Ikenaga 2 Jos Leys



"A relatively simple formula can generate immensely complex images." – Jos Leys

Investigations IN NUMBER, DATA, AND SPACE®

Equal Groups UNIT 5

Equal Groups

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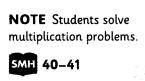
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Wheels, Apples, and Days

Solve the problems and show your solutions.

1. There are 5 cars parked in the driveway. How many wheels are there altogether?



2. I have 3 bags of apples. Each bag has 6 apples. How many apples do I have?

3. My birthday is 3 weeks away. Each week has 7 days. How many days away is my birthday?

Ongoing Review

A. 16

B. 23

C. 24

D. 25

Homework



Things That Come in Groups

Talk with family members—or look around your home or in a store—to find things that come in groups of 2 to 12. Write the name of each item and the quantity the item comes in. See whether

NOTE Students have been solving multiplication problems about things that come in groups of a certain amount. For example, there are 4 wheels on a car, juice boxes are packaged in groups of 3, and so on. Help your child find things at home, outside, or in a store that come in equal groups.

-	
SMH	39
SMIT	34

you can find things that come in groups of 7 or 11!

Item	Comes in Groups of This Many

Fingers and Eyes will

Solve the problems and show your solutions.

1. There are 4 people sitting at my table. Each person has 5 fingers on each hand. How many fingers are there altogether?

NOTE Students write and solve multiplication problems.

SMH 39, 40-41

2. There are 12 people in my group. Each person has 2 eyes. How many eyes are there altogether?

3. Write a story problem that represents 4×3 .

Ongoing Review

- **A.** 9
- **B.** 12
- **C.** 15
- **D.** 25

Name Date

Equal Groups

Picture Problems (page 1 of 3)

For each problem, write a multiplication equation, solve the problem, and show your solution.

1. There are 10 apples in a basket.
Each apple has 4 worms.
How many worms do the apples have in all?

2. There are 4 sports bags.
Each bag has 9 balls inside.
How many balls are there in all?

Picture Problems (page 2 of 3)

For each problem, write a multiplication equation, solve the problem, and show your solution.

3. Alan sees 6 cars.
Each car has 4 wheels.
How many wheels does Alan see?

4. Mia has 5 packs of juice boxes. There are 30 juice boxes in all. The same number of juice boxes is in each pack. How many juice boxes are in each pack?

Session 1.3

Picture Problems (page 3 of 3)

For each problem, write a multiplication equation, solve the problem, and show your solution.

5. Rosi has 3 bags of marbles.
There are 12 marbles in each bag.
How many marbles does Rosi have?

6. Jack drew some hexagons.
Each hexagon has 6 sides.
There are 30 sides in all.
How many hexagons did Jack draw?



What's the Number?

Answer the following questions.

NOTE Students practice place-value concepts with 3-digit numbers.



SMH 9, 10-11, 36

1. What number is 40 more than 717?

2. What number is 60 less than 485?

3. What number is 90 more than 236?

4. What number is 20 less than 119?

5. What number is 300 more than 331?

6. What number has 4 hundreds, 2 tens, and 8 ones?

.....

7. What number has 23 tens and no ones?

8. What number has 7 hundreds and 2 ones? ____

9. What number has 5 hundreds and 12 tens? _____

Session 1.3



Chapters, Slices, and Miles

Write multiplication equations, solve the problems, and show your solutions.

NOTE Students solve multiplication problems.

SMH 40-41

- 1. There are 3 books in a series. Each book has 11 chapters. If I read all of the books, how many chapters will I read altogether?
- **2.** I have 4 pizzas. Each pizza has 8 slices. How many slices are there altogether?
- **3.** George ran for 6 days. He ran 5 miles each day. How many miles did he run altogether?

Ongoing Review

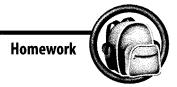
4. Circle the equation that goes with the story below. Orange juice comes in packs of 4 cans. I have 5 packs of orange juice. How many cans of orange juice do I have?

$$\triangle$$
 20 × 4 = ?

C.
$$9 \times 6 = ?$$

B.
$$5 \times 4 = ?$$

D.
$$5 \times 20 = ?$$



More Picture Problems

For each problem, write a multiplication equation, solve the problem, and show your solution.

NOTE Students practice solving multiplication problems.

