1. Bri drew a picture. Choose all of the equations that represent Bri's picture.
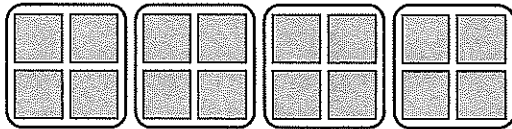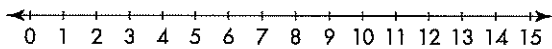

☐ $1 + 1 + 1 + 1 = 4$

☐ $4 + 4 + 4 = 12$

☐ $4 + 4 + 4 + 4 = 16$

☐ $4 \times 2 = 8$

☐ $4 \times 4 = 16$

2. Lance is putting 2 apple slices on each of 6 salads. What is the total number of apple slices? Show the problem on a number line. Then write the answer.

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

⬭ apple slices

3. To water 4 plants, Noah needs to fill his watering can 2 times. He has 16 plants and wants to know how many times he will fill his watering can in all. Which tools would be appropriate for Noah to use to solve the problem? Choose all that apply.

☐ Cubes

☐ Ruler

☐ Grid paper

☐ Counters

☐ Pennies

4. Fred keeps his coin collection organized in an array. Draw a different array that has the same factors. Then write multiplication equations for each array.
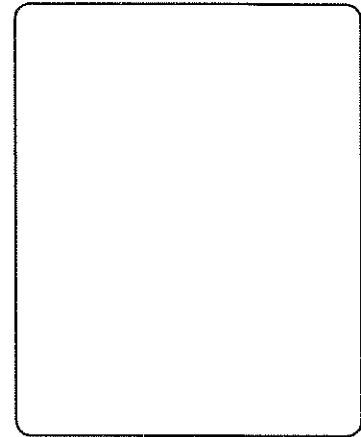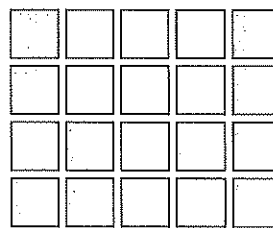
5. Daniel kicked five 3-point field goals in his football game. For questions 5a-5d, choose Yes or No to tell if the equation shows a way to find the number of points that Daniel scores.

5a. $5 + 5 = 10$ ◯ Yes ◯ No

5b. $5 + 3 = 8$ ◯ Yes ◯ No

5c. $5 \times 3 = 15$ ◯ Yes ◯ No

5d. $3 + 3 + 3 + 3 + 3 = 15$ ◯ Yes ◯ No

6. Frances has 3 boxes of books with 6 books in each box. Draw an array to show the books. Find the total number of books.
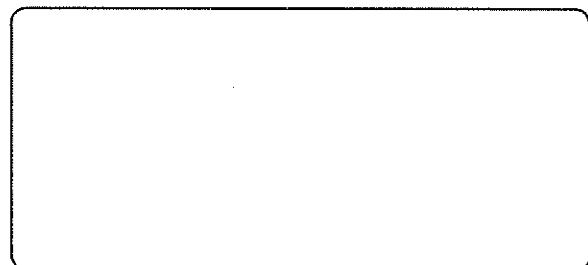
7. Zander has 21 basketballs that he wants to put into 2 different racks. Can there be equal groups of basketballs with no basketballs remaining? Why or why not?

8. Mikael solves a multiplication problem by drawing jumps on a number line. Which multiplication equation does his number line show?
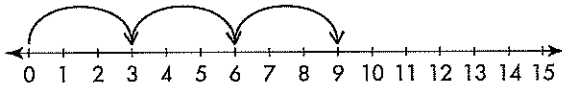
9. Taylor needs to put 8 hats in each box. She has 64 hats. Which equation can help you find how many boxes Taylor can fill?

