

Name _____

Enrichment

3-1

Decode and Solve

Use number sense to decode the value of each shape.

1. $6 \times \square = 480$

2. $\square \times \triangle = 640$

3. $\triangle \times \square = 720$

4. $\square \times \triangle = \text{hexagon}$

$\square = \underline{\hspace{2cm}}$ $\triangle = \underline{\hspace{2cm}}$

$\square = \underline{\hspace{2cm}}$ $\text{hexagon} = \underline{\hspace{2cm}}$

5. $\text{circle} \times 200 = 1,000$

6. $\triangle \times \text{circle} = 3,000$

7. $\text{trapezoid} \times \triangle = 1,200$

8. $\text{circle} \times \text{trapezoid} = \text{pentagon}$

$\text{circle} = \underline{\hspace{2cm}}$ $\triangle = \underline{\hspace{2cm}}$

$\text{trapezoid} = \underline{\hspace{2cm}}$ $\text{pentagon} = \underline{\hspace{2cm}}$

Use the value of the shapes that you decoded above to solve these number sentences.

9. $\triangle \times \text{pentagon} = \underline{\hspace{2cm}}$

10. $\text{circle} \times \square = \underline{\hspace{2cm}}$

11. $\square \times \text{trapezoid} = \underline{\hspace{2cm}}$

12. $\triangle \times \triangle = \underline{\hspace{2cm}}$

13. $\triangle \times \text{pentagon} = \underline{\hspace{2cm}}$

14. $\square \times \triangle = \underline{\hspace{2cm}}$

15. $\square \times \triangle \times \text{pentagon} = \underline{\hspace{2cm}}$

Name _____

Enrichment

3-1

Decode and Solve

Use number sense to decode the value of each shape.

1. $6 \times \boxed{80} = 480$

2. $\boxed{80} \times \triangle 8 = 640$

3. $\triangle 8 \times \boxed{90} = 720$

4. $\boxed{90} \times \triangle 8 = \text{hexagon } 720$

$\square = 80$ $\triangle = 8$

$\text{rectangle} = 90$ $\text{hexagon} = 720$

5. $\text{circle } 5 \times 200 = 1,000$

6. $\triangle 600 \times \text{circle } 5 = 3,000$

7. $\text{trapezoid } 2 \times \triangle 600 = 1,200$

8. $\text{circle } 5 \times \text{trapezoid } 2 = \text{pentagon } 10$

$\text{circle} = 5$ $\triangle = 600$

$\text{trapezoid} = 2$ $\text{pentagon} = 10$

Use the value of the shapes that you decoded above to solve these number sentences.

