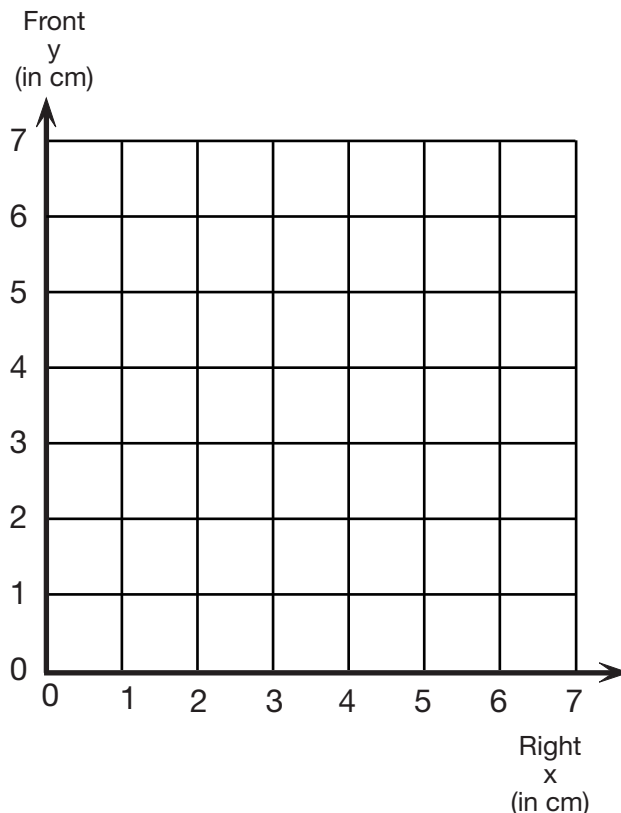**1.** Give the coordinates of the triangle, circle, and square in the data table below.

Shape	Right (in cm) x	Front (in cm) y	(Right, Front) (x, y)
▲			
●			
■			

Front
y (in cm)
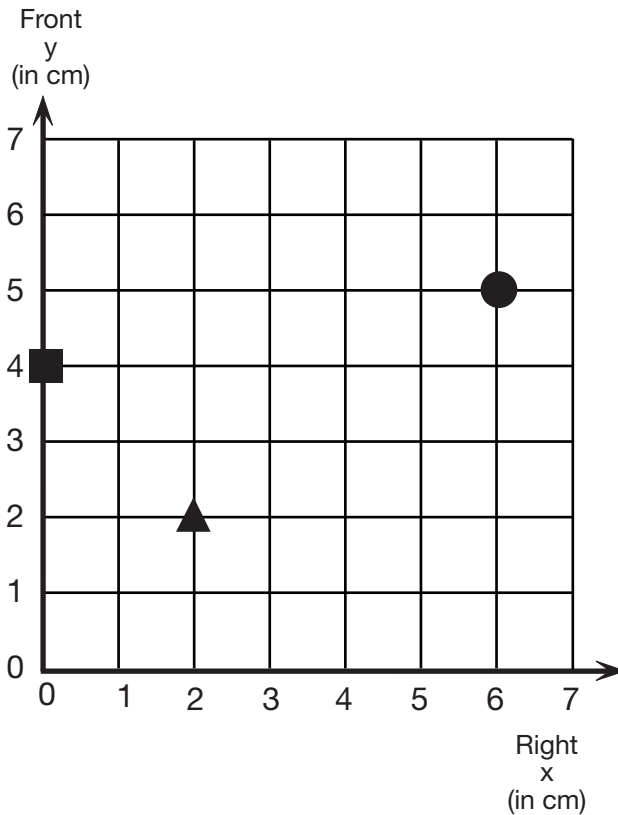
Right
x
(in cm)