SMH 39, 40-41

1. In Kelley's picture there are 6 shirts. Each shirt has 6 buttons. How many buttons are there altogether?

2. Pilar brought 5 packs of crayons. There are 8 crayons in each pack. How many crayons are there altogether?

3. Benjamin drew a picture of some dogs. Each dog has 4 legs. There are 28 legs in the picture. How many dogs did he draw?

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Session 1.4 Unit 5



Groups, Groups, Everywhere!



NOTE Students solve multiplication problems.



- 1. There are 4 wheels on a car.

 How many wheels are on 5 cars?
- 2. There are 2 wings on a bird.

 How many wings are on 6 birds?
- 3. There are 10 dimes in a dollar.

 How many dimes are in 4 dollars?
- **4.** There are 7 days in a week.

 How many days are in 2 weeks?

- 5. There are 6 muffins in a box.

 How many muffins are in 5 boxes?
- **6.** There are 8 legs on a spider.

 How many legs are on 3 spiders?
- 7. There are 12 months in a year.

 How many months are in 2 years?

Ongoing Review

- 8. Which multiplication expression equals 30?
 - A. 4×5
- **B.** 5×6
- C. 10×2
- **D.** 7×4

Saving Nickels

Solve these problems and show your solutions.

1. Adam decided to save a nickel every day. How much money did Adam have after 2 days? **NOTE** Students practice multiplying by 5s. All four problems are related to one another, and students may use the answer to one problem to help them find the answer to another.



2. How much money did Adam have after 5 days?

3. How much money did he have after 10 days?

4. How much money did he have after 20 days?



Animal Groups

Write the multiplication sentence that goes with the picture.

NOTE Students solve multiplication problems.



1. 4 nests with 3 birds each



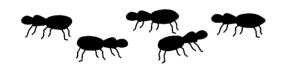
____ × ___ = ____

2. 3 dogs with 2 bones each



____ × ___ = ____

3. 5 ants with 6 legs each



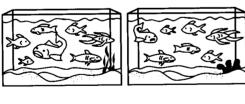
____ × ___ = ____

4. 4 kittens with 4 paws each



____ × ___ = ___

5. 2 tanks with 7 fish each



× ___ = ____

6. 3 squirrels with 5 nuts each



_____ × ____ = ____

Ongoing Review

7. Each cube tower has 10 cubes. How many cubes are in 5 towers?

A. 55

B. 50

C. 30

D. 25

Related Problems (page 1 of 3)

Solve the problems in Set A. For each problem, write a multiplication equation, solve the problem, and show your solution.

Set A

1. Triangles have 3 sides. How many sides do 7 triangles have?

2. Hexagons have 6 sides. How many sides do 7 hexagons have?

Equal Groups

Related Problems (page 2 of 3)

Solve the problems in Set B. For each problem, complete the multiplication equation, solve the problem, and show your solution.

Set B

1. Nancy and Philip were finding multiples on their skip counting charts. They circled 42 on the 6s chart. How many jumps of 6 did they take to get to 42?

 $---\times 6 = 42$

2. Deondra and Kenji circled 42 on the 3s chart. How many jumps of 3 did they take to get to 42? Show how you got your answer.

 $----\times 3 = 42$

Related Problems (page 3 of 3) AUDITION



Solve the problems in Set C and Set D. For each problem, write a multiplication equation, solve the problem, and show your solution.

Set C

- 1. Oscar bought juice boxes that come in packages of 6. He bought 5 packs. How many juice boxes did he buy?
- 2. Pilar bought 8 packs of juice boxes. How many juice boxes did she buy?

Set D

- 1. Deondra noticed 7 children outside her house, each riding a tricycle. How many wheels were there altogether?
- 2. Two more children rode up on tricycles. How many wheels were there then?

Choose one set (A, B, C, or D) and explain how the first problem could help you solve the second problem. Write your answer on another sheet of paper.



Multiplication Match

1. Match the problem to the solution.

NOTE Students solve multiplication problems.



SMH 40-41

There are 4 children.

Each child saves 5 dimes.

How many dimes do they save in all?

Each child has 3.

There are 3 children. Each child has the same number of balloons.

There is a total of 9 balloons.

How many balloons does each child have?

15 in all

There are 5 children. Each child has the same number of books. Together they have 20 books. How many books does each child have?

20 in all

There are 5 children. Each child has 3 markers. How many markers do they have altogether?

Each child has 4.

Ongoing Review

2. What is 6×4 ?

A. 10

B. 24

C. 32

D. 40

Equal Groups

Homework

NOTE Students use what they know to solve multiplication

solve the second problem.

SMH 40-41, 44

problems. For example, the answer to the first problem may help them

More Related Problems

Solve these problems and show your solutions.