9. $\triangle \times \text{pentagon} = 80$

10. $\text{circle} \times \text{rectangle} = 450$

11. $\square \times \text{trapezoid} = 160$

12. $\triangle \times \triangle 600 = 4,800$

13. $\triangle 600 \times \text{pentagon} = 6,000$

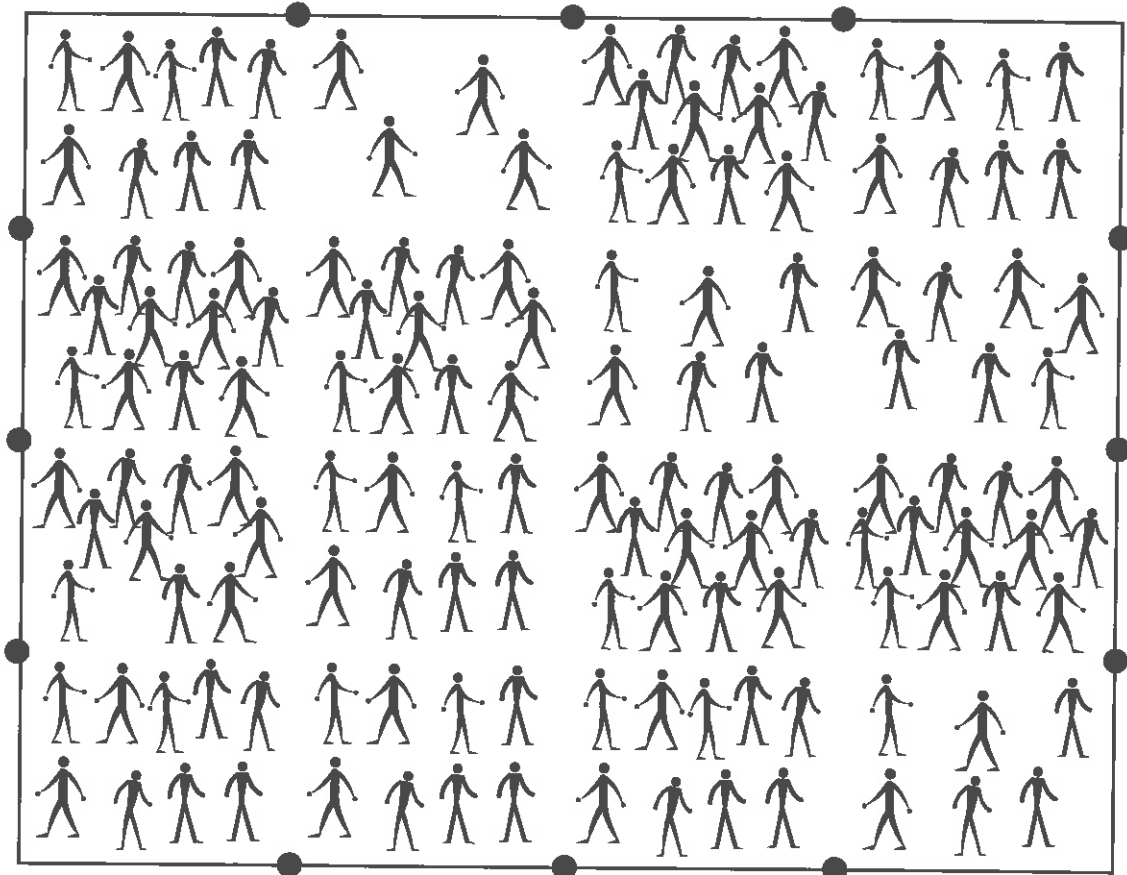
14. $\text{rectangle} \times \triangle = 54,000$

15. $\text{rectangle} \times \triangle \times \text{pentagon} = 7,200$

Name _____

Who's Here?

Do you know how to find the attendance of people at a large event? There are too many people to count one by one, so you need to estimate. This is called crowd estimation.



1. Draw 3 lines top to bottom by connecting dot to dot. Draw 3 lines going across by connecting dot to dot. Find the box that is farthest left and on the bottom. Count as many people in the box as you can. _____

