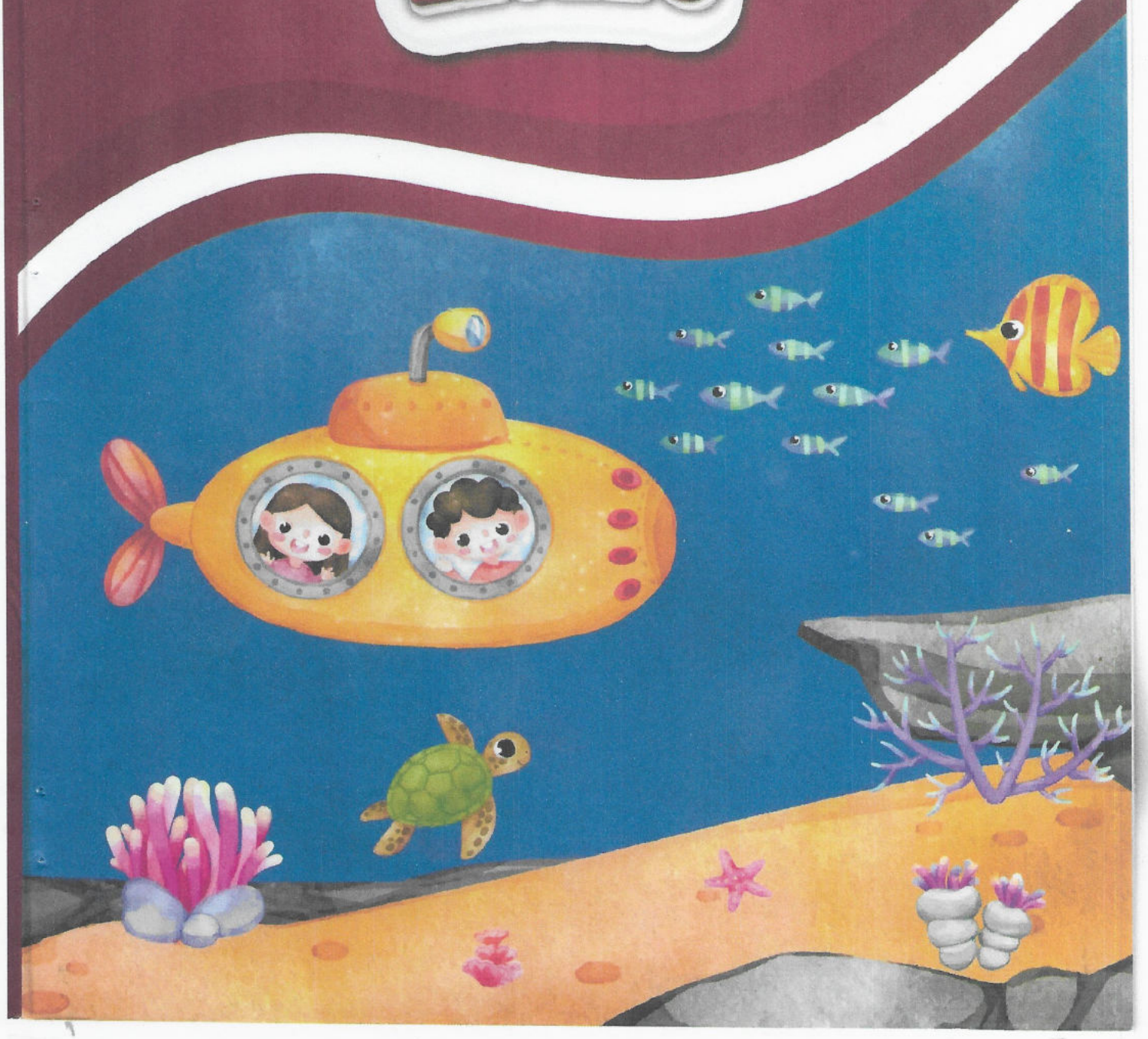
WORLD'S KEY

COMMON CORE State Standards

Mathematics

LEVEL 3



WORLD'S KEY

MATHEMATICS

LEVEL 3

2023



شركة البشرى للتربية والعلوم
المدارس الدولية

إن تقدم الأمم يعتمد على تقدم العلوم فيها. ونحن نفتخر بأننا في صلب هذه المهمة، خاصة بأن دورنا يعتمد بشكل أساسي على تطوير ركائز العملية التعليمية في المنهاج والبرامج والتدريب وتأهيل المدارس لتحصل على اعتماد مدرسة دولية.

إن شركة البشرى بالتعاون مع WORLD'S KEY أنتجت سلسلة من المناهج ضمن المعايير الدولية التي تراعي واقع بيئتنا ومجتمعنا، مع إضافة التعليم الإلكتروني لدعم العملية التعليمية وتحويلها من طور التلقين إلى طور الإبداع و التفاعل وتنمية المهارات.

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General Director

A. Tarhini

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شركة البشرى للتربية والعلوم

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LESSON 1 NUMBERS TO 10,000

OBJECTIVES

- Count in thousands, hundreds, tens, and ones.
- Write numbers in words.

THINK

Jad is counting the candies.
How many candies are there?

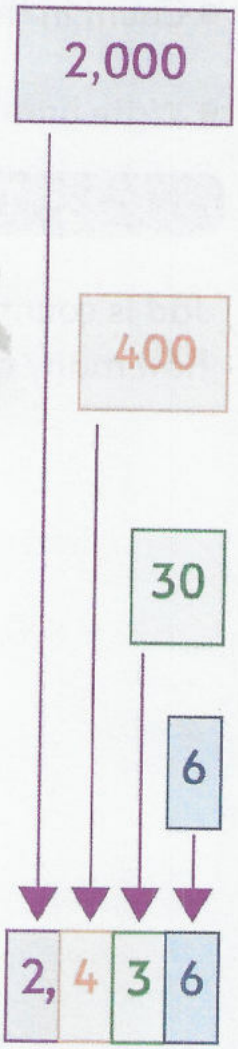


LEARN





We put a comma after the digit in the thousands place.



two thousand, four hundred thirty-six

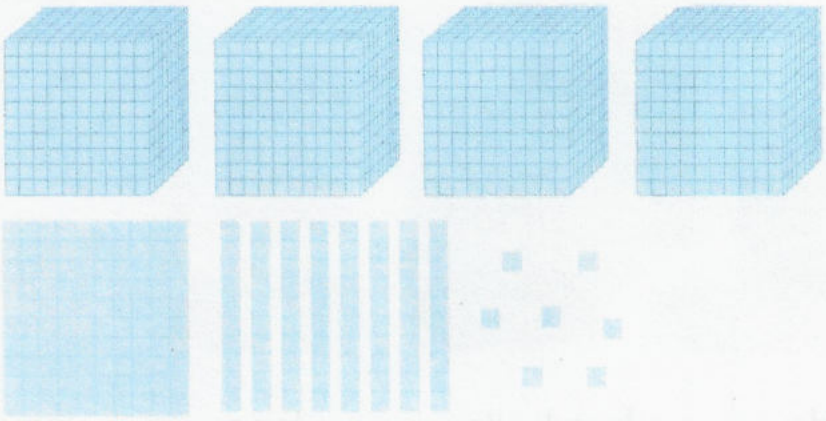
2 thousands, 4 hundreds, 3 tens, and 6 ones make 2,436.

2,000 + 400 + 30 + 6 = _____

There are _____ candies.

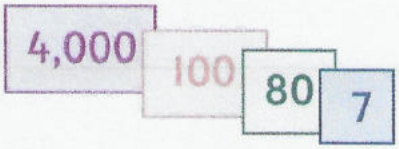
PRACTICE

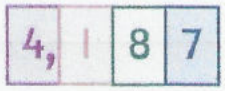
A. Write the number.

1. 

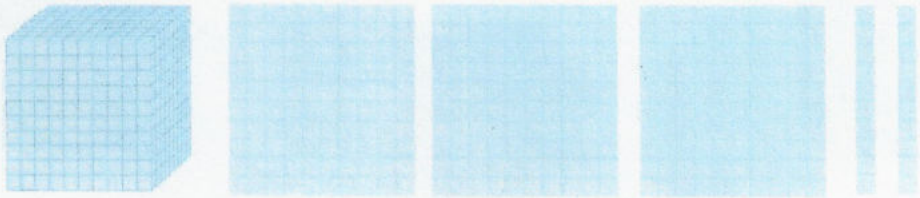
4 thousands, 1 hundred, 8 tens, and 7 ones make _____.

4,000 + 100 + 80 + 7 = _____



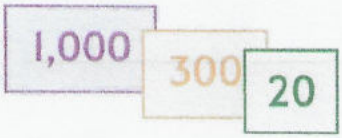


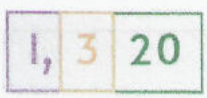
four thousand, one hundred eighty-seven

2. 

1 thousand, 3 hundreds, and 2 tens make _____.

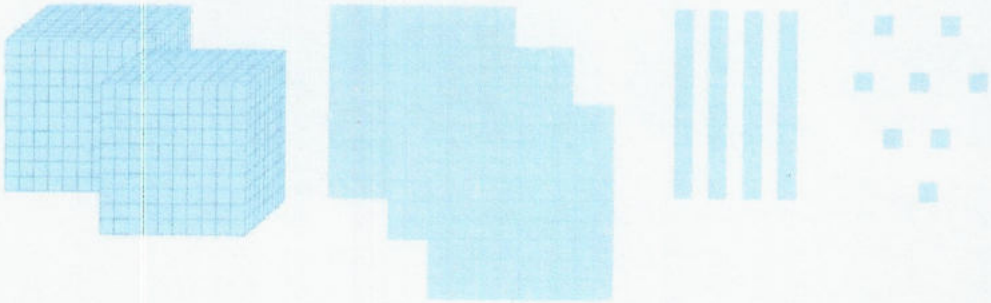
1,000 + 300 + 20 = _____





one thousand, three hundred twenty

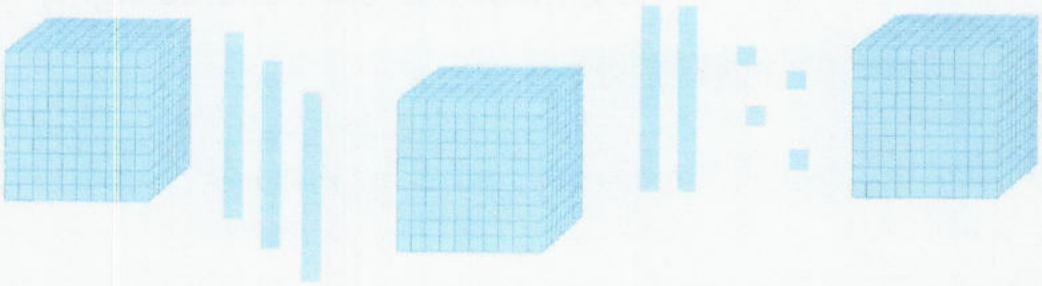
B. Fill in the blanks below. Then write the number in numeral form and word form.

1. 

____ thousands ____ hundreds ____ tens ____ ones

Numeral form: _____

Word form: _____

2. 

____ thousands ____ hundreds ____ tens ____ ones

Numeral form: _____

Word form: _____

C. Read each number.
Show each number with place value cards.
Write each number in words.

1. 1,299

_____

_____

2. 9,090

_____

_____

D. Fill in the blanks below.

1. 9 thousands, 4 hundreds, 3 tens, and 8 ones make _____.

2. 4 ones, 2 hundreds, and 3 thousands make _____.

3. _____ is 2 hundreds, 8 tens, and 4 thousands.

4. 9,080 is _____ tens and 9 thousands.

E. Add.

1. 8,000 + 900 + 7 = _____

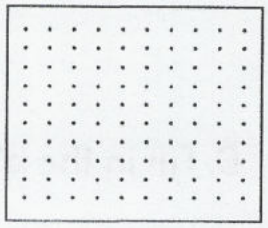
2. 400 + 3,000 + 30 + 4 = _____

3. 2,000 + 20 = _____

4. 20 + 5,000 + 300 + 7 = _____

F. Word Problems

1. Adam is making geoboards for the students in his class.
Each geoboard needs 100 pins.
How many geoboards can Adam make with 1,000 pins?



_____

_____

2. Pumpkin seeds come in packages of 100.
Jana buys 30 packages.
How many seeds does she buy?



_____

_____

LESSON 2 COMPARE NUMBERS

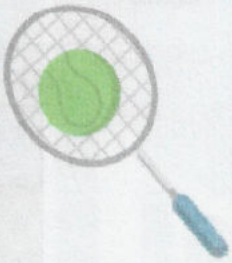
OBJECTIVE

- Compare two numbers using place value.