2. Measure the distance from the center of the triangle to the center of the circle.
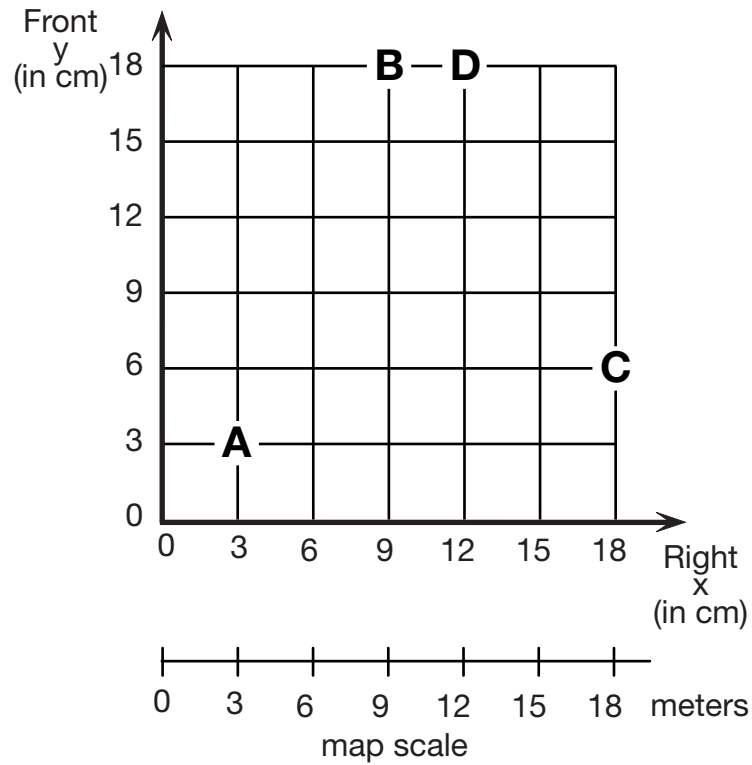
_____

3. On the grid to the right, draw the triangle, circle, and square at the correct coordinates.

Shape	Right (in cm) x	Front (in cm) y	(Right, Front) (x, y)
▲	7	6	(7, 6)
●	4	2	(4, 2)
■	0	2	(0, 2)

Front
y (in cm)

Right
x
(in cm)

Name _____   Date _____

Here is a map of a playground.

Front
y
(in cm) 18 ─────────────── B ─ D ───────
15 ┼──┼──┼──┼──┼──┼──┼
12 ┼──┼──┼──┼──┼──┼──┼
9 ┼──┼──┼──┼──┼──┼──┼
6 ┼──┼──┼──┼──┼──┼── C
3 ─ A ──┼──┼──┼──┼──┼
0 └──┴──┴──┴──┴──┴──┴──→
0   3   6   9   12 15 18   Right
x
(in cm)

0   3   6   9   12 15 18 meters
map scale

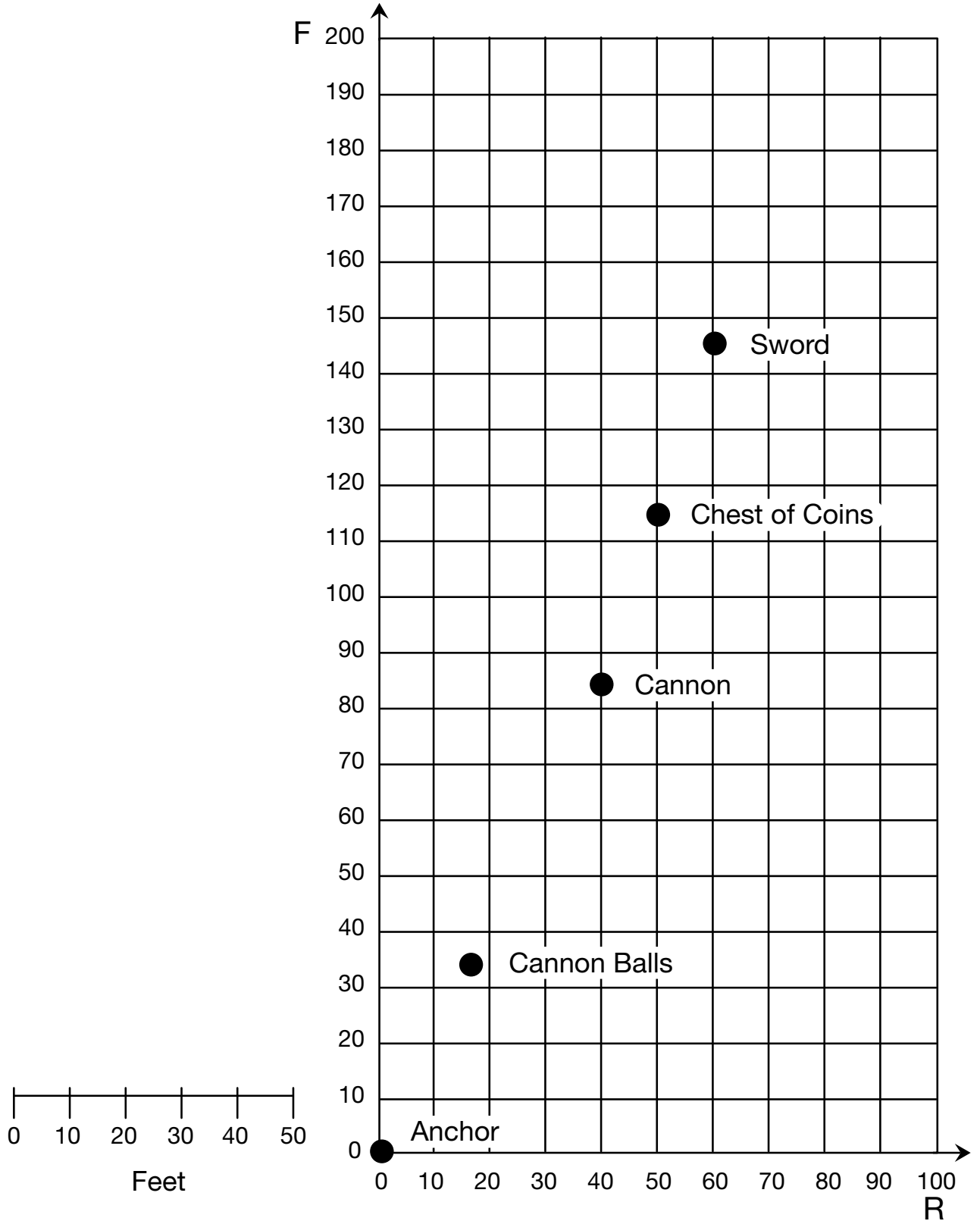**4.** Record the coordinates of each object on the map in the data table.