2. Estimate to find the total number of people.

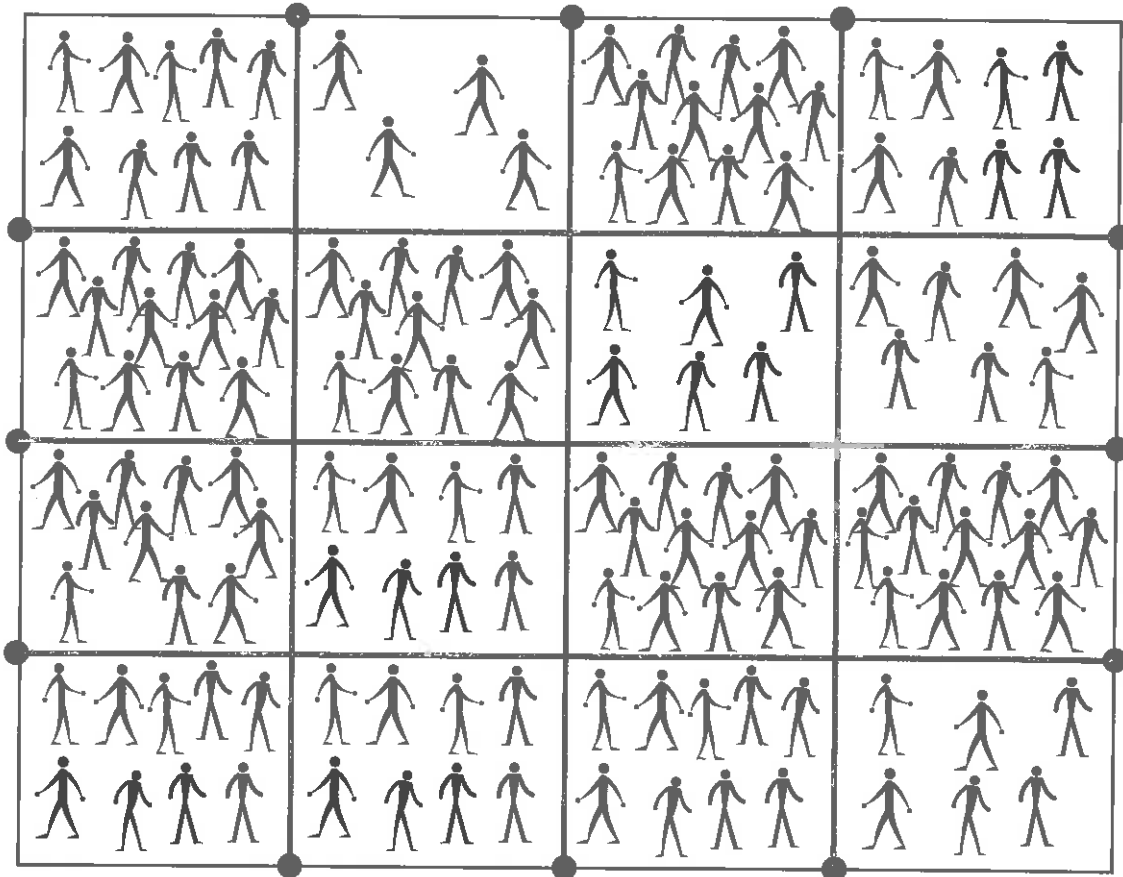
number of people \times number of boxes = total number of people

_____ \times _____ = _____

Name _____

Who's Here?

Do you know how to find the attendance of people at a large event? There are too many people to count one by one, so you need to estimate. This is called crowd estimation.



1. Draw 3 lines top to bottom by connecting dot to dot. Draw 3 lines going across by connecting dot to dot. Find the box that is farthest left and on the bottom. Count as many people in the box as you can.

9 people

2. Estimate to find the total number of people.

Sample answer:


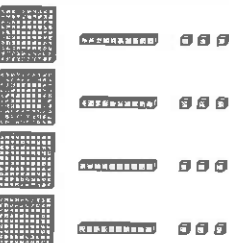




number of people \times number of boxes = total number of people

$$\underline{9} \times \underline{16} = \underline{144 \text{ people}}$$

Name _____

Multiplication Match

Draw lines to match each expression in the first column to the expression or model that represents the same problem in the second column. Then draw a line from the second column to the product in the third column.

1. 2×23		120
2. 3×231	$(6 \times 10) + (6 \times 9)$	452
3. 3×18		117
4. 4×18	$(3 \times 200) + (3 \times 30) + (3 \times 1)$	234
5. 5×24		48
6. 6×39	$(3 \times 30) + (3 \times 9)$	68
7. 4×17		72
8. 4×113	$(4 \times 10) + (4 \times 8)$	115
9. 3×39		114
10. 5×23	$(2 \times 20) + (2 \times 4)$	693
11. 2×24		46
12. 6×19	$(6 \times 30) + (6 \times 9)$	54

Name _____

Multiplication Match

Draw lines to match each expression in the first column to the expression or model that represents the same problem in the second column. Then draw a line from the second column to the product in the third column.