THINK

The table below shows the attendance of three games at the sports center.
Which game has the greatest number of attendees?
Which game has the least number of attendees?

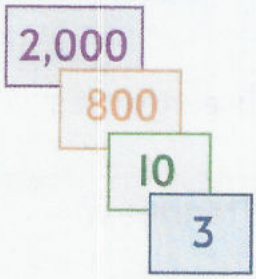
Attendance of Three Games

		
Soccer	Basketball	Tennis
3,185	2,813	3,192

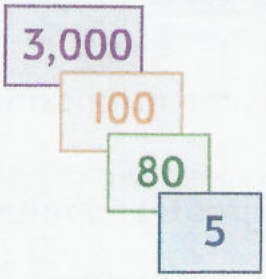
LEARN

- Basketball Game Soccer Game

2,813 people



3,185 people



Compare the digits in the greatest place first.

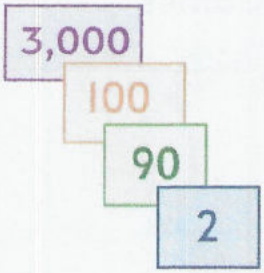


2 thousands is less than 3 thousands. So, 2,813 < 3,185.

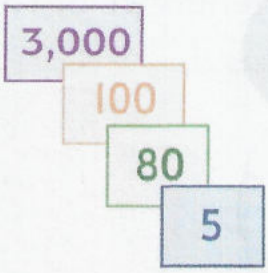
There are fewer people at the _____ game than the _____ game.

- Tennis Game Soccer Game

3,192 people



3,185 people



The thousands and the hundreds are the same.



9 tens is greater than 8 tens. So, 3,192 > 3,185.

There are more people at the _____ game than the _____ game.

The number of attendees is arranged from least to greatest as follows.

Basketball	Soccer	Tennis
2,813	3,185	3,192

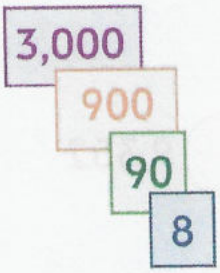
The _____ game has the greatest number of attendees.

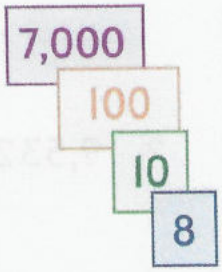
The _____ game has the least number of attendees.

PRACTICE

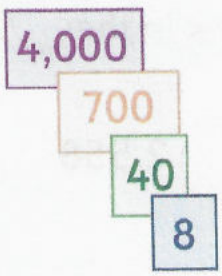
A. Circle the greater number.

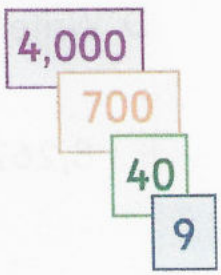
1. 3,998 7,118





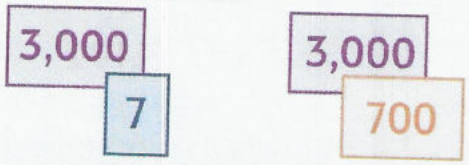
2. 4,748 4,749



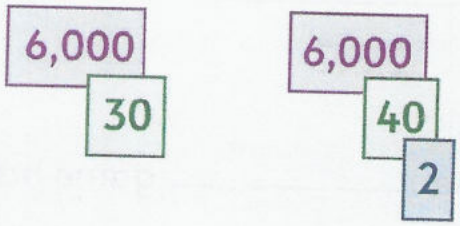


B. Circle the smaller number.

1. 3,007 3,700

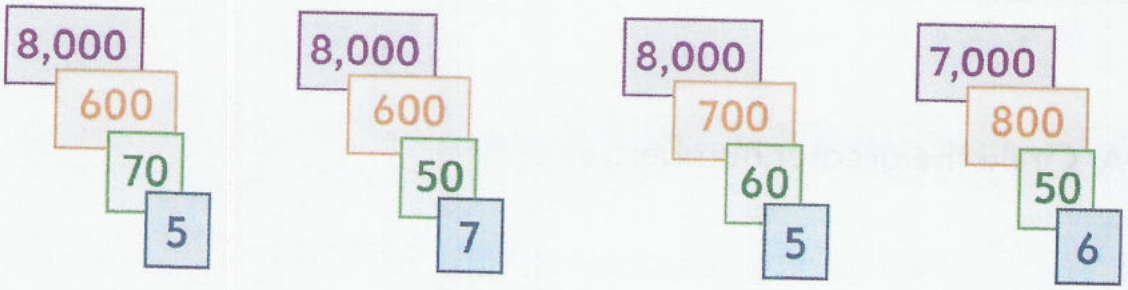


2. 6,030 6,042



C. Write the numbers in order from least to greatest.

8,675 8,657 8,765 7,856



_____ _____ _____ _____

D. Write > or < in the ◯.

1. 8,262 ◯ 2,558
2. 9,532 ◯ 9,352
3. 6,365 ◯ 6,390
4. 5,655 ◯ 5,565

E. Write the numbers in order from greatest to least.

5,900	9,050	950	5,009

_____ _____ _____ _____

F. Write the greatest and the least 4-digit numbers you can make using all the given digits in the table below.

Digits	Greatest Number	Least Number
1, 2, 5, 6		
0, 4, 6, 8		

G. Use the digits 2, 5, 6, and 8 to make the following numbers.

1. The greatest number between 2,700 and 5,700 is _____.

2. The least number between 2,700 and 5,700 is _____.

H. Compare using > or <.

1. 1,400 + 4 ◯ 1,000 + 40 + 600

2. 900 + 50 + 4,000 ◯ 4,000 + 5 + 90

I. Guess the number.

1. What is the greatest 4-digit number?

2. What is the least 4-digit number?

J. The table shows the height of some mountains in meters.

Mountain	Height
A- Pichu Pichu (Peru)	5,664
B- Little Si (U.S.A)	480
C- Mount Tyree (Antarctica)	4,852
D- Mount Everest (Nepal)	8,848
E- Mont Blanc (France)	4,810
F- Castle Peak (U.S.A)	4,348

Use the letters to list the mountains according to their height, from the tallest to the lowest.

OBJECTIVE

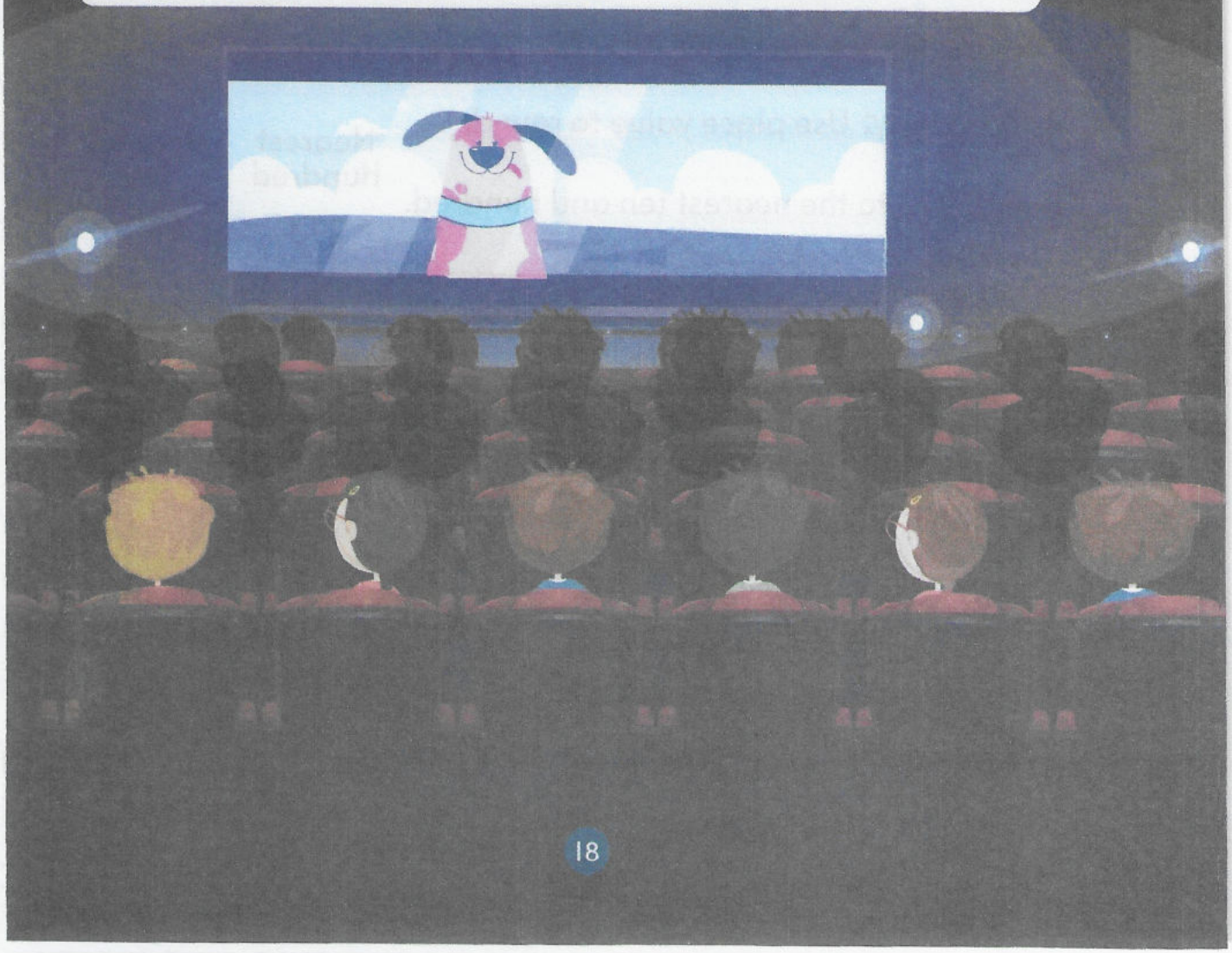
- Round whole numbers to the nearest ten and hundred using a number line and place value.

THINK

There are 273 people watching a movie.

Rounded to the nearest ten, how many people are watching the movie?

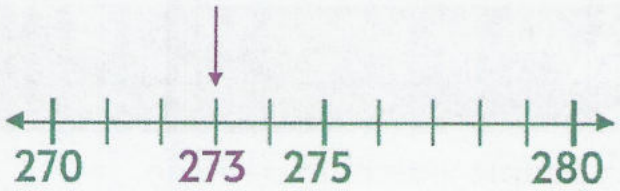
Rounded to the nearest hundred, how many people are watching the movie?



LEARN

Round 273 to the nearest ten and hundred.

<u>One way:</u> Use the number line to round.



Find which tens the number 273 is between.

273 is between 270 and 280.

273 is closer to ____ than it is to ____.

So, 273 rounded to the nearest ten is ____.

<u>Another way:</u> Use place value to round.

Round 273 to the nearest ten and hundred.

Nearest Hundred	Nearest Ten
273	273
↓	↓
300	270

Find the digit in the rounding place.

Look at the next digit to the right.
If it is 5 or greater, add 1 to the rounding digit.
If it is less than 5, leave the rounding digit as it is.

Change all the digits to the right of the rounding place to 0.

273 rounded to the nearest ten is ____.

273 rounded to the nearest hundred is ____.

PRACTICE

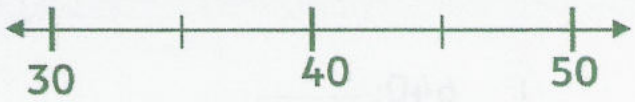
A. Which number is halfway between 200 and 300?

_____

B. Adam rounds 678 to 680. Which place does he round to?

_____

C. Locate and label 46 on the number line. Round to the nearest ten.



46 is between _____ and _____.

46 is closer to _____ than it is to _____.

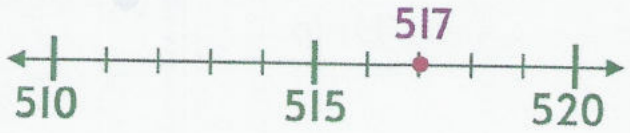
46 rounded to the nearest ten is _____.