Ⓐ $64 \times 8 = \square$

Ⓑ $8 \div 64 = \square$

Ⓒ $64 \div \square = 8$
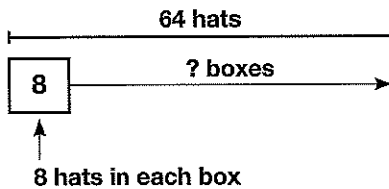
Ⓓ $64 \div \square = 64$

10. Omar uses repeated subtraction to find $54 \div 6$. How many groups of 6 does Omar subtract?

11. Rosa picks 24 apples to share with her teachers. She wants to give 4 apples to each of her teachers.

Part A

Explain how Rosa can figure out how many teachers can get apples.

Part B

Explain a different way that Rosa can figure out how many teachers can get apples.

1. A garden has 9 rows of tomato plants. There are 8 plants in each row. How many tomato plants are there?

2. At the fair, tickets are $6 for each adult and $5 for each child. 5 adults and 3 children attend the fair. What is the total cost of their tickets?

Part A

Identify any hidden questions.

Part B

Draw bar diagrams for this problem. Show the equations that you used.

3. Mrs. Applegate wrote five equations on the board. Which of the equations did she write correctly? Choose all that apply.

☐ $14 \times 0 = 14$

☐ $23 \times 1 = 23$

☐ $87 \times 0 = 0$

☐ $89 \times 1 = 90$

☐ $19 \times 0 = 0 \times 19$

4. Jessie is thinking of a number that is a multiple of 9. Which of the following could be Jessie's number? Choose all that apply.

☐ 9

☐ 24

☐ 36

☐ 48

☐ 63

5. Miriam has 3 packages of pencils. Each package has 10 pencils. How many pencils does Miriam have?

6. Choose the greatest product.

Ⓐ 10×1

Ⓑ 2×6

Ⓒ 5×3

Ⓓ 9×0

7. Leon says that an array with 5 rows and 7 columns has 12 items. Is this reasonable? Explain why or why not.

8. Elena has 3 jewelry boxes. She keeps 5 necklaces in each box. Then Elena buys another jewelry box. The new box has the same number of necklaces. How many necklaces does Elena have now? Use a bar diagram to represent the problem.

9. A beaded bracelet has 3 different types of beads. There are 10 of each type of bead. How many beads are in the bracelet?

- (A) 13 beads
- (B) 15 beads
- (C) 20 beads
- (D) 30 beads

10. Draw lines to connect equal expressions.

5×1		7×0
3×0		4×5
5×4		1×5

11. Levi is thinking of a number that is a multiple of both 5 and 10. For questions 11a-11d, choose Yes or No to tell if it could be Levi's number.

11a. 5 ○ Yes ○ No

11b. 15 ○ Yes ○ No

11c. 20 ○ Yes ○ No

11d. 30 ○ Yes ○ No

12. Tamika has 2 pies. She cuts each pie into 6 pieces. How many pieces of pie does Tamika have?

13. Jaxson has 38 roses to plant in window boxes. Each window box holds 10 plants. How many window boxes does he need to buy to plant all of the roses? Explain the math that you used.

Name _____

1. Marilyn arranged her stickers in an array. Which shows a way to break Marilyn's array into two smaller arrays?

○○○○○○○
○○○○○○○
○○○○○○○
○○○○○○○
○○○○○○○
○○○○○○○
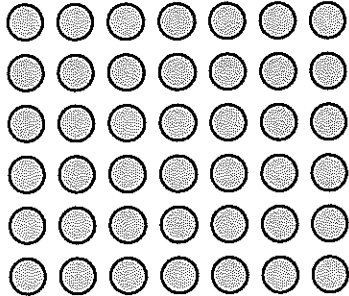
(A) $(3 \times 7) + (4 \times 7)$

(B) $(3 \times 7) + (3 \times 8)$

(C) $(3 \times 7) + (3 \times 7)$

(D) $(4 \times 8) + (4 \times 8)$

2. Choose *Yes* or *No* to tell if 24 is the missing product.

2a. $4 \times 8 = ?$ ○ Yes ○ No

2b. $4 \times 6 = ?$ ○ Yes ○ No

2c. $3 \times 8 = ?$ ○ Yes ○ No

2d. $6 \times 4 = ?$ ○ Yes ○ No

3. Lucky makes the generalization that an 8s fact can be broken into two 4s facts. Write an equation to test his generalization.