Counting Around by 3s and 6s

One day Ms. Johnson's class counted around the room by 6s. The 30th person said 180.

The next day they counted around by 3s. Some students in the class said they knew that this time the 30th person would say 90.

Use a number line, a 100 chart, or a picture to show if that is true.

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Bags of Apples

Ms. Ross owns an apple orchard. She was making bags that each held 6 apples. In order to fill up 30 bags, she used 180 apples.

The next day she was filling bags that held 3 apples. She knew that this time she would need only 90 apples to fill up 30 bags.

Use a number line, 100 chart, or picture to show whether that is true.



Adding 10s and 100s

Solve the following sets of related problems. Think about how to use one problem to solve the next one.

NOTE Students practice solving addition problems in related sets.

SMH 20-24, 36

$$144 + 150 =$$

How Many Legs?

Solve the problems and show your solutions.

1. Cats have 4 legs.

How many legs are on 3 cats?

How many legs are on 7 cats?

How many legs are on 26 cats?

2. Insects have 6 legs.

How many legs are on 3 insects?

How many legs are on 7 insects?

How many legs are on 15 insects?



How Much Taller?

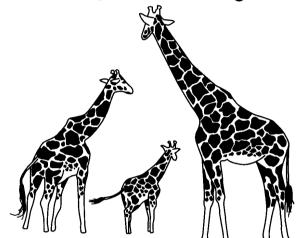
For each problem, write an equation, solve the problem, and show your solution.

NOTE Students use addition and/or subtraction to compare two different heights.



SMH 28, 32-35

Average Giraffe Heights



Female Adult: 168 inches

Baby: 72 inches

Male Adult: 216 inches

- 1. How much taller is a female giraffe than a baby giraffe?
- 2. How much taller is a male giraffe than a female giraffe?
- 3. How much taller is a male giraffe than a baby giraffe?

Equal Groups

Homework

Spiders, Cats, and People suggest

NOTE Students practice multiplying by 2s, 4s, and 8s.



SMH 40-41, 49-51

Solve the problems and show your solutions.

In an old house, there live some spiders, cats, and people.

People have 2 legs. Cats have 4 legs. Spiders have 8 legs.

- 1. In one room, there are 4 cats and 3 spiders. How many legs are there altogether?
- 2. In another room, there are 3 people and 5 cats. How many legs are there altogether?
- 3. In another room, there are 16 legs. What could be in that room? Can you find more than one possibility? Explain your thinking.



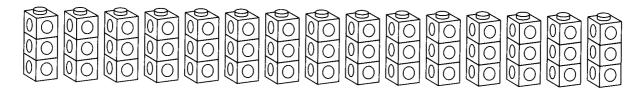
How Many Towers?

Color the towers to help you solve the problem.

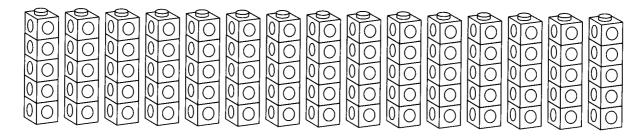
NOTE Students solve multiplication problems.

SMH 42-43

1. How many 3s are there in 36?



2. How many 5s are there in 55?



Ongoing Review

- **3.** If I start at 0 and count by 6s, which number will I **not** land on?
 - **A.** 6
- **B.** 24
- **C.** 30
- **D.** 32

Comic Book Collections

Collector	Number of Comic Books
Adam	175
Bridget	207
Casawn	250
Denzel	152
Elena	215

NOTE Students order, add, and subtract 3-digit numbers.



1. Write the number of comic books in each collection in order on the number line below.

For each problem, write an equation, solve the problem, and show your solution.

- 2. How many more comic books are in the largest collection than the smallest collection?
- 3. If Adam and Denzel put their collections together, how many comic books would they have?



Crossing Over 100

Solve the following sets of related problems. Think about how to use one problem to solve the next one.

NOTE Students practice solving subtraction problems in related sets.



1. 100 - 68 =	
----------------------	--

Equal Groups

How Many More?

Solve the problems. Show your solutions on the number lines.

NOTE Students find the missing number to make an addition equation correct.





4. 146 + ____ = 320

NOTE Students make Array Cards to learn about multiplication and

multiplication combinations. Ask your child to explain how he or she

is figuring out the total number of

squares in each array.

SMH 45, 46



Making Array Cards

I started to make my own set of Array Cards in class. Now I will finish making my set for homework.