D. Round to the nearest ten using place value.

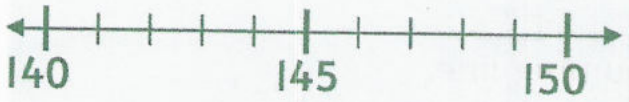
31:____ 99:____ 55:____ 17:____ 62:____

E. Round to the nearest ten using the number line.

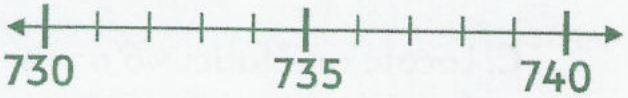
1. 517:____



2. 149:____



3. 732:____

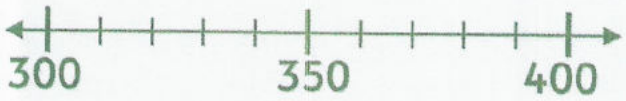


F. Round to the nearest hundred using the number line.

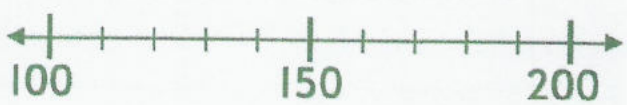
1. 640:____



2. 305:____



3. 166:____



G. Locate and label 548 on the number line. Round to the nearest hundred.



548 is between _____ and _____.

548 is closer to _____ than it is to _____.

548 rounded to the nearest hundred is _____.

H. Round to the nearest ten and hundred.

Number	Nearest 10	Nearest 100
298		
754		

I. List three numbers that are 550 when rounded to the nearest ten and 500 when rounded to the nearest hundred.

_____ _____ _____

J. Word Problems

1. The Leaning Tower of Pisa in Italy has 249 steps.
   a. To the nearest ten, how many steps are there?



   _____

   b. To the nearest hundred, how many steps are there?

   _____

2. A baby elephant weighs 152 kg.
   Round its weight to the nearest ten and hundred.



   Nearest ten: _____

   Nearest hundred: _____

LESSON 4 ADD 4-DIGIT NUMBERS

OBJECTIVE

- Use place value to add 4-digit numbers.

THINK

2,803 people visited the book fair in the morning.

1,443 people visited the book fair in the afternoon.

How many people visited the book fair all day long?



LEARN

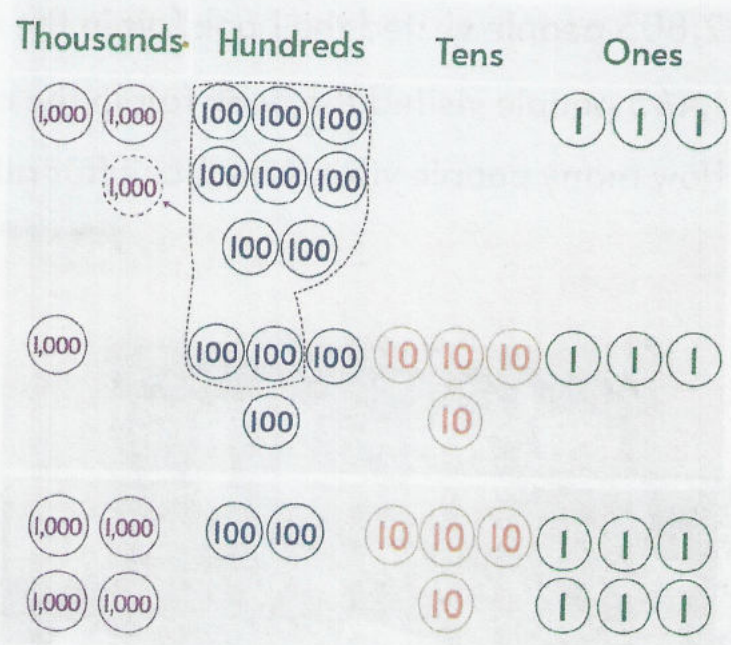
Write a number sentence with a symbol for the unknown.

2,803 + 1,443 = ? ← unknown

An unknown is a symbol that stands for a number in an equation.

Add Ones

$$\begin{array}{r} 2,803 \\ +\ 1,443 \\ \hline 6 \end{array}$$



Add Tens

$$\begin{array}{r} 2,803 \\ +\ 1,443 \\ \hline 46 \end{array}$$

Add Hundreds

$$\begin{array}{r} {\scriptstyle 1\ \ \ \ } \\ 2,803 \\ +\ 1,443 \\ \hline 246 \end{array}$$

Add Thousands

$$\begin{array}{r} {\scriptstyle 1\ \ \ \ } \\ 2,803 \\ +\ 1,443 \\ \hline 4,246 \end{array}$$

2,803 + 1,443 = 4,246
1,443 + 2,803 = 4,246
Commutative property of addition: Switching the order of addends does not change the sum.

We change 10 hundreds to 1 thousand.

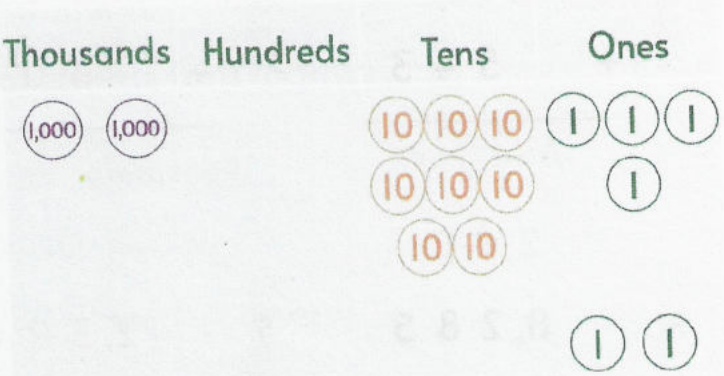
_____ people visited the book fair all day long.

PRACTICE

A. Add to find the unknown number.

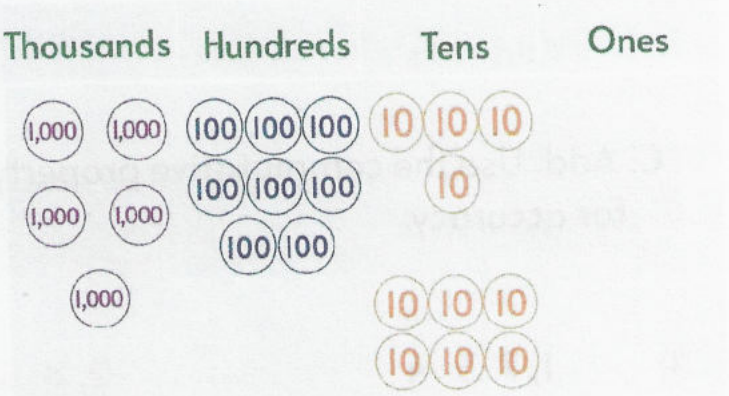
1. 2,084 + 2 = ☐

$$\begin{array}{r} 2,084 \\ +\quad 2 \\ \hline \end{array}$$



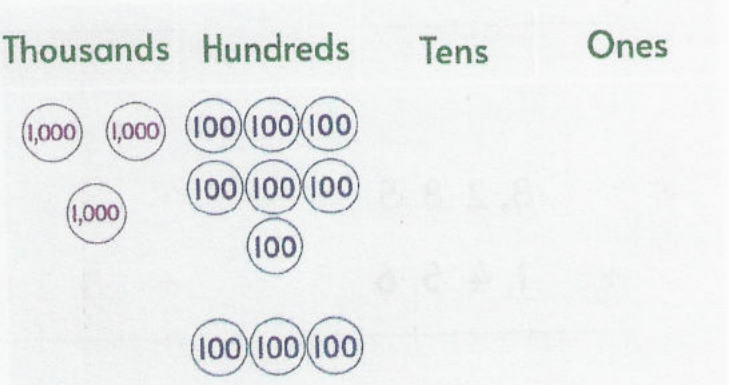
2. 5,840 + 60 = ☐

$$\begin{array}{r} 5,840 \\ +\quad 60 \\ \hline \end{array}$$



3. 3,700 + 300 = ☐

$$\begin{array}{r} 3,700 \\ +\quad 300 \\ \hline \end{array}$$



B. Add.

1. 6,499 + 543 = _____

2. 1,998 + 300 = _____

3. 2,503 + 2,899 = _____

4. 8,285 + 1,456 = _____

5. 2,390 + 3,490 = _____

6. 5,555 + 3,555 = _____

C. Add. Use the commutative property of addition to check for accuracy.

1. 1,734 + 2,882 = _____

   2,882 + 1,734 = _____

2. 8,285 + 1,456 = _____

   1,456 + 8,285 = _____

D. Add to find the unknown number.

1. 2,856 + 5,522 = ☐

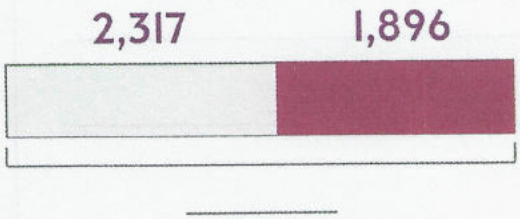
+ _____

2. 3,075 + 5,640 = ☐

+ _____

E. Word Problems

1. A man sold 2,317 balloons in the first week of the carnival.
He sold 1,869 balloons in the second week.
How many balloons did he sell altogether?



_____

_____

_____

2. 4,295 tickets were sold on Saturday.
164 more tickets were sold on Sunday than on Saturday.
How many tickets were sold on Sunday?

3. This table shows the number of biscuits made by three machines in one hour.

Machine A	1,468
Machine B	652
Machine C	945

a. What is the total number of biscuits made by machines A and B?

b. What is the total number of biscuits made by the three machines?

LESSON 5 SUBTRACT 4-DIGIT NUMBERS

OBJECTIVE

- Use place value to subtract 4-digit numbers.

THINK

In a school, there are 3,246 students.

1,634 of them are boys.

How many girls are there?



LEARN

Write a number sentence with a symbol for the unknown.

3,246 - 1,634 = ? ← unknown

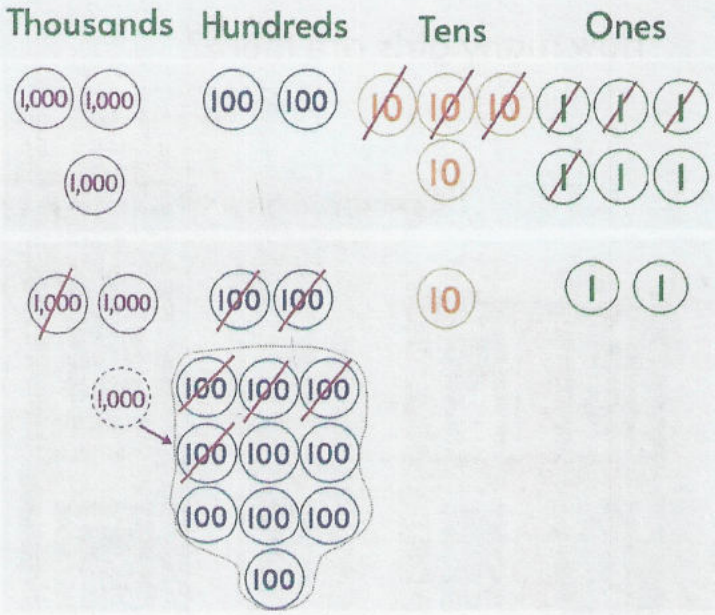
A bar model may help you organize the information.

3,246 Students

1,643	?
Boys	Girls

Subtract. 3, 2 4 6

- 1, 6 3 4



As there are not enough hundreds to subtract from, we change 1 thousand to 10 hundreds.



Subtract Ones	Subtract Tens	Subtract Hundreds	Subtract Thousar
3, 2 4 6	3, 2 4 6	2 12 3, 2 4 6	2 3, 2 4 6
- 1, 6 3 4	- 1, 6 3 4	- 1, 6 3 4	- 1, 6 3 4
2	1 2	6 1 2	1, 6 1 2

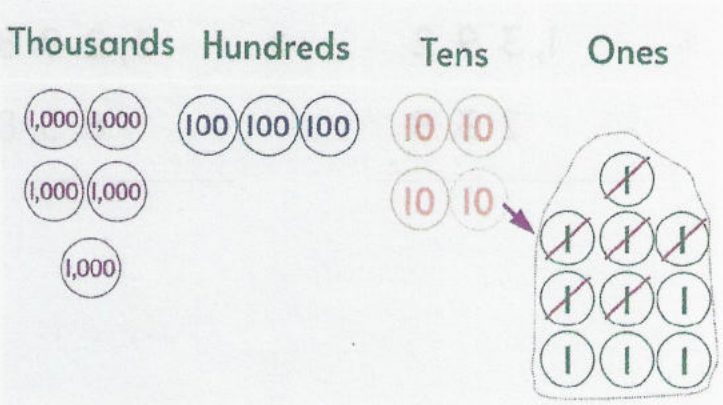
There are _____ girls.