1. 2×23		120
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7. 4×17		72
8. 4×113	$(4 \times 10) + (4 \times 8)$	115
9. 6×39		114
10. 5×23	$(2 \times 20) + (2 \times 4)$	693
11. 2×24		46
12. 6×19	$(6 \times 30) + (6 \times 9)$	54

Name _____

Mathematical Marlena

Marlena is about to amaze you with great feats of mathematics. Marlena says, "I want you to write the number 37 three times."

1. Now she says, "Multiply the first 37 by 1."

2. Then she tells you, "Multiply the second 37 by 2."

3. She directs you to "Multiply the third 37 by 3."

4. She says, "Take each product and multiply it by 3."

5. Marlena now asks, "What is the pattern if you continue to multiply 3 times the product of 37 and the next number in sequence?"

Then Marlena begins her second math game.

6. She tells you, "Write a number between 1 and 5."

7. Then she says, "Now add 5 to the number."

8. Now she says, "Multiply the number by 2."

9. She says, "Subtract 2 from the product."

10. Marlena then says, "Now multiply that answer by 2."

11. Then she asks you to "Divide the product by 4."

12. She finally directs you to "Subtract 4 from your answer."

Marlena says, "The answer is the number you wrote down!"

Name _____

Mathematical Marlena

Marlena is about to amaze you with great feats of mathematics. Marlena says, "I want you to write the number 37 three times."

1. Now she says, "Multiply the first 37 by 1."

$$\underline{37 \times 1 = 37}$$

2. Then she tells you, "Multiply the second 37 by 2."

$$\underline{37 \times 2 = 74}$$

3. She directs you to "Multiply the third 37 by 3."

$$\underline{37 \times 3 = 111}$$

4. She says, "Take each product and multiply it by 3."

$$\underline{37 \times 3 = 111, 74 \times 3 = 222, \text{ and}}$$

$$\underline{111 \times 3 = 333}$$

5. Marlena now asks, "What is the pattern if you continue to multiply 3 times the product of 37 and the next number in sequence?"

The pattern is 444, 555, 666, 777, 888, 999

when you multiply the product of 37 and

the next number by 3.

**Sample answers
for the number 2:**

Then Marlena begins her second math game.

6. She tells you, "Write a number between 1 and 5."

2

7. Then she says, "Now add 5 to the number."

7

8. Now she says, "Multiply the number by 2."

14

9. She says, "Subtract 2 from the product."

12

10. Marlena then says, "Now multiply that answer by 2."

24

11. Then she asks you to "Divide the product by 4."

6

12. She finally directs you to "Subtract 4 from your answer."

2

Marlena says, "The answer is the number you wrote down!"

Name _____

Enrichment

3-5

Partial Product Pick

Circle the partial products for each problem.

1.
$$\begin{array}{r} 379 \\ \times 9 \\ \hline \end{array}$$

81	270	810	63
27	630	2,700	8,100

2.
$$\begin{array}{r} 446 \\ \times 8 \\ \hline \end{array}$$

32	160	48	3,200
480	320	3,600	3,500

3.
$$\begin{array}{r} 1,937 \\ \times 6 \\ \hline \end{array}$$

180	42	540	60
480	320	6,000	5,400

4.
$$\begin{array}{r} 1,251 \\ \times 7 \\ \hline \end{array}$$

70	14	7	1,000
350	7,000	35	1,400

5.
$$\begin{array}{r} 9,033 \\ \times 6 \\ \hline \end{array}$$

600	54	18	5,400
1,800	54,000	540	180

6.
$$\begin{array}{r} 6,565 \\ \times 4 \\ \hline \end{array}$$

200	24,000	20	20,000
240	24	2,400	2,000

Name _____

Partial Product Pick

Circle the partial products for each problem.