4. Jamal broke up a large array into a 3×6 array and a 4×6 array. What was the large array that Jamal started with?

5. Which facts can you use to find 6×8? Choose all that apply.

☐ 6×1 and 6×7

☐ 3×1 and 3×7

☐ 6×6 and 6×7

☐ 2×8 and 4×8

☐ 6×4 and 6×4

6. A bookstore uses 6 books in each display. There are 2 displays on each of the bookstore's 4 walls. How many books are used in the displays? Show your work.

7. What number makes the equation correct?

$(3 \times 8) + (4 \times 8) =$ _____

8. Alma has 6 bags of beads. There are 8 beads in each bag. How many beads does Alma have?

Ⓐ 14 beads

Ⓑ 24 beads

Ⓒ 48 beads

Ⓓ 56 beads

9. Larry organizes his baseball cards into a 3×7 array. Akio organizes his baseball cards into a 7×8 array. How can Larry and Akio break apart their arrays? Write each pair of facts in the correct space.
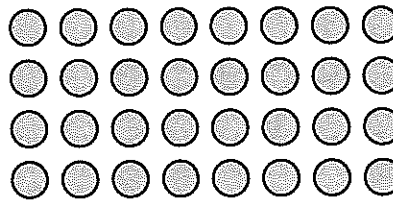
3×7	7×8

3×3 and 3×4

1×8 and 6×8

3×8 and 4×8

1×7 and 2×7

7×4 and 7×4

10. Which of the expressions below can you use to solve $3 \times 4 \times 6$? Choose all that apply.

☐ $4 \times 3 \times 6$

☐ $3 \times 3 \times 4$

☐ $6 \times 3 \times 4$

☐ $2 \times 3 \times 4$

☐ $4 \times 3 \times 4$

11. Chase arranged his counters into this array.

Part A

What two facts could Chase use to write an equation for the array?

Part B

If Chase adds one more row of 8 counters to his array, can he still use the facts you wrote in Part A? Explain why or why not.
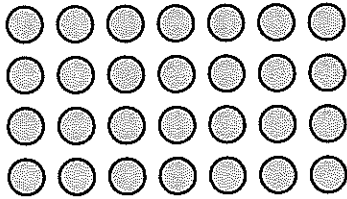
12. Jerome bought 2 adult tickets and 7 student tickets for a play. How much did he spend? Show any equations used.

Ticket Prices

Student $4 each ticket
Adult $6 each ticket

Name _____

1. Tyrone wrote a multiplication fact and a division fact for the array below. Choose all of the equations that show a fact Tyrone could have written.

☐ $4 \times 6 = 24$
☐ $7 \times 4 = 28$
☐ $28 \div 4 = 7$
☐ $8 \times 4 = 32$
☐ $32 \div 4 = 8$

2. Corey wrote three equations. What number will make all of Corey's equations true?

$? \times 9 = 54$

$42 \div 7 = ?$

$48 \div ? = 8$

3. Amber, Greg, and Liam are sharing a bag of grapes. They divide the grapes into 2 equal groups. There is 1 grape left in the bag. Which number below could be the number of grapes in the bag when they started?

Ⓐ 16
Ⓑ 20
Ⓒ 25
Ⓓ 36

4. Mr. Jefferson wrote four equations. For questions 4a–4d, choose *Yes* or *No* to tell if the equations are true.

4a. $7 \div 1 = 7$ ○ Yes ○ No
4b. $8 \div 8 = 1$ ○ Yes ○ No
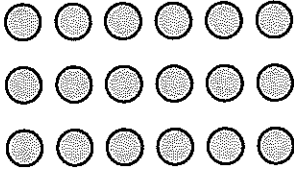**4c.** $3 \div 0 = 0$ ○ Yes ○ No
4d. $0 \div 7 = 0$ ○ Yes ○ No

5. Levi is buying used books. He buys 5 hardcover books and 2 paperback books. He spends $28. If the books are all the same price, how much does each book cost?