PRACTICE

A. Subtract.

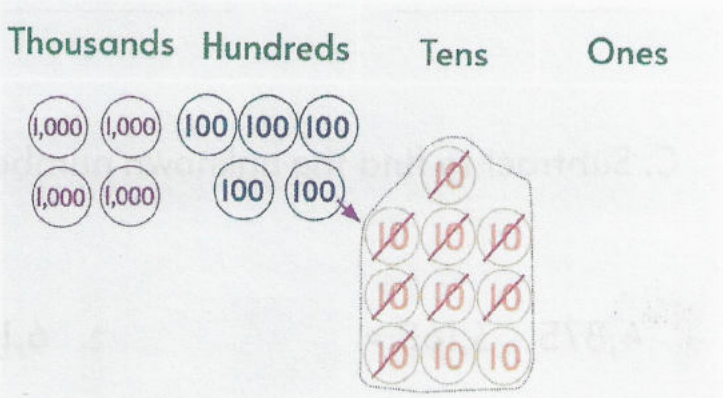
1. 5,340 - 6 = ☐

$$\begin{array}{r} 5,340 \\ - \quad 6 \\ \hline \end{array}$$



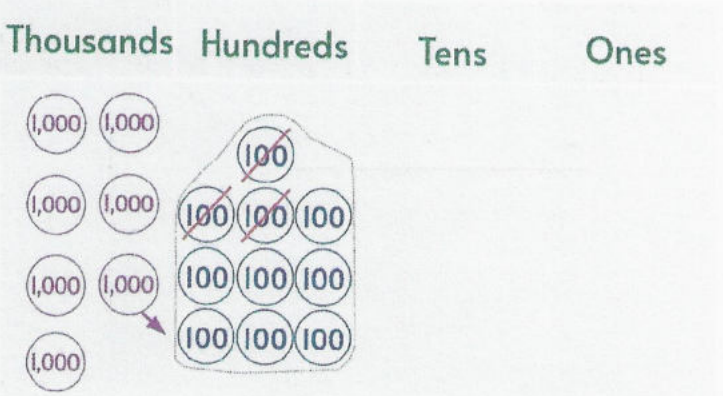
2. 4,500 - 80 = ☐

$$\begin{array}{r} 4,500 \\ - \quad 80 \\ \hline \end{array}$$



3. 7,000 - 300 = ☐

$$\begin{array}{r} 7,000 \\ - \quad 300 \\ \hline \end{array}$$



B. Subtract. Use addition to check your answer.

1. 1,392
   - 238
   ———

   \+ ———

2. 3,298
   - 858
   ———

   \+ ———

3. 3,475
   - 1,267
   ———

   \+ ———

C. Subtract to find the unknown number.

1. 4,875 - 3,168 = ☐

   \- ———

2. 6,182 - 581 = ☐

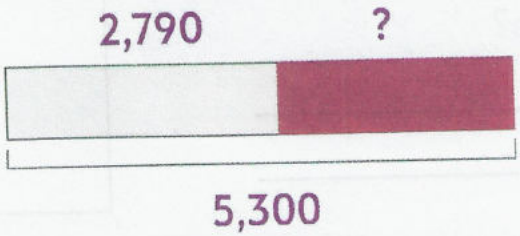
   \- ———

D. Word Problems

1. Jana solved the subtraction problem below.
She made a few mistakes.
Find the mistakes and correct them.

```
  5,300
- 4,547
--------
  1,853
```

2. Adam has 5,300 seeds in a bag.
He plants 2,790 seeds.
How many seeds are left with Adam?



3. A farmer collects 1,930 chicken eggs.
He collects 859 fewer duck eggs than chicken eggs.

a. How many duck eggs does he collect?

_____

_____

b. How many eggs does he collect altogether?

_____

_____

4. A group of students uses 6,423 cans to make a sculpture.
Another group makes a sculpture using 2,112 cans.

a. What is the difference in the number of cans used for both sculptures?

_____

_____

b. How do you know that your answer is correct?

_____

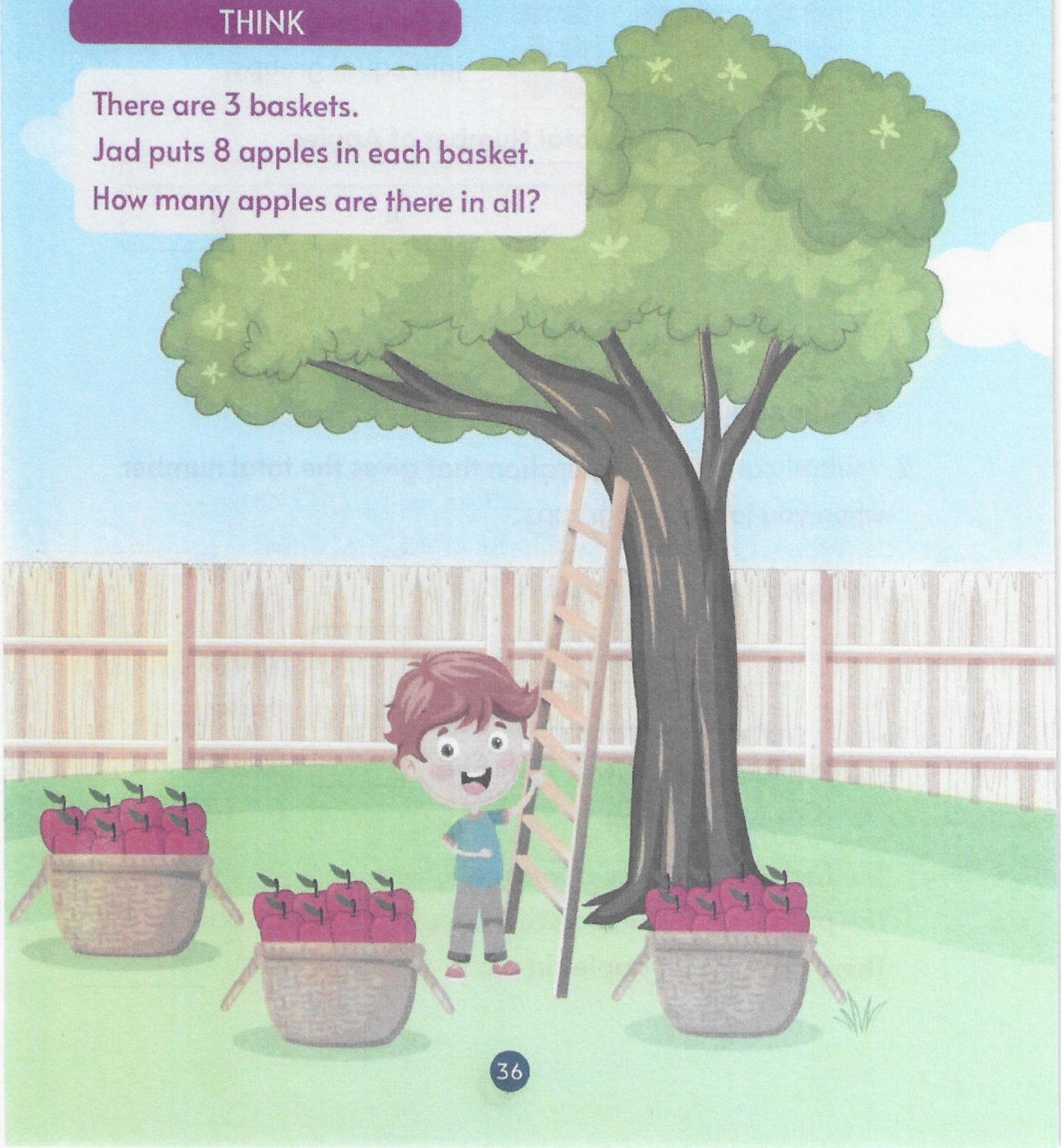
_____

OBJECTIVE

- Use addition or multiplication to join equal groups.

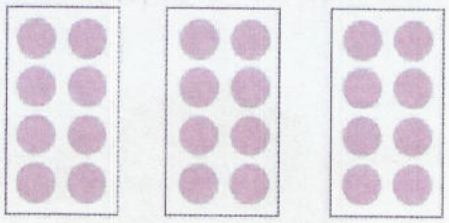
THINK

There are 3 baskets.
Jad puts 8 apples in each basket.
How many apples are there in all?

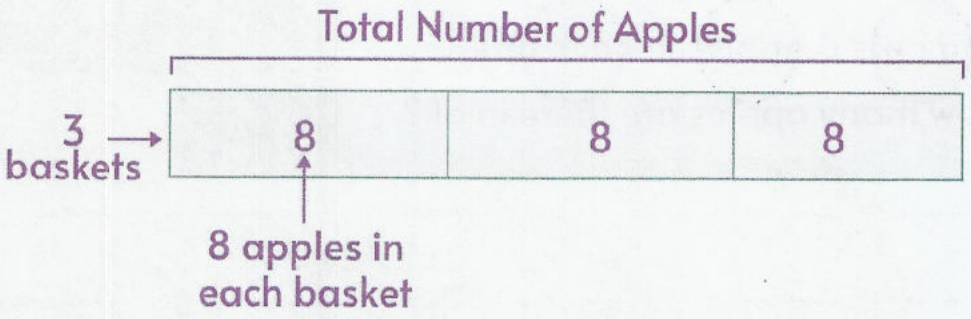


LEARN

1. The counters show 3 groups of 8 apples.



You can use addition to join equal groups.



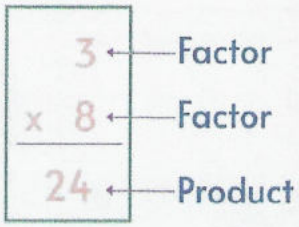
Addition Equation: 8 + 8 + 8 = 24

2. Multiplication is an operation that gives the total number when you join equal groups.

Multiplication Equation: 3 x 8 = 24

3 times 8 equals 24.

3 x 8 = 24 or



Number of Groups — Number in Each Group — Number in All

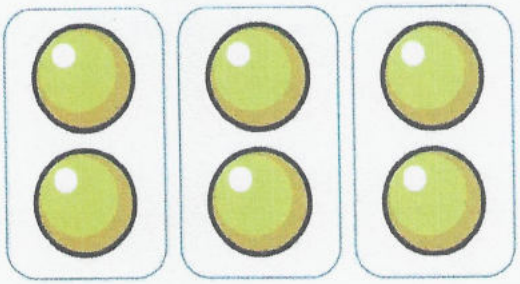
The factors are the numbers multiplied.

The product is the answer to the multiplication problem.

There are _____ apples in all.

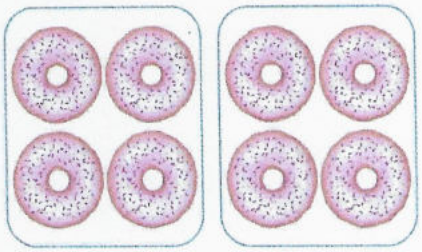
PRACTICE

A. Write the related addition and multiplication sentences for each.

1. 

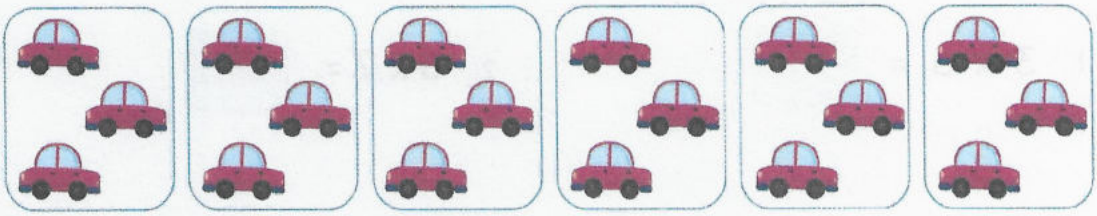
____ + ____ + ____ = ____

____ x ____ = ____

2. 

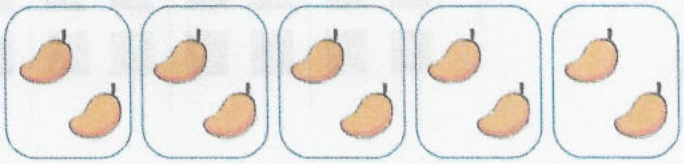
____ + ____ = ____

____ x ____ = ____

3. 

____ + ____ + ____ + ____ + ____ + ____ = ____

____ x ____ = ____

4. 