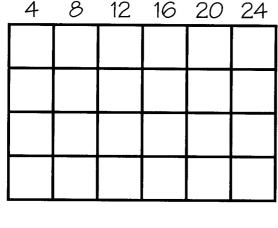
I have the following items:

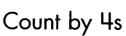
- The Array Cards I have made so far
- The sheets I need to cut to make the rest of the cards
- The directions on how to make the cards
- A plastic bag to store the cards in

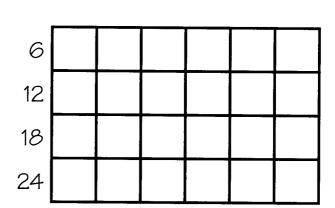
I need the following items:

- Scissors
- Pencil, marker, or crayon

Here are two different ways to figure out the number of squares in a 4×6 array.







Count by 6s

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Unit 5



"Combinations I Know" and "Combinations I'm Working On"

As you play Factor Pairs, make a list of the multiplication combinations you know and the ones that you are still working on. This list will change as you learn more of the combinations.

Combinations I Know	Combinations I'm Working On

Equal Groups

Daily Practice

How Many Are Left?

For each problem, write an equation, solve the problem, and show your solution.

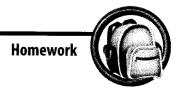
1. Gina had 300 basketball stickers. She gave 55 of them to her friend for a birthday present. How many stickers did Gina have left?

NOTE Students practice solving subtraction problems that involve 2- and 3-digit numbers. Ask your child to explain how he or she solved each problem.

SMH 26-28, 32-35

- 2. Cristobal had 250 boat stickers. He sold 85 of them at a yard sale. How many stickers did Cristobal have left?
- **3.** The Valley View Asian Heritage Museum had 294 stamps in their Japanese stamp collection. They sold 120 of them to another collector. How many are left?
- **4.** Mr. Jackson had 268 baseball trading cards in his collection. He gave 92 of them to his niece. How many are left?

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Playing Factor Pairs summer



Let's play Factor Pairs together.

I have the following items:

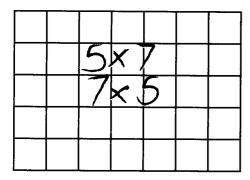
- A copy of the game rules
- A list of "Combinations I Know" and a list of "Combinations I'm Working On"
- My Array Cards

NOTE The game "Factor Pairs" is designed to help your child learn multiplication combinations, sometimes called multiplication "facts." As you play with your child, ask questions about how he or she is figuring out the number of squares on each Array Card.

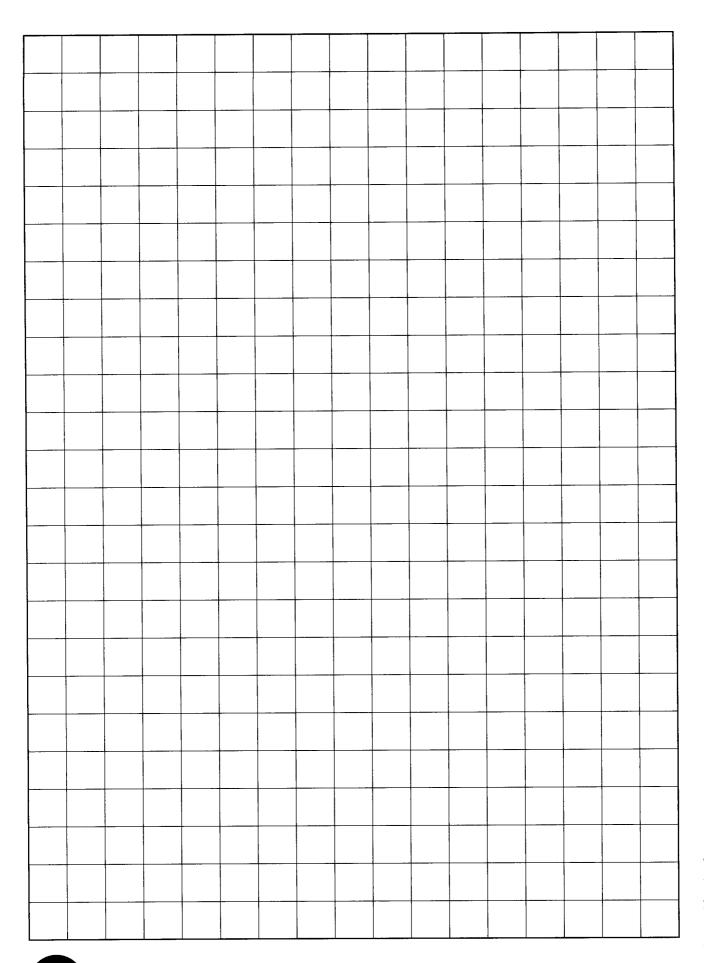


SMH 45, 46, G10

Here is one of the Array Cards I will be using in the game.