6. Look at the counters below.

Part A

Draw lines around the counters to show $18 \div 6$.

○ ○ ○ ○ ○ ○
○ ○ ○ ○ ○ ○
○ ○ ○ ○ ○ ○

Part B

Find a different multiplication fact where the product is 18. Explain how you can group the counters for the fact.

7. Draw lines to connect equal expressions.

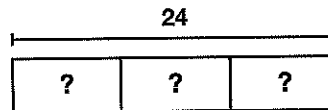| $0 \div 8$ | | $8 \div 8$ |
$36 \div 6$		6×0
$4 \div 4$		7×1
$35 \div 5$		1×6

8. Sam wrote five numbers. Which of Sam's numbers can be divided into 6 equal groups with 0 left over? Choose all that apply.

☐ 56

☐ 54

☐ 48

☐ 36

☐ 32

9. Lizzie drew this bar diagram to model a division problem. Write a multiplication equation Lizzie could use to help solve the problem.

```
          24
|--------------------|
| ?   |  ?   |  ?   |
```

10. Jerome divided his baseball card collection into 2 equal groups. There was 1 card left over. Jerome said he has an odd number of baseball cards. Is he correct? Explain.

11. Taylor is trying to find $8 \div 1$. She says the answer is 1 because $8 \times 1 = 1$. Is Taylor correct? Explain.

12. Carlos has 49 colored pencils. He sorts the pencils into 7 groups. How many are in each group?

13. On her trip, Cybil sent 56 postcards. She sent the same number of postcards to each of 8 friends. How many postcards did Cybil send to each friend?

Use the bar diagram to help.

56 postcards							
?	?	?	?	?	?	?	?

Ⓐ 6

Ⓑ 7

Ⓒ 8
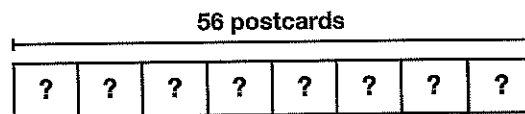
Ⓓ 9

14. Write the fact family for 1, 5, and 5.

15. Richard wrote 3 true statements about even and odd numbers. Choose all of the true statements.

- ☐ An even number times an odd number has an odd product.
- ☐ All even numbers are multiples of 2.
- ☐ The product of 5 and any number is always odd.
- ☐ The product of two even numbers is even.
- ☐ An odd number cannot be divided by 2 with none left over.

16. Which number makes both equations true?

$$27 \div 9 = ? \qquad 9 \times ? = 27$$

17. Debra drew the bar diagram below. Which equations could be used to represent the problem shown in Debra's bar diagram? Choose all that apply.

36			
?	?	?	?
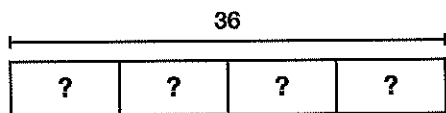
- ☐ $? \times 36 = 4$
- ☐ $4 \div ? = 36$
- ☐ $36 \div 4 = ?$
- ☐ $4 \times ? = 36$
- ☐ $36 \times 4 = ?$

18. Miriam has 3 packages of pencils. Each package has 6 pencils. She wants an eraser for each pencil. If erasers come in packs of 9, how many packs will she need to buy?

Part A

Explain what you need to find first to solve the problem.

Part B

Tell which operations you will use. Then solve the problem.

1. Write and solve a division story for 36 ÷ 4.

2. Look at the multiplication table below.

×	☐	☐	9
☐			9
2	10		18
3	15		
4		28	36
☐			45

Part A

Fill in the missing factors and products.

Part B

What pattern do you see in the first row of products in the table? Explain why this pattern is true.

3. Amber has 30 plants. She puts the same number of plants in each of 5 rows. How many plants are in each row? Draw a bar diagram to represent the problem. Then solve the problem.

4. Is the product of the following problems greater than 7 × 8? Choose *Yes* or *No*.

4a. 6 × 7 × 1   ○ Yes ○ No

4b. 2 × 4 × 7   ○ Yes ○ No

4c. 2 × 7 × 8   ○ Yes ○ No

4d. 7 × 0 × 8   ○ Yes ○ No

5. Lilly has 4 pages of photos arranged in arrays. The table shows the number of rows and columns on each page. Which page has the most photos?