____ + ____ + ____ + ____ + ____ = ____

____ x ____ = ____

B. Draw a picture to find the total. Write a multiplication sentence.

1. 6 groups of 2

_____ x _____ = _____

2. 3 groups of 4

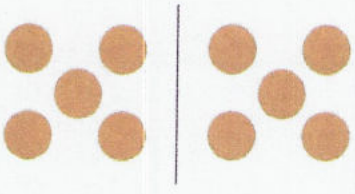
_____ x _____ = _____

C. Multiply to find the unknown product.

1. 3 x 5 = ☐

2. 5 x 2 = ☐

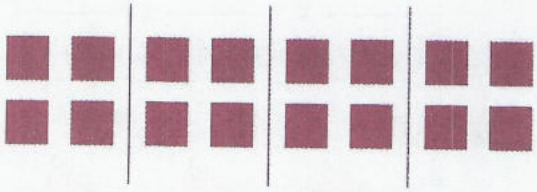
D. Complete. Use the pictures to solve.

1. 

2 groups of _____

5 + _____ = _____

2 x _____ = _____

2. 

4 groups of _____

4 + 4 + 4 + _____ = _____

4 x _____ = _____

E. Draw a model to find the total number.

1. 3 groups of 5
_____ in all

2. 1 x 7 = _____

F. Consider the multiplication sentence 6 x 8 = 48. Complete the sentences by using the words from the box below.

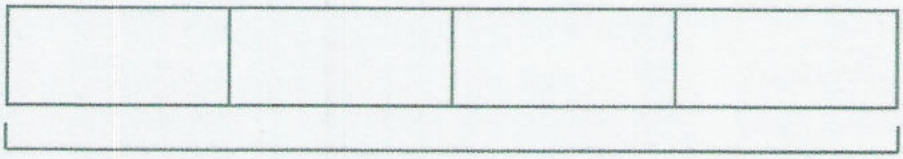
equal groups	repeated addition	multiply	factors	product

1. The number 48 is the _____.
2. The symbol x tells you to _____.
3. The numbers 6 and 8 are the _____.
4. 8+8+8+8+8+8=48 shows _____.
5. 6 x 8 means _____ of 8.

G. Word Problems

1. There are 4 groups of 5 students who play basketball at school.
How many students play basketball at school?

First, draw a bar model to show each group of students.
Draw _____ boxes and write _____ in each box.



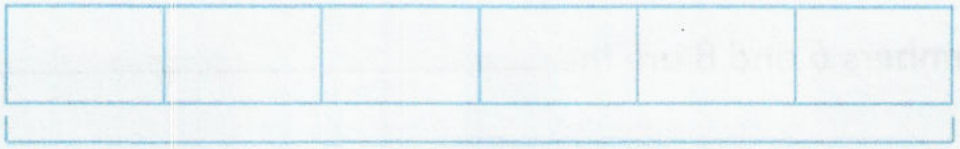
Students

Then multiply to find the total number of basketball players.

_____ x _____ = _____

_____

2. Lyn buys 4 packages of apple juice and 2 packages of grape juice. There are 7 juice boxes in each package.
How many juice boxes does Lyn buy? Show your work.



Juice Boxes

_____ x _____ = _____

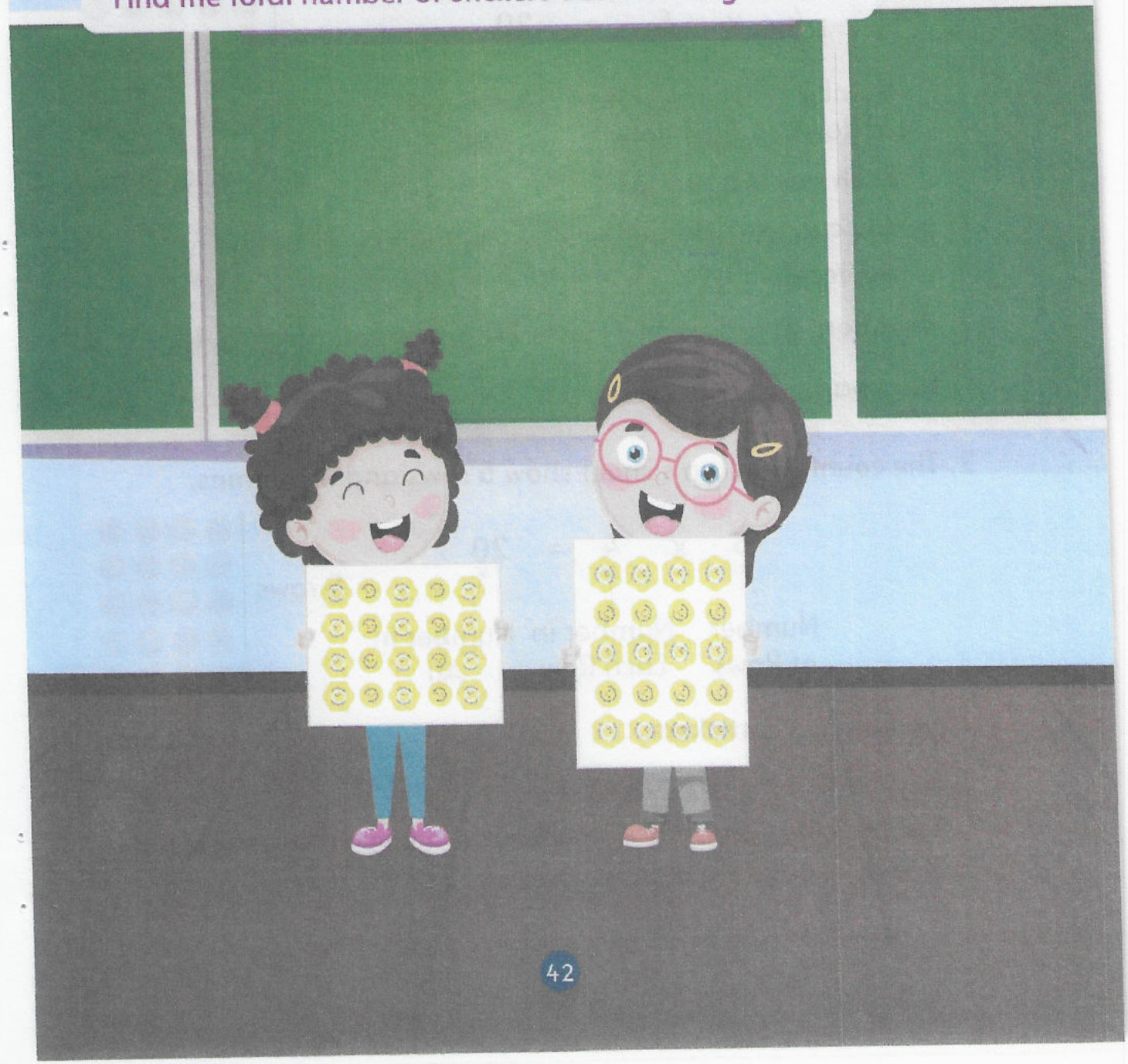
_____

OBJECTIVE

- Use arrays to solve multiplication problems.

THINK

Jana and Lyn each has a sheet of stickers.
Find the total number of stickers each of the girls has.



LEARN

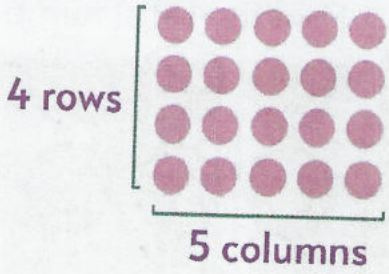
The stickers are in an array.
An array shows objects in equal rows and columns.

1. The counters in Jana's sheet show 4 rows and 5 columns.

   a. Multiplication can also be used to find the total in an array.

   $4 \times 5 = 20$

   Number of Rows | Number in Each Row | Number in All

   Each row is a group.

   b. You can use addition or skip counting by 5s to find the total.

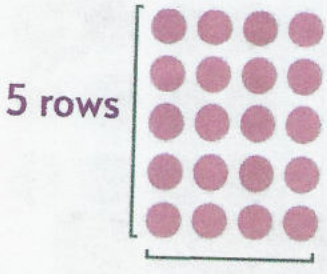
   Addition: $5 + 5 + 5 + 5 = 20$ | Skip counting: 5, 10, 15, 20

   Jana has _____ stickers.

2. The counters in Lyn's sheet show 5 rows and 4 columns.

   $5 \times 4 = 20$

   Number of Rows | Number in Each Row | Number in All

   Lyn has _____ stickers.

So, $4 \times 5 = 5 \times 4 = 20$.
Commutative property of multiplication: Switching the order of factors does not change the product.

PRACTICE

A. Write an addition sentence and a multiplication sentence to show equal rows.

1. 

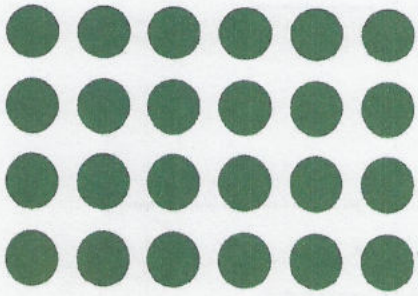
____ + ____ + ____ = ____

____ x ____ = ____

2. 

____ + ____ = ____

____ x ____ = ____

3. 

____ + ____ + ____ + ____ = ____

____ x ____ = ____

4.

____ + ____ = ____

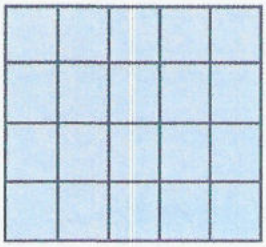
____ x ____ = ____

B. Draw an array to find the product.

1. 4 x 2 = _____

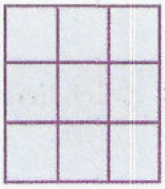
2. 3 x 5 = _____

C. Write an addition sentence and a multiplication sentence to show equal rows.

1. 

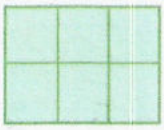
_____ + _____ + _____ + _____ = _____

_____ x _____ = _____

2. 

_____ + _____ + _____ = _____

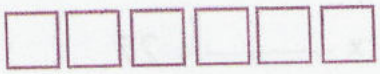
_____ x _____ = _____

3. 

_____ + _____ = _____

_____ x _____ = _____

D. Use 6 tiles to make as many different arrays as you can. Draw the arrays.

1. 

2.

1 row of 6

1 x 6 = 6

6 rows of _____

6 x _____ = 6

3.

_____ rows of _____

_____ x _____ = 6

4.

_____ rows of _____

_____ x _____ = 6

E. Mark the pair of number sentences related to the addition sentence: 5 + 5 + 5 =15.

(a) 3 x 5 = 15 ; 5 x 3 = 15

(b) 15 - 5 = 10 ; 5 x 10 = 50

(c) 3 x 5 = 15 ; 3 + 5 = 8

(d) 5 + 3 = 8 ; 8 - 5 = 3

F. Use the commutative property of multiplication to find each missing number.

1. 5 x 2 = _____

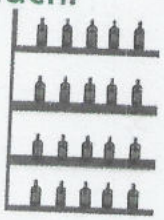
   2 x 5 = _____

2. 3 x _____ = 27

   9 x 3 = _____

G. Word Problems

1. Bottles of syrup are arranged in 4 rows of 5 bottles each. Jana adds 2 more bottles to each row. How many bottles of syrup are there in all?

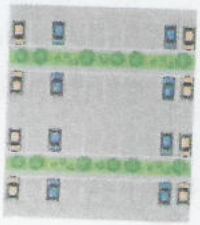


_____

_____

_____

2. A parking lot had 4 rows of 10 spaces. 2 more rows were added after the parking lot was expanded. How many parking spaces are there now?



_____

_____

_____

LESSON 8 MULTIPLICATION WITH 2, 3, AND 5

OBJECTIVE

- Solve multiplication problems with 2, 3, and 5 as factors.

THINK

The frog makes jumps of 2.

The rabbit makes jumps of 3.

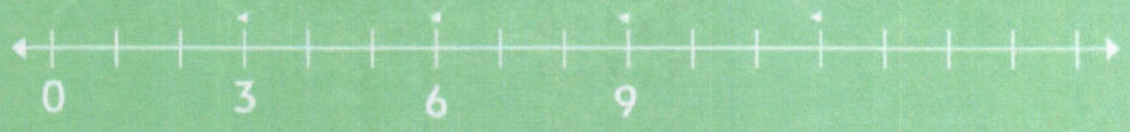
The kangaroo makes jumps of 5.

Write the numbers where each animal lands on the number line.













LEARN

Multiples are the products of a number and whole numbers.
Multiples of 2 and 5 have patterns in their products.

2s Fact	
0 x 2 = 0	5 x 2 = 10
1 x 2 = 2	6 x 2 = 12
2 x 2 = 4	7 x 2 = 14
3 x 2 = 6	8 x 2 = 16
4 x 2 = 8	9 x 2 = 18
10 x 2 = 20	

The products for the 2s facts are multiples of 2. Multiples of 2 end in 0, 2, 4, 6, or 8.