1.
$$\begin{array}{r} 379 \\ \times 9 \\ \hline \end{array}$$

81	270	810	63
27	630	2,700	8,100

2.
$$\begin{array}{r} 446 \\ \times 8 \\ \hline \end{array}$$

32	160	48	3,200
480	320	3,600	3,500

3.
$$\begin{array}{r} 1,937 \\ \times 6 \\ \hline \end{array}$$

180	42	540	60
480	320	6,000	5,400

4.
$$\begin{array}{r} 1,251 \\ \times 7 \\ \hline \end{array}$$

70	14	7	1,000
350	7,000	35	1,400

5.
$$\begin{array}{r} 9,033 \\ \times 6 \\ \hline \end{array}$$

600	54	18	5,400
1,800	54,000	540	180

6.
$$\begin{array}{r} 6,565 \\ \times 4 \\ \hline \end{array}$$

200	24,000	20	20,000
240	24	2,400	2,000

Name _____

Multiply Without a Pencil

You know different methods you can use to find products.

Try to solve the problems below in your head.

If you find the solution mentally, circle **MM** for *mental math*.

If you need to write out the solution, circle **PP** for *paper and pencil*.

1. Fred drove on Interstate 95 for 4 hours. He went 55 miles an hour the whole time. How many miles did he drive?

MM or PP

2. Celie read 6 chapters of a mystery on Saturday. Each chapter had 25 pages. How many pages did Celie read that day?

MM or PP

3. Darius practiced his guitar 15 minutes a day for 7 days. How many minutes did Darius spend practicing guitar that week?

MM or PP

4. A baker makes 72 cookies per batch. At that rate, how many cookies would the baker make in 3 batches?

MM or PP

5. Eleni does 40 sit-ups every morning before she gets ready for school. How many sit-ups will Eleni do in 5 days?

MM or PP

6. A large bag of dry dog food weighs 30 pounds. What is the total weight of 4 large bags of dry dog food?

MM or PP

7. A bag of gravel weighs 45 pounds. What is the total weight of 4 bags of gravel?

MM or PP

8. A crate of melons weighs 50 pounds. What is the total weight of 5 crates of melons?

MM or PP

9. There are 52 cards in a standard deck of playing cards. How many cards would be in 6 standard decks?

MM or PP

10. A piano has 88 keys. Some are white and some are black. How many keys would there be on 5 pianos?

MM or PP

11. Which problems were easiest to solve in your head? Which ones were harder for you to do mentally? Explain.

Name _____

Enrichment

3-6

Multiply Without a Pencil

You know different methods you can use to find products.

Try to solve the problems below in your head.

If you find the solution mentally, circle **MM** for *mental math*.

If you need to write out the solution, circle **PP** for *paper and pencil*.

**Methods chosen
will vary.**

1. Fred drove on Interstate 95 for 4 hours. He went 55 miles an hour the whole time. How many miles did he drive?

220 miles

MM or PP

2. Celie read 6 chapters of a mystery on Saturday. Each chapter had 25 pages. How many pages did Celie read that day?

150 pages

MM or PP

3. Darius practiced his guitar 15 minutes a day for 7 days. How many minutes did Darius spend practicing guitar that week?

105 minutes

MM or PP

4. A baker makes 72 cookies per batch. At that rate, how many cookies would the baker make in 3 batches?

216 cookies

MM or PP

5. Eleni does 40 sit-ups every morning before she gets ready for school. How many sit-ups will Eleni do in 5 days?

200 sit-ups

MM or PP

6. A large bag of dry dog food weighs 30 pounds. What is the total weight of 4 large bags of dry dog food?

120 pounds

MM or PP

7. A bag of gravel weighs 45 pounds. What is the total weight of 4 bags of gravel?

180 pounds

MM or PP

8. A crate of melons weighs 50 pounds. What is the total weight of 5 crates of melons?

250 pounds

MM or PP

9. There are 52 cards in a standard deck of playing cards. How many cards would be in 6 standard decks?

312 cards

MM or PP

10. A piano has 88 keys. Some are white and some are black. How many keys would there be on 5 pianos?

440 keys

MM or PP

11. Which problems were easiest to solve in your head? Which ones were harder for you to do mentally? Explain.

Answers will vary.