This is how I plan to keep practicing the ones I do **not** know.



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NOTE Students solve multiplication problems.

Spots and Stripes

Solve each problem.

1. This butterfly has 6 spots on each wing. How many spots are on 5 butterflies like this one?



SMH 39, 40-41

2. This fish has 5 black stripes.How many stripes are on8 fish like this one?



3. This frog has 7 spots.How many spots are on10 frogs like this one?



4. This zebra has 9 black stripes.How many stripes are on3 zebras like this one?



5. This ladybug has 4 spots.How many spots are on7 ladybugs like this one?



Ongoing Review

- **6.** One spider has 8 legs. How many legs do 5 spiders have?
 - **A.** 20
- **B.** 40
- **C.** 60
- **D.** 80

Homework (

Practicing with Multiplication Cards

Help me practice with my Multiplication Cards. **NOTE** Students practice learning multiplication combinations with products up to 50.



I have the following items:

- A copy of the directions
- My Multiplication Cards from school or 6 sheets to make new ones

Here are the front and back of one Multiplication Card.

$$5 \times 6$$
 6×5
Start with 5×5



Make \$1.00, Make \$2.00

1. Fill in the blanks to make combinations of four amounts that add up to \$1.00.

NOTE Students practice finding combinations of numbers that add up to a given total.

Example:

2. Fill in the blanks to make combinations of four amounts that add up to \$2.00.

Session 3.6

Playing Array Games

Let's play Count and Compare together.

I have the following items:

- A copy of the game rules
- A list of "Combinations I Know" and a list of "Combinations I'm Working On"
- My Array Cards

NOTE The new game "Count and Compare" is designed to help your child learn multiplication combinations, sometimes called multiplication facts. As you play with your child, ask questions about how he or she is figuring out the number of squares on each Array Card. Also revisit the array game "Factor Pairs," which you and your child have already played together.

SMH 49-51, G9, G10

Let's play Factor Pairs together.

I have the following items:

- A copy of the game rules
- My Array Cards

Here are some of my Array Cards that we will be playing with.

3	×	4	
Į.	1	3	
1	Ϊ	Ĭ	

2 × 6	
6 × 2	

	1. 11.
	'- 6' '-
	1 19 🗸 1
	

Division Stories (page 1 of 2)

Solve each of the problems below and show your solution clearly.

1. There are 28 desks in the classroom. The teacher puts them in groups of 4. How many groups of desks are in the classroom?

2. Three friends are given a pack of trading cards to share equally. The pack contains 18 cards. How many cards should each person get?

Division Stories (page 2 of 2)

3. Becky has 30 flowers. She wants to put them in bouquets of 5 flowers each. How many bouquets will Becky be able to make?

4. Seven children are building toy cars. They have 28 toy wheels to share equally. How many toy wheels will each child get?



Addition Starter Problems

Solve each problem two ways, using the first steps listed below. Show your work clearly.

NOTE Students practice flexibility with solving addition problems.



Start by solving 143 + 8.

Start by solving 140 + 160.

Start by solving 200 + 100.

Start by solving 53 + 49.

Story Problems (page 1 of 2)

Solve each problem and show how you solved it.

1. A robot has 4 hands. Each hand has 6 fingers. How many fingers does the robot have altogether?

2. We made 20 muffins for the bake sale. We put the muffins in bags to sell. We put 4 muffins in each bag. How many bags of muffins did we have to sell?

3. We bought 5 packs of yogurt cups. Each pack had 4 yogurt cups. How many yogurt cups did we buy?

Story Problems (page 2 of 2)

4. Five children have one book of 35 movie tickets to share equally. Each movie costs one ticket. How many movies can each child see?

5. Before school my mother gave me a pack of 24 new pencils. When I get to school, I want to share them equally among my three friends and me. How many pencils will each of us get?

6. Benjamin drew a picture of 7 pentagons. Each pentagon has 5 sides. How many sides are there in all?

Packs, Students, Sides, and Frogs

NOTE Students solve division problems.

SMH 47, 48

Solve each problem and show your solution.