5s Fact	
0 x 5 = 0	5 x 5 = 25
1 x 5 = 5	6 x 5 = 30
2 x 5 = 10	7 x 5 = 35
3 x 5 = 15	8 x 5 = 40
4 x 5 = 20	9 x 5 = 45
10 x 5 = 50	

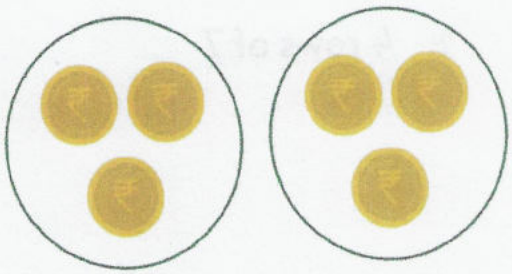
The products for the 5s facts are multiples of 5. Multiples of 5 end in 0 or 5.

3s Fact	
0 x 3 = 0	5 x 3 = 15
1 x 3 = 3	6 x 3 = 18
2 x 3 = 6	7 x 3 = 21
3 x 3 = 9	8 x 3 = 24
4 x 3 = 12	9 x 3 = 27
10 x 3 = 30	

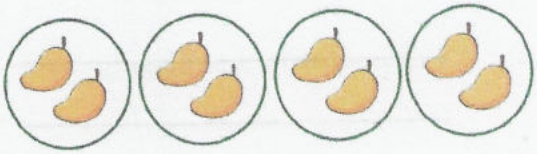
The products for the 3s facts are multiples of 3.

PRACTICE

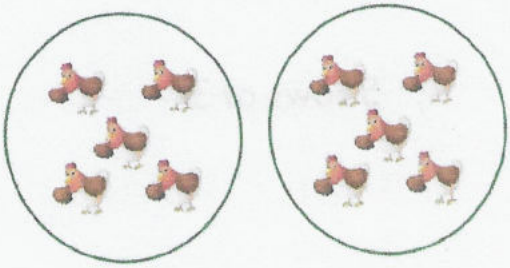
A. Count equal groups to find how many. Write the addition and multiplication sentences.

1. 

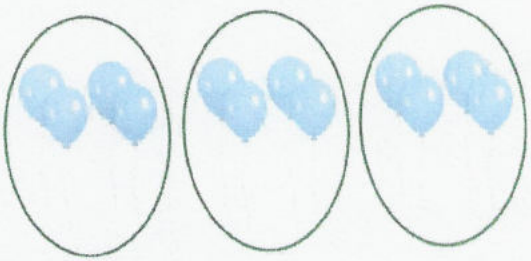
____ groups of ____
____ in all
3 + ____ = ____
____ x 3 = ____

2. 

____ groups of ____
____ in all
2 + ____ + ____ + ____ = ____
____ x 2 = ____

3. 

____ groups of ____
____ in all
5 + ____ = ____
____ x 5 = ____

4. 

____ groups of ____
____ in all
____ + ____ + ____ = ____
____ x ____ = ____

B. Draw an array for each. Then write two multiplication sentences.

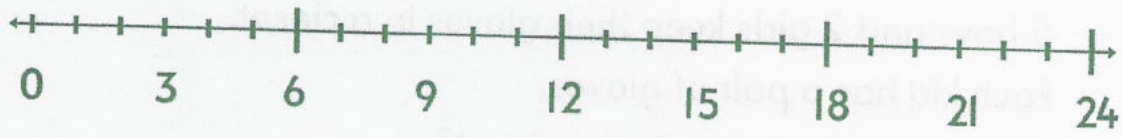
1. 2 rows of 4

2. 4 rows of 7

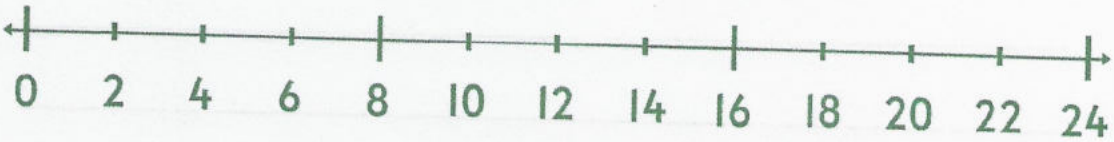
3. 3 rows of 8

4. 5 rows of 3

C. Draw jumps on the number line to find each product.

1. 

3 x 6 = _____

2. 

3 x 8 = _____

D. Find the unknown factor. Use the commutative property of multiplication.

1. _____ x 3 = 21

   3 x _____ = 21

2. 2 x _____ = 18

   _____ x 2 = 18

3. 5 x _____ = 20

   _____ x 5 = 20

E. Word Problems

1. 5 boys and 2 girls keep their gloves in a closet.
   Each kid has a pair of gloves.
   How many gloves are in the closet?

2. There are 7 iris flowers and 7 tulips.
   Each flower has 3 petals.
   How many petals are there in all?

3. Each of Adam, Jana, and Lyn had 3 snacks packed in their lunch boxes. Each kid ate 1 snack.
   How many snacks were left with the 3 kids?

LESSON 9 MULTIPLICATION WITH 4, 6, AND 10

OBJECTIVE

- Solve multiplication problems with 4, 6, and 10 as factors.

THINK

Adam packed the apples in a box of 4 rows,
2 rows of red apples and 2 rows of green apples.
Each row has 9 apples.

How many apples are there in the box?

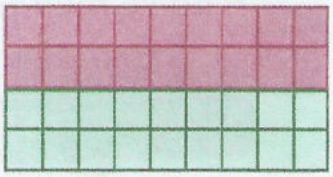


LEARN

Find 4 x 9.

Decompose 4 into equal addends: 4 = 2 + 2

Use the known fact of 2 x 9 and double it.



4 x 9 = 2 x 9 + _____ x _____ (Multiply)

= _____ + 18 (Add)

= 36

The array shows that 2 x 9 plus _____ x 9 equals _____ x 9.

So, 4 x 9 = _____.

There are _____ apples in the box.

4s Fact	
0 x 4 = 0	5 x 4 = 20
1 x 4 = 4	6 x 4 = 24
2 x 4 = 8	7 x 4 = 28
3 x 4 = 12	8 x 4 = 32
4 x 4 = 16	9 x 4 = 36
10 x 4 = 40	

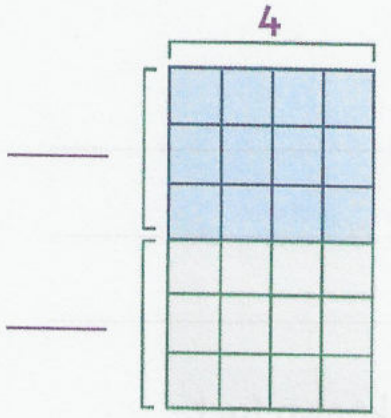
6s Fact	
0 x 6 = 0	5 x 6 = 30
1 x 6 = 6	6 x 6 = 36
2 x 6 = 12	7 x 6 = 42
3 x 6 = 18	8 x 6 = 48
4 x 6 = 24	9 x 6 = 54
10 x 6 = 60	

10s Fact	
0 x 10 = 0	5 x 10 = 50
1 x 10 = 10	6 x 10 = 60
2 x 10 = 20	7 x 10 = 70
3 x 10 = 30	8 x 10 = 80
4 x 10 = 40	9 x 10 = 90
10 x 10 = 100	

Multiples of 10 always end in 0.

PRACTICE

A. Double a known fact to find 6 x 4. Label the array and complete the number sentences.



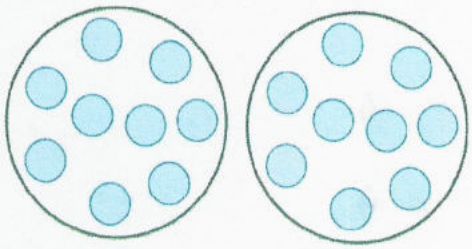
_____ x 4 = _____

_____ x 4 = _____

12 + 12 = _____

So, 6 x 4 = _____.

B. Double 2 x 9 to find 4 x 9.



Multiply with 2.

2 x 9 = _____

Double the product.

18 + 18 = _____

So, 4 x 9 = _____.

C. Double a known fact to find each product. Draw and label an array.

1. 8 x 4 = _____

2. 3 x 6 = _____

D. Find each unknown product. Double a known fact.

1. 10 x 9 = ____

2.
$$\begin{array}{r} 4 \\ \times\ 4 \\ \hline \square \end{array}$$

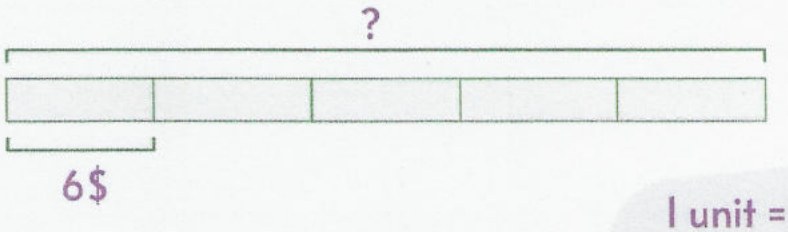
E. Word Problems

1. Ahmad earns 10$ per day.
He works for 7 days.
How much does he earn within the week?

_____

_____

2. 5 children equally share the cost of a present.
Each of them pays 6$.
What is the cost of the present?



1 unit = 6$
5 units =6$ x 5

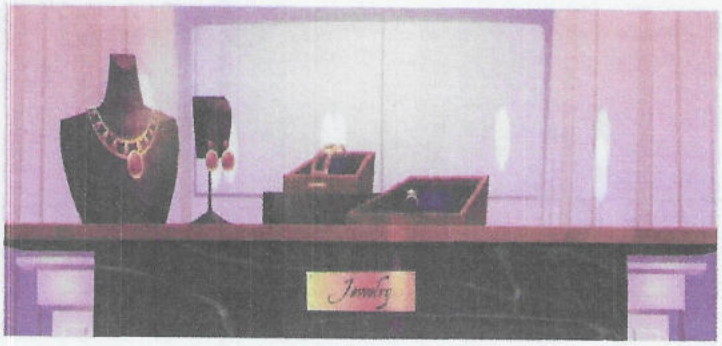


_____

_____

3. Lyn poured 4 liters of syrup into each of her 4 bottles.
How many liters of syrup are there in all?

4. Lyn owns 4 sets of jewelry. Each set contains 2 earrings, 1 necklace, 1 bracelet, and 1 ring.
How many pieces of jewelry does Lyn have altogether?
Write a multiplication sentence.
Explain how you can double a known fact to find the answer.



OBJECTIVE

- Solve multiplication problems with 7, 8, and 9 as factors.

THINK

A baker sells 3 rows of cupcakes.

There are 7 cupcakes in each row.

How many cupcakes does he sell in all?



LEARN

7s Fact	
0 x 7 = 0	5 x 7 = 35
1 x 7 = 7	6 x 7 = 42
2 x 7 = 14	7 x 7 = 49
3 x 7 = 21	8 x 7 = 56
4 x 7 = 28	9 x 7 = 63
10 x 7 = 70	

8s Fact	
0 x 8 = 0	5 x 8 = 40
1 x 8 = 8	6 x 8 = 48
2 x 8 = 16	7 x 8 = 56
3 x 8 = 24	8 x 8 = 64
4 x 8 = 32	9 x 8 = 72
10 x 8 = 80	

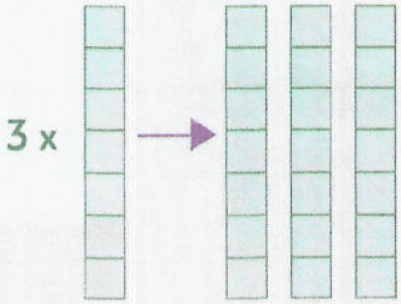
9s Fact	
0 x 9 = 0	5 x 9 = 45
1 x 9 = 9	6 x 9 = 54
2 x 9 = 18	7 x 9 = 63
3 x 9 = 27	8 x 9 = 72
4 x 9 = 36	9 x 9 = 81
10 x 9 = 90	

He sells ——— cupcakes in all.

PRACTICE

A. Find the product.

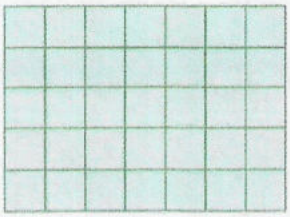
1.