Name _____

Rhyming Multiplication

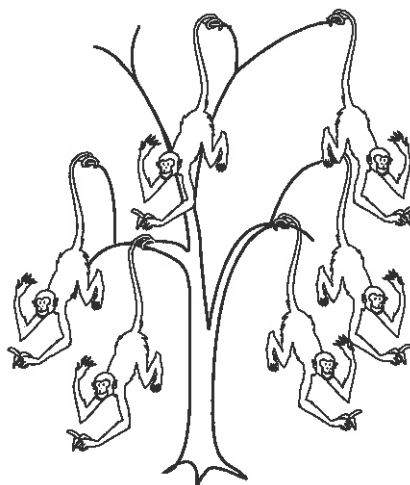
Write a number sentence for each verse.

1. As I was going to the store
I saw seven dogs and one dog more.
Each dog had fifteen bones to chew.
How many bones came into view?

2. 18 marchers marched in a row.
Each marcher had 4 horns to blow.
They blew all the horns, both big and small.
How many horns did they blow in all?

3. Six monkeys were kind of thrifty.
They all loved bananas and they each ate fifty.
Bananas to monkeys are a special treat.
How many bananas did the monkeys eat?

4. What did I see on the street today?
Seventy-seven fire trucks came my way.
Nine firefighters on each truck waved at me.
How many firefighters did I see?



Name _____

Enrichment

3-7

Rhyming Multiplication

Write a number sentence for each verse.

1. As I was going to the store
I saw seven dogs and one dog more.
Each dog had fifteen bones to chew.
How many bones came into view?

$$8 \times 15 = 120$$

2. 18 marchers marched in a row.
Each marcher had 4 horns to blow.
They blew all the horns, both big and small.
How many horns did they blow in all?

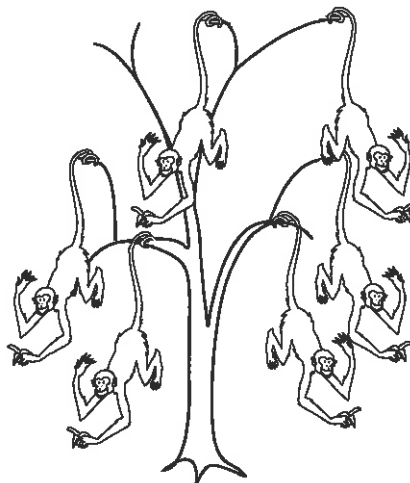
$$18 \times 4 = 72$$

3. Six monkeys were kind of thrifty.
They all loved bananas and they each ate fifty.
Bananas to monkeys are a special treat.
How many bananas did the monkeys eat?

$$6 \times 50 = 300$$

4. What did I see on the street today?
Seventy-seven fire trucks came my way.
Nine firefighters on each truck waved at me.
How many firefighters did I see?

$$77 \times 9 = 693$$



Name _____

Roll Out the Fun

Find the missing factors or products to complete each equation.
Then complete the sentences in the word problems.

Zippy Roller Coaster
Height: 114 ft
Length: 2,711 ft

Souvenirs
Baseball cap—157 tickets
Stuffed animal—318 tickets

1. Neil's family and Reena's family spent two days at the amusement park. On Fridays, family passes cost \$119. On Saturdays, family passes cost \$139.

$2 \times 119 = \underline{\hspace{2cm}}$ $2 \times 139 = \underline{\hspace{2cm}}$

In all, the two families spent _____ on Friday

and _____ on Saturday.

2. The world's longest roller coaster is 3 times the length of the Zippy roller coaster. The world's tallest roller coaster is 4 times the height of the Zippy roller coaster.

_____ $\times 3 =$ _____ $114 \times$ _____ $=$ _____

The world's longest roller coaster is _____ feet long.

The world's tallest roller coaster is _____ feet high.

3. Before leaving the amusement park, Reena went to the souvenir store to trade in her tickets. She chose 1 baseball cap for each of her 3 friends. Then she chose 2 stuffed animals for herself.

_____ $\times 157 =$ _____ $2 \times$ _____ $=$ _____

Reena used _____ tickets to get gifts for her friends

and _____ tickets to get the stuffed animals.