- **1.** I bought 28 cups of yogurt. Each pack of yogurt has 4 cups. How many packs did I buy?
- 2. A teacher wants to put 25 students in 5 equal groups. How many students will be in each group?
- **3.** I counted 24 sides on all of the triangles I drew. Each triangle has 3 sides. How many triangles did I draw?
- **4.** There is a group of frogs in a pond. Each frog has 4 legs. I counted 24 legs. How many frogs are in the pond?

Ongoing Review

- 5. How many days are there in 6 weeks?
 - **A.** 42
- **B.** 40
- **C.** 36
- **D.** 24



Addition Story Problems

For each problem, write an equation, solve the problem, and show your solution.

1. The Parktown Soccer League has 144 players. The Riverside Soccer League has 165 players. When the two leagues get together for a tournament, how many soccer players are there altogether if everyone comes?

NOTE Students practice solving 2- and 3-digit addition problems. Ask your child to explain how he or she solved each problem.

SMH 20-24

2. The Parktown Soccer League bought T-shirts for the players, parents, and coaches. They bought 150 large T-shirts and 95 extra-large T-shirts. How many T-shirts did they buy in all?

3. To pay for new equipment, the Riverview Soccer League raised \$215 from a bake sale and \$287 from a car wash. How much money did they raise altogether?

Session 4.3



Missing Factors Recording Sheet

Follow the rules for playing *Missing Factors*. For each array that you keep, write an equation that uses either multiplication or division. Circle the missing factor in each equation.

Example: $2 \times 8 = 16 \text{ or } 16 \div 2 = 8$

2.
4.
6.
8.
10.
12.
14.
16.
18.
20.
22.
24.

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Multiply or Divide?

Solve each problem and show your solution.

- 1. Zoe and Yuki have a bag of 30 pretzels. They want to share them evenly. How many pretzels should each student get? Did you multiply or divide?
- **NOTE** Students solve multiplication and division problems.
- SMH 40-41, 48

- 2. Webster has 5 boxes of granola bars for his class. Each box has 6 granola bars. How many granola bars are there altogether? Did you multiply or divide?
- 3. Latisha picks 24 flowers from her garden. She wants to put the same number of flowers in each of 3 vases. How many flowers should she put in each vase?

 Did you multiply or divide?

Ongoing Review

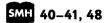
- **4.** If each letter is worth 5¢, how much money is the name **Maurice** worth?
 - **A.** 30¢
- **B.** 35¢
- **C.** 40¢
- **D.** 45¢



Two-Part Problems

Solve these two-part problems and show your solutions.

NOTE Students solve multiplication and division problems.



1. Matthew has 30 boxes of raisins. There are 10 raisins in each box. He shares them equally with the children at his lunch table. There are 6 children altogether. How many raisins does each child get?

_____ boxes per child raisins per child

Jamal has 2 cats. Each cat has 4 kittens.Each kitten has 3 toys. How many toys do the kittens have altogether?_____ kittens____ toys

Ongoing Review

3. There are 46 legs in Room 222, including the teacher's legs.

How many students are in the class?

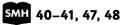
- **A.** 20
- **B.** 22
- **C.** 23
- **D.** 25

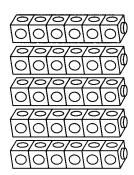


Match Me Up!

1. Match the picture to the problems. Then solve all of the problems.

NOTE Students solve multiplication and division problems and match each problem with a representation.





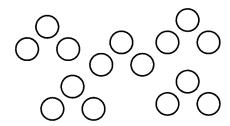
How many 4s in 20? ______

20 ÷ 4 = _____

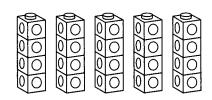
5 groups of 4 are _____

altogether.

5 × 4 = _____



5 groups of 6 are ______
altogether. $5 \times 6 =$ _____
How many 6s in 30? ______ $30 \div 6 =$ _____



How many 3s in 15? _______ $15 \div 3 =$ ______

5 groups of 3 are ______
altogether. $5 \times 3 =$ ______

Ongoing Review

2. I counted 30 fingers around the table. How many people were at the table?

- **A.** 25
- **B.** 10
- **C.** 6

D. 3



Smart Savings

How much money could you save in 1 year? What could you buy with that money?

NOTE Students multiply several numbers by 12.

SMH 40-41

If I save this much each month	I will save this much in a year!	This is what I could buy at the end of 1 year.
1. \$1		
2. \$2		
3. \$3		
4. \$4		
5. \$5		
6. \$6		
7. \$7		
8. \$8		