3 x 7 = ———

7 x 3 = ———

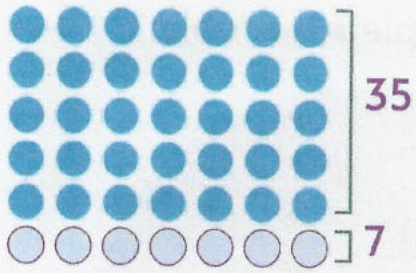
2.



5 x 7 = ———

7 x 5 = ———

3. a.



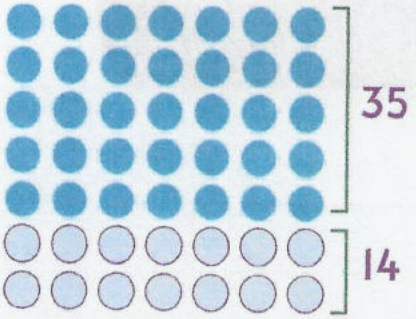
6 x 7 = 35 + 7

5 x 7 = 35

6 x 7 = _____



b.



7 x 7 = 35 + 14

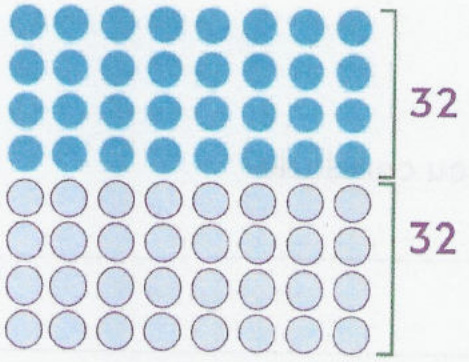
5 x 7 = 35

2 x 7 = 14

7 x 7 = _____



4.



4 x 8 = 32

8 x 8 = _____ + _____

= _____

B. An octopus has 8 arms. Complete the table.



Number of Octopuses	2	4			8		
Number of Arms	16		48	56		72	80

C. Add the tens digit and the ones digit of each product.

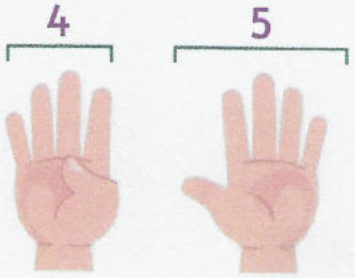
1 x 9 = 9
2 x 9 = 18
3 x 9 = 27
4 x 9 = 36
5 x 9 = 45
6 x 9 = 54
7 x 9 = 63
8 x 9 = 72
9 x 9 = 81
10 x 9 = 90

What do you conclude?

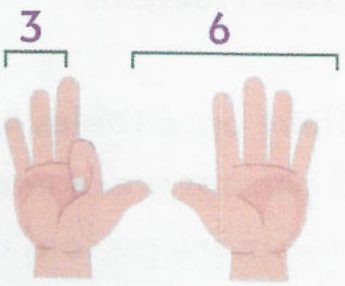
_____

_____

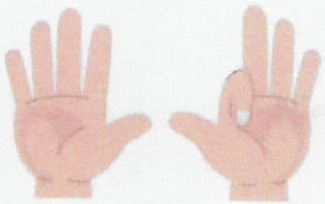
D. Here is an interesting way to multiply with 9. Find the product.

1. 

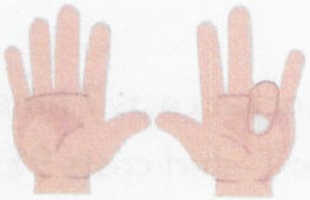
$5 \times 9 = 45$

2. 

$9 \times 4 =$ ____

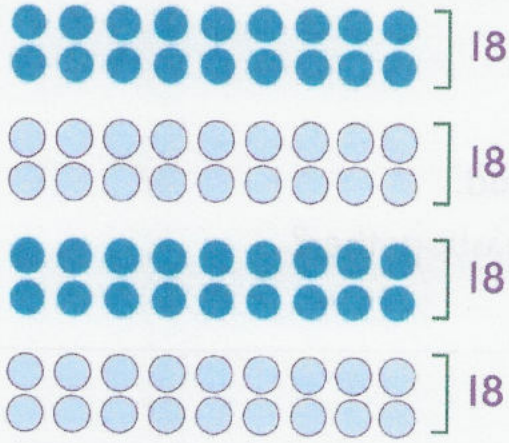
3. 

$7 \times 9 =$ ____

4. 

$9 \times 9 =$ ____

E. Write the missing factor.



$2 \times 9 = 18$

$9 \times 2 = 18$

$9 \times 4 = 18 \times$ ____

$9 \times 6 = 18 \times$ ____

$9 \times 8 = 18 \times$ ____

F. Word Problems

1. There are 6 tables in the restaurant.
   8 persons are at each table.
   How many persons are in the restaurant?

2. A jacket costs 7 times as much as a T-shirt.
   The T-shirt costs 9$.
   What is the cost of the jacket?

3. 4 boys went to a camp.
   Each boy brought 9 cans of food.
   How many cans did they bring altogether?

OBJECTIVE

- Solve multiplication problems with 0 and 1 as factors.

THINK

Adam has 8 plates with 1 orange on each plate.
Jana has 7 plates with 0 oranges on each plate.
How many oranges does Adam have?
How many oranges does Jana have?



LEARN

0s Fact	
0 x 0 = 0	5 x 0 = 0
1 x 0 = 0	6 x 0 = 0
2 x 0 = 0	7 x 0 = 0
3 x 0 = 0	8 x 0 = 0
4 x 0 = 0	9 x 0 = 0
10 x 0 = 0	

1s Fact	
0 x 1 = 0	5 x 1 = 5
1 x 1 = 1	6 x 1 = 6
2 x 1 = 2	7 x 1 = 7
3 x 1 = 3	8 x 1 = 8
4 x 1 = 4	9 x 1 = 9
10 x 1 = 10	

The identity property of multiplication states that the product of any number and 1 is that number.

8 x 1 = 8 1 x 8 = 8

The zero property of multiplication states that the product of any number and zero is zero.

0 x 7 = 0 7 x 0 = 0

x	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

Adam has _____ oranges.

Jana has _____ oranges.

PRACTICE

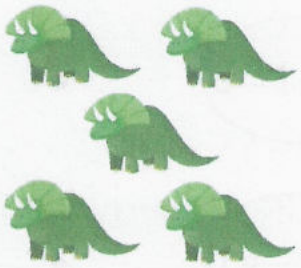
A. Circle the equal groups to find the unknown product.

1. 2 x 1 = _____



$$\begin{array}{r} 2 \\ \times\ 1 \\ \hline \square \end{array}$$

2. 5 x 1 = _____



$$\begin{array}{r} 5 \\ \times\ 1 \\ \hline \square \end{array}$$

B. Write an addition sentence to help find each product. Check using the identity property of multiplication.

1. 8 x 1 = _____ = _____

2. 7 x 1 = _____ = _____

C. Match each multiplication sentence to its unknown number.

5 x 1 = ___	•	• 5
___ x 1 = 8	•	• 8
5 x ___ = 0	•	• 4
6 x ___ = 6	•	• 0
4 x 1 = ___	•	• 1

D. Use the identity property of multiplication or the zero property of multiplication to find each product.

1. 4 x 0 = _____
2. 7 x 1 = _____
3. 6 x 1 = _____
4. 1 x 0 = _____

5. $2 \times 1 =$ _____

6. $8 \times 0 =$ _____

7. $0 \times 7 =$ _____

8. $9 \times 1 =$ _____

E. Write the correct word to complete each sentence.

identity zero

1. The _____ property of multiplication states that any number multiplied by 0 equals 0.

2. The _____ property of multiplication states that any number multiplied by 1 equals that number.

F. Mark the multiplication sentence that shows how to find the number of beaks two cats have.

(a) $1 + 1 = 2$

(b) $1 \times 1 = 1$

(c) $2 \times 2 = 4$

(d) $2 \times 0 = 0$

G. Complete the multiplication sentences.

1. ——— x 1 = 15
2. ——— x 0 = 0
3. 7 x ——— = 7
4. 19 x ——— = 0

H. Word Problems

1. Lyn collects stamps. She gets 1 stamp each day for 7 days in the first week and the same number of stamps for 5 days in the second week.
   How many stamps does she add to her collection?

2. There are no pockets on any of Adam's shirts or jackets.
   How many pockets do 2 of Adam's shirts and 4 of Adam's jackets have?

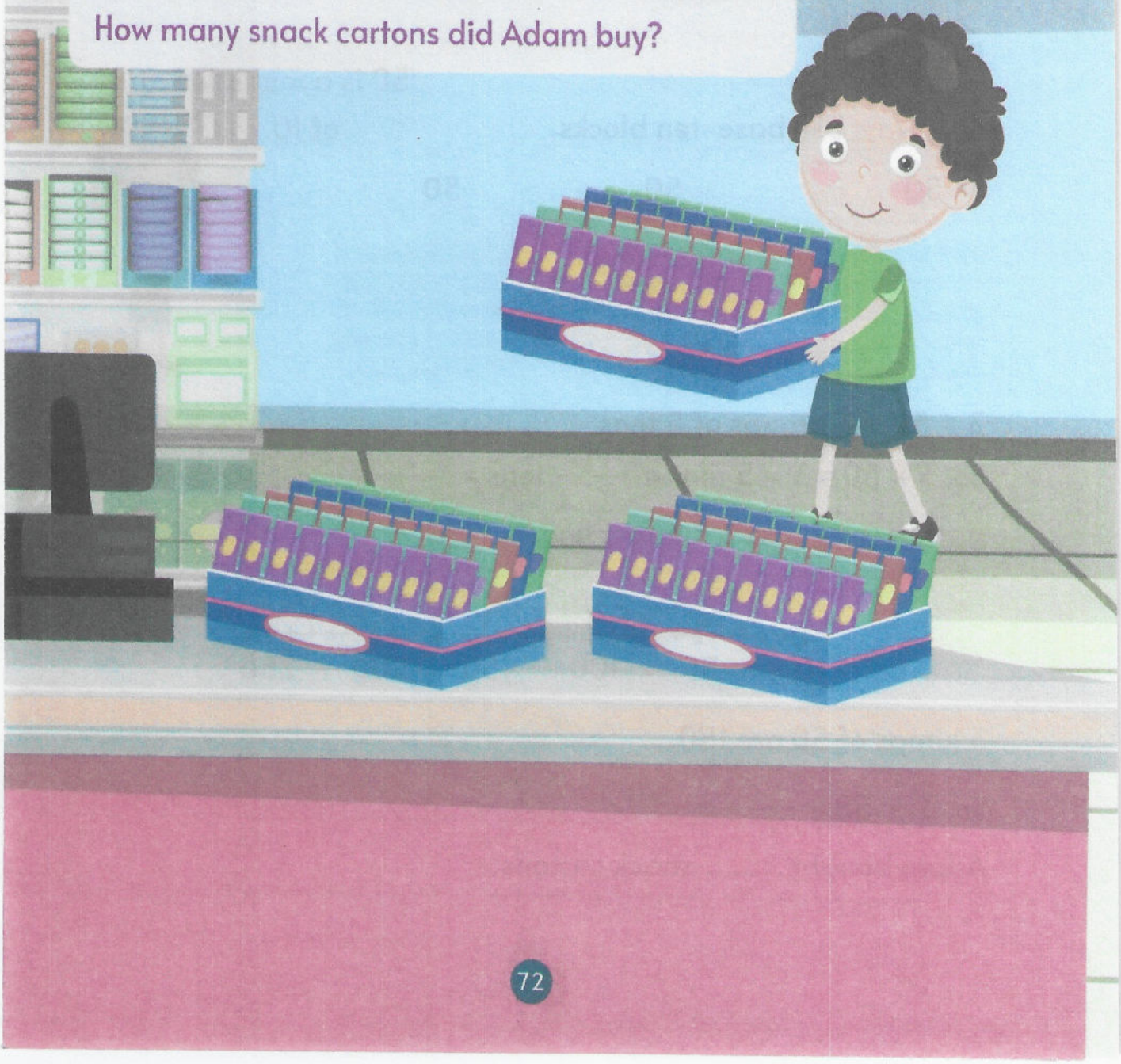
LESSON 12 MULTIPLICATION BY MULTIPLES OF 10

OBJECTIVE

- Use number patterns to multiply by multiples of 10.

THINK

Adam bought 3 boxes of snacks.
Each box contains 5 rows of 10 snack cartons.
How many snack cartons did Adam buy?



LEARN

5 rows of 10 snack cartons = 50 snack cartons = 1 box

Adam bought 3 boxes.

Find 3 × 50.



One way: Use base-ten blocks.