Page	Rows	Columns
1	4	2
2	3	3
3	2	3
4	2	4

Ⓐ Page 1

Ⓑ Page 2

Ⓒ Page 3

Ⓓ Page 4

6. Which of the following strategies can help you solve 3×8? Choose all that apply.

☐ $(3 \times 4) + (3 \times 4)$

☐ $(3 \times 3) + (8 \times 8)$

☐ $(3 \times 8) + (1 \times 8)$

☐ $(1 \times 3) + (1 \times 8)$

☐ $(1 \times 8) + (2 \times 8)$

7. What number is missing from this multiplication table?

×	4	5
6	24	30
7	?	35

Ⓐ 21

Ⓑ 26

Ⓒ 28

Ⓓ 32

8. Draw lines to match each product or quotient on the left with the equation it solves on the right.

48	$6 \times 8 = ?$
7	$4 \times 7 = ?$
28	$42 \div 6 = ?$
8	$32 \div 4 = ?$

9. Caleb notices a pattern in the multiplication table. He shades some rows to show his pattern.

×	1	2	3	4
2	2	4	6	8
3	3	6	9	12
4	4	8	12	16
5	5	10	15	20
6	6	12	18	24

Part A

What pattern could Caleb have seen?

Part B

Explain why this pattern is true.

10. Hua collected 60 bags of cereal for the food pantry. She puts 6 bags in a box. How many boxes can she fill this way?

11. Which of the following stories is about 7 × 8? Choose all that apply.

☐ Molly has 7 bracelets and 8 necklaces. How many pieces of jewelry does Molly have?

☐ Molly has 7 jewelry trays. Each tray has 8 pieces of jewelry. How many pieces of jewelry does she have?

☐ Molly gives each of 8 friends 7 bracelets. How many bracelets did she give away?

☐ Molly sorts her jewelry by color into trays. Each tray holds 4 pieces. She has 3 trays of red and 8 trays of blue. How many pieces of jewelry does she have?

☐ Molly has a tray of bracelets and 6 trays of necklaces. Each tray holds 7 pieces of jewelry. How many pieces of jewelry does Molly have?

12. Jayson has 24 coins that he wants to put into equal groups. Can he put the coins in groups of the following numbers with none left over? Choose *Yes* or *No*.

12a. 3   ○ Yes ○ No

12b. 4   ○ Yes ○ No

12c. 5   ○ Yes ○ No

12d. 6   ○ Yes ○ No

13. Look at these two expressions.

$30 \div 6 \bigcirc 30 \div 5$

Part A

Explain how you can use what you see to compare the expressions without computing. Then write the correct symbol >, <, or = in the circle above.

Part B

Check your answer by computing both quotients. Write the quotients and the correct symbol >, <, or = below.

_____ ◯ _____

14. A test has 9 questions. Each question is worth 2 points. How many points are there in all? Write an equation to solve the problem.

15. Which shows a way to solve 4×5?

   Ⓐ Use the Distributive Property:
       $(2 \times 4) + (2 \times 3)$

   Ⓑ Use repeated addition:
       $5 + 5 + 5 + 5$

   Ⓒ Look at a multiplication table: Find the 4s row. Go across until you find 5. The product is the number at the bottom of that column, 45.

   Ⓓ Use the Identity Property:
       $(1 \times 4) + (1 \times 5)$

16. Write and solve a multiplication story for 5×9.

17. Jerry walked to and from the library 3 times last week. The distance from Jerry's house to the library and back to his house is 2 miles. How many miles did Jerry walk last week?

18. Look at the multiplication table below.

×	4	5	6	7
3	12	15	18	21
4	16	20	24	28
5	20	25	30	35
6	24	30	36	42
7	28	35	42	49
8	32	40	48	56

Part A

Shade the products in the 6s column of the table. What pattern do you see?

Part B

Explain the pattern you found.