Name _____

Enrichment

3-8

Roll Out the Fun

Find the missing factors or products to complete each equation.
Then complete the sentences in the word problems.

Zippy Roller Coaster

Height: 114 ft

Length: 2,711 ft

Souvenirs

Baseball cap—157 tickets

Stuffed animal—318 tickets

1. Neil's family and Reena's family spent two days at the amusement park. On Fridays, family passes cost \$119. On Saturdays, family passes cost \$139.

$$2 \times 119 = \underline{238} \quad 2 \times 139 = \underline{278}$$

In all, the two families spent \$238 on Friday
and \$278 on Saturday.

2. The world's longest roller coaster is 3 times the length of the Zippy roller coaster. The world's tallest roller coaster is 4 times the height of the Zippy roller coaster.

$$\underline{2,711} \times 3 = \underline{8,133} \quad 114 \times \underline{4} = \underline{456}$$

The world's longest roller coaster is 8,133 feet long.

The world's tallest roller coaster is 456 feet high.

3. Before leaving the amusement park, Reena went to the souvenir store to trade in her tickets. She chose 1 baseball cap for each of her 3 friends. Then she chose 2 stuffed animals for herself.

$$\underline{3} \times 157 = \underline{471} \quad 2 \times \underline{318} = \underline{636}$$

Reena used 471 tickets to get gifts for her friends
and 636 tickets to get the stuffed animals.

Name _____

Shaping Factors and Products

Each problem below uses shapes instead of numbers.

Each shape has a value of 0, 1, 2, 3, 4, or 5.

The shapes have the same value for all problems.

As you figure out the value of each shape, fill in the key at the right.

Then rewrite and solve each problem.

<p>1.</p> $\begin{array}{r} \heartsuit \ \spadesuit \\ \times \quad \spadesuit \\ \hline \otimes \ \heartsuit \ \spadesuit \end{array}$	<p>Rewrite and solve here.</p>
<p>2.</p> $\begin{array}{r} \heartsuit \ \otimes \ \spadesuit \\ \times \quad \heartsuit \\ \hline \circ \ \clubsuit \ \blacktriangledown \end{array}$	<p>Rewrite and solve here.</p>
<p>3.</p> $\begin{array}{r} \spadesuit \ \blacktriangledown \ \spadesuit \\ \times \quad \clubsuit \\ \hline \otimes, \spadesuit \ \otimes \ \spadesuit \end{array}$	<p>Rewrite and solve here.</p>
<p>4.</p> $\begin{array}{r} \otimes, \heartsuit \ \otimes \ \blacktriangledown \\ \times \quad \heartsuit \\ \hline \heartsuit, \circ \ \heartsuit \ \blacktriangledown \end{array}$	<p>Rewrite and solve here.</p>
<p>5.</p> $\begin{array}{r} \heartsuit, \otimes \ \blacktriangledown \ \spadesuit \\ \times \quad \heartsuit \\ \hline \circ, \heartsuit \ \otimes \ \blacktriangledown \end{array}$	<p>Rewrite and solve here.</p>

KEY	
0 =	_____
1 =	\otimes _____
2 =	_____
3 =	_____
4 =	_____
5 =	\spadesuit _____

Name _____

Shaping Factors and Products

Each problem below uses shapes instead of numbers.







Each shape has a value of 0, 1, 2, 3, 4, or 5.

The shapes have the same value for all problems.

As you figure out the value of each shape, fill in the key at the right.

Then rewrite and solve each problem.