Object	Right (in cm) x	Front (in cm) y	(Right, Front) (x, y)
A door			
B trash can			
C flagpole			
D swing set			

5. What is the distance from the flag pole (C) to the trash can (B) on the real playground?

Treasure Map

Measuring Mass Check-In: Question 3 Feedback Box	Expec- tation	Check In	Comments
Measure mass in grams.	E6		
• Level the two-pan balance properly.			
• Balance the two pans as closely as possible.			
• Add the standard masses correctly.			
• Measure the common object within an appropriate range.			
Collect and organize data in a table.	E7		

- -

Compare to 20 Grams

Less Than 20 Grams (<)	Equal to 20 Grams (=)	Greater Than 20 Grams (>)

Tiffany's Investigation

1. A. Tiffany did an investigation like *Mass vs. Number* with pieces of chalk. Each piece of chalk had about the same mass. Here is her data table. Complete the missing data.
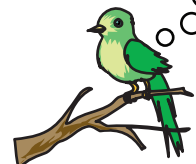
Mass of Chalk

| N
Number of Pieces of Chalk | M
Mass (in grams) |
|---|---|
| 1 | 4 |
| 2 | 8 |
| 3 | 12 |
| 4 | 16 |
| 5 | |
| 6 | 25 |
| | 28 |
| 8 | 33 |
| 9 | |
| | 40 |

2. Describe any patterns you see in the data table.

3. Use a sheet of *Centimeter Graph Paper* to make a graph of the chalk and mass data in Question 1.

- Label the horizontal axis Number of Pieces of Chalk (N).
- Label the vertical axis Mass in grams (M).
- Number the axes so you have enough room for the values N = 15 pieces of chalk and M = 100 grams.
- Use a ruler to draw a best-fit line.
- Title the graph.

Will you number the vertical axis by 5s or by 10s?

4. A. Use the data table to find the mass of ten pieces of chalk. Show or tell how you know.

   B. Use the graph to check your answer for Question 4A. Show or tell how you found your answer.

5. If Tiffany kept adding chalk until she had a mass of about 50 grams, about how many pieces of chalk would be in the pan? Show or tell how you know.

6. Predict the mass of 30 pieces of chalk. Solve the problem another way to check. Show your work to explain both strategies.

7. Tiffany decided to weigh big pieces of sidewalk chalk. Each piece was about 25 grams. She recorded a mass of 85 grams. Is that reasonable? Explain how you decided.

Name _____   Date _____

Tiffany's Investigation Feedback Box	Expect-ation	Check In	Comments
Identify and extend multiplicative patterns represented in a table or graph. [Q# 1, 3]	E1		
Solve multiplication and division problems involving mass. [Q# 4–7]	E3		
Make a point graph using ordered pairs and draw a best-fit line. [Q# 3]	E9		
Read a table to find information about a data set. [Q# 4A–6]	E10		
Read a point graph to find information about a data set. [Q# 4B–6]	E10		
Make predictions about a data set using a data table or point graph with a best-fit line. [Q# 7]	E11		

	Yes . . .	Yes, but . . .	No, but . . .	No. . .
MPE2. Find a strategy. I choose good tools and an efficient strategy for solving the problem. [Q# 4–7]				
MPE3. Check for reason-ableness. I look back at my solution to see if my answer makes sense. If it does not, I try again. [Q# 6–7]				
MPE5. Show my work. I show or tell how I arrived at my answer so someone else can understand my thinking. [Q# 4–7]				
MPE6. Use labels. I use labels to show what numbers mean. [Q# 4–7]				