<p>1.</p> $\begin{array}{r} \heartsuit \spadesuit \\ \times \quad \spadesuit \\ \hline \otimes \heartsuit \spadesuit \end{array}$	<p>Rewrite and solve here.</p> $25 \times 5 = 125$
<p>2.</p> $\begin{array}{r} \heartsuit \otimes \spadesuit \\ \times \quad \heartsuit \\ \hline \circ \clubsuit \blacktriangledown \end{array}$	<p>Rewrite and solve here.</p> $215 \times 2 = 430$
<p>3.</p> $\begin{array}{r} \spadesuit \blacktriangledown \spadesuit \\ \times \quad \clubsuit \\ \hline \otimes, \spadesuit \otimes \spadesuit \end{array}$	<p>Rewrite and solve here.</p> $505 \times 3 = 1,515$
<p>4.</p> $\begin{array}{r} \otimes, \heartsuit \otimes \blacktriangledown \\ \times \quad \heartsuit \\ \hline \heartsuit, \circ \heartsuit \blacktriangledown \end{array}$	<p>Rewrite and solve here.</p> $1,210 \times 2 = 2,420$
<p>5.</p> $\begin{array}{r} \heartsuit, \otimes \blacktriangledown \spadesuit \\ \times \quad \heartsuit \\ \hline \circ, \heartsuit \otimes \blacktriangledown \end{array}$	<p>Rewrite and solve here.</p> $2,105 \times 2 = 4,210$

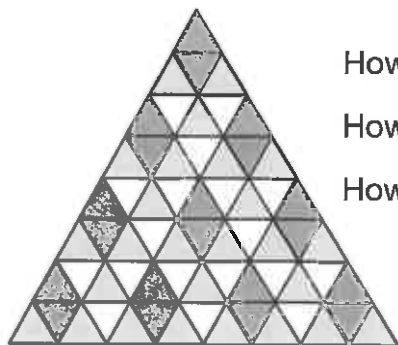
KEY	
0 =	
1 =	
2 =	
3 =	
4 =	
5 =	

Name _____

How Many Are There?

Use addition, subtraction, or multiplication to find the number of each shape in the patterns below. Then explain how you found your answers.

1.



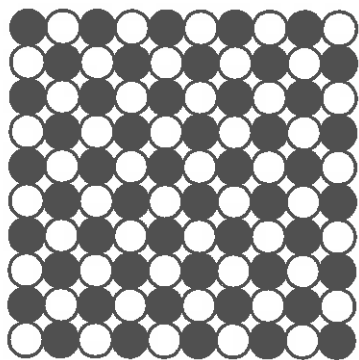
How many  are in the pattern? _____

How many  are in the pattern? _____

How many  are in the pattern? _____

How did you find the number of each shape in the pattern?

2.



How many  are in the pattern? _____

How many  are in the pattern? _____

How many  are in the pattern? _____

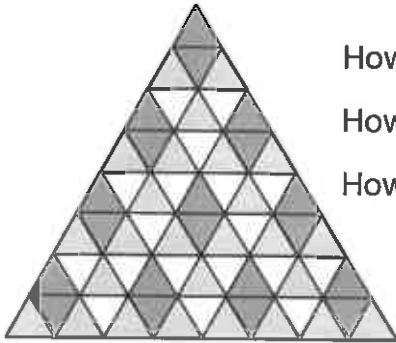
How did you find the number of each shape in the pattern?

Name _____

How Many Are There?

Use addition, subtraction, or multiplication to find the number of each shape in the patterns below. Then explain how you found your answers.

1.



How many  are in the pattern?

How many  are in the pattern?

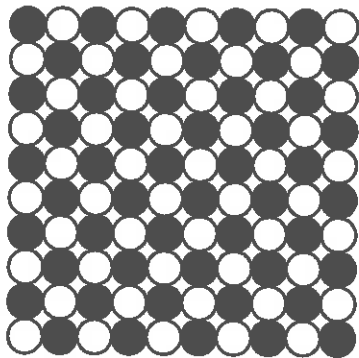
How many  are in the pattern?

10
26
18

How did you find the number of each shape in the pattern?

Students' answers should include the use of addition, subtraction, or multiplication.

2.



How many  are in the pattern?

How many  are in the pattern?

How many  are in the pattern?

81
50
50

How did you find the number of each shape in the pattern?

Students' answers should include the use of addition, subtraction, or multiplication.