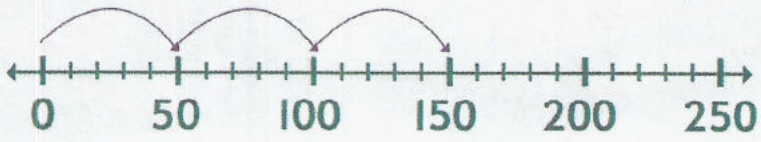
50 50 50



3 × 50 is 3 groups of 5 tens.

So, 3 × 50 = 3 × 5 tens = ——— tens = ———.

Another way: Use a number line.



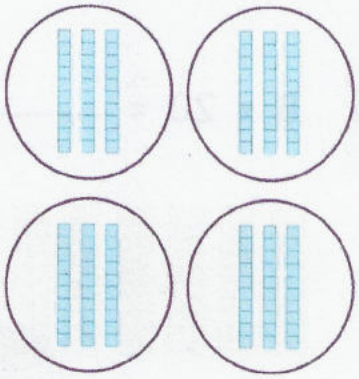
3 jumps of 50 are 150.

So, 3 x 50 = ———.

Adam bought ——— snack cartons.

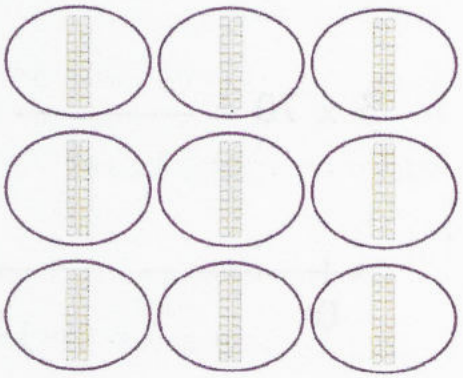
PRACTICE

A. Write a multiplication sentence for each picture.

1. 

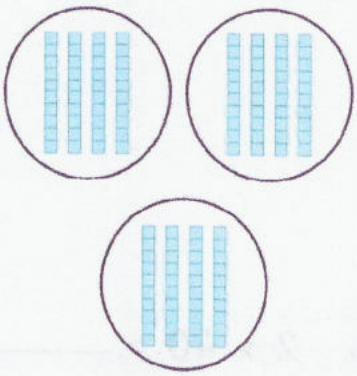
____ groups of ____

____ x ____ = ____

2. 

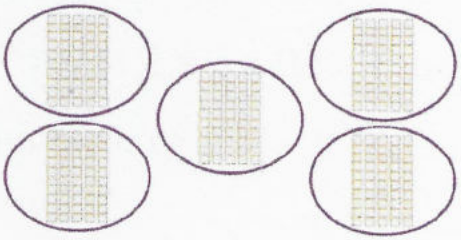
____ groups of ____

____ x ____ = ____

3. 

____ groups of ____

____ x ____ = ____

4. 

____ groups of ____

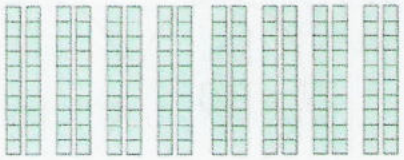
____ x ____ = ____

B. Use a number line or draw base-ten blocks to find each product.

1. 3 x 70 = _____



2. 8 x 20 = _____



3. 9 x 30 = _____

4. 5 x 60 = _____

5. 6 x 50 = _____

6. 2 x 40 = _____

C. Complete each equation.

1. $6 \times 6 =$ _____

   $6 \times 60 =$ _____

2. $3 \times 2 =$ _____

   $3 \times 20 =$ _____

3. $5 \times 3 =$ _____

   $5 \times 30 =$ _____

4. $8 \times 9 =$ _____

   $8 \times 90 =$ _____

5. $4 \times 9 =$ _____

   $40 \times 9 =$ _____

6. $7 \times 8 =$ _____

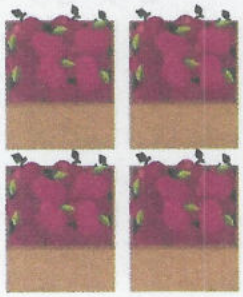
   $70 \times 8 =$ _____

D. Find the unknown product.

1. $70 \times 2 =$ ☐
2. $40 \times 9 =$ ☐
3. $20 \times 8 =$ ☐
4. $80 \times 3 =$ ☐
5. $30 \times 7 =$ ☐
6. $50 \times 6 =$ ☐
7. $60 \times 4 =$ ☐
8. $90 \times 5 =$ ☐

E. Word Problems

1. Each of the 4 crates contains 70 apples.
How many apples are there in the 4 crates?



2. Each of the children shown in the picture brought 60 muffins for the school fundraising.
How many muffins did they bring altogether?



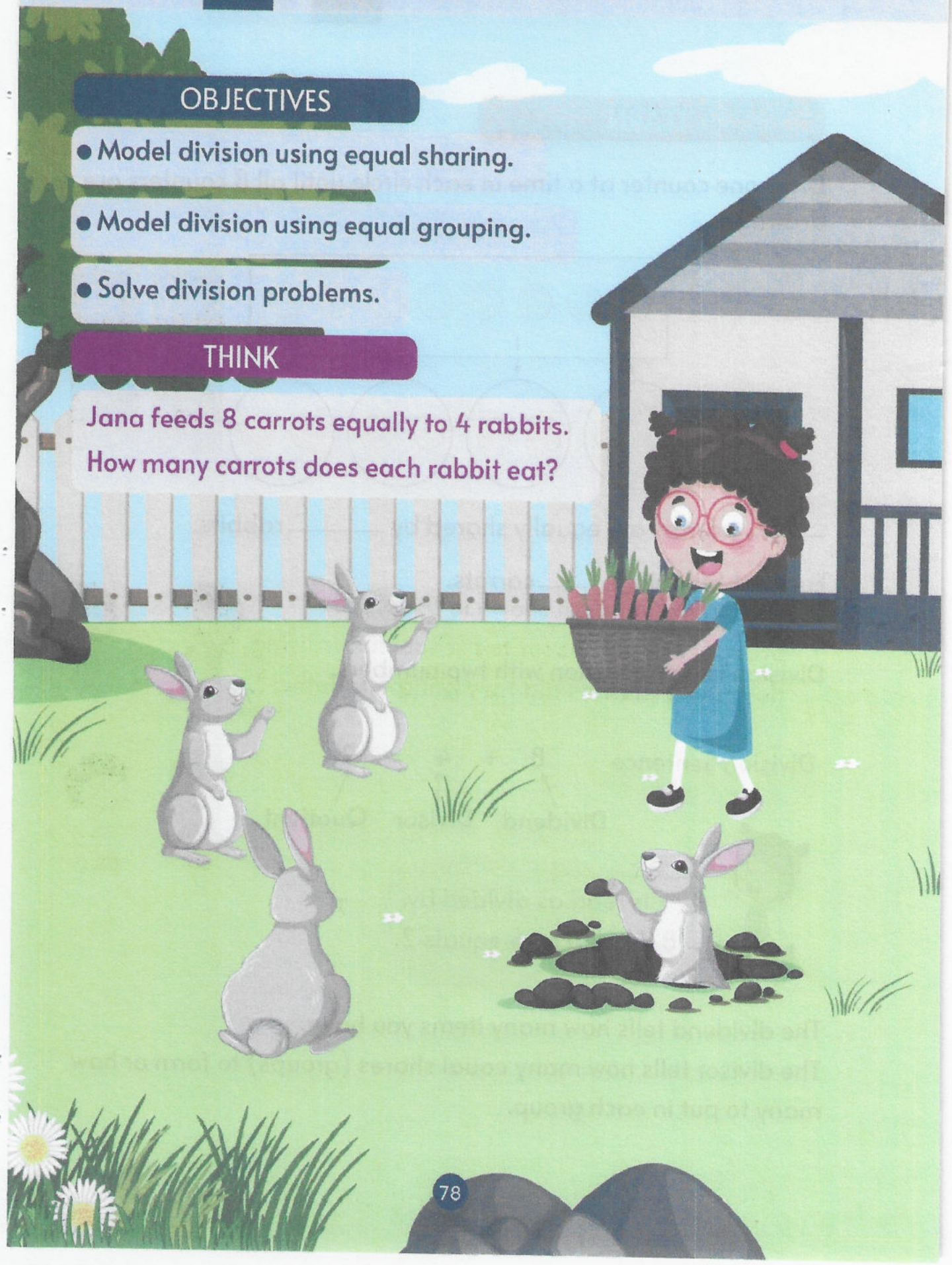
LESSON 13 DIVISION AS EQUAL SHARING

OBJECTIVES

- Model division using equal sharing.
- Model division using equal grouping.
- Solve division problems.

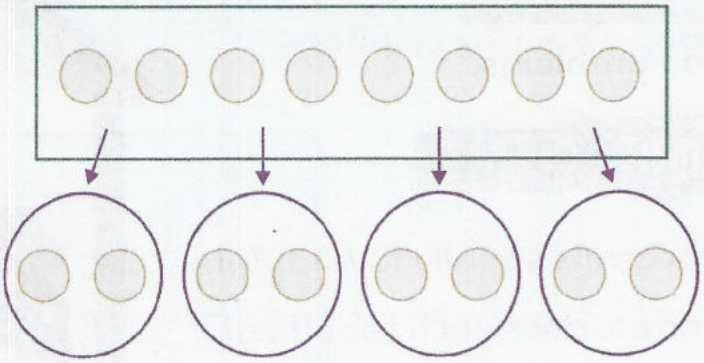
THINK

Jana feeds 8 carrots equally to 4 rabbits.
How many carrots does each rabbit eat?



LEARN

Draw one counter at a time in each circle until all 8 counters are drawn.



_____ carrots are equally shared by _____ rabbits.

Each rabbit eats _____ carrots.

Division is an operation with two numbers.

Division Sentence $8 \div 4 = 2$

Dividend Divisor Quotient

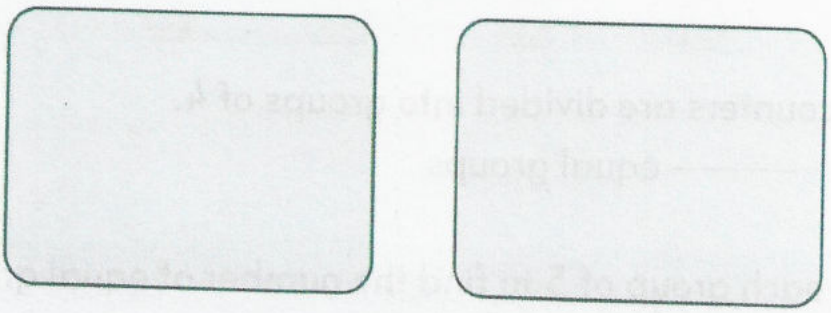


÷ is read as divided by.
8 divided by 4 equals 2.

The dividend tells how many items you have.
The divisor tells how many equal shares (groups) to form or how many to put in each group.

PRACTICE

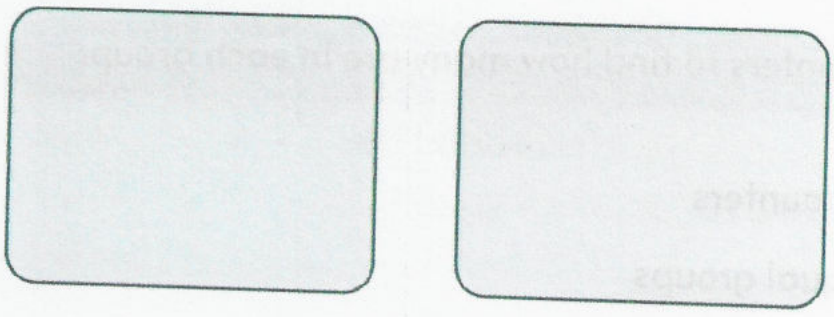
A. Divide 6 counters equally to find the number of counters in each group. Draw the counters.



_____ counters are divided into 2 groups.

6 ÷ 2 = _____ counters in each group

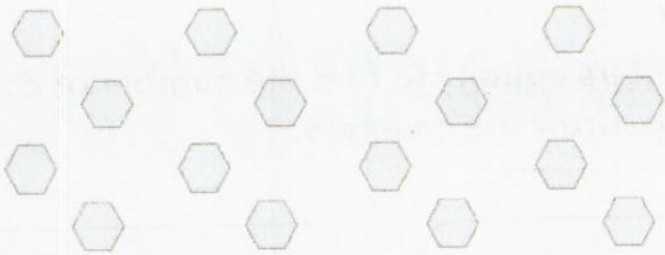
B. Divide 8 counters equally to find the number of counters in each group. Draw the counters.



_____ counters are divided into _____ groups.

8 ÷ 2 = _____ counters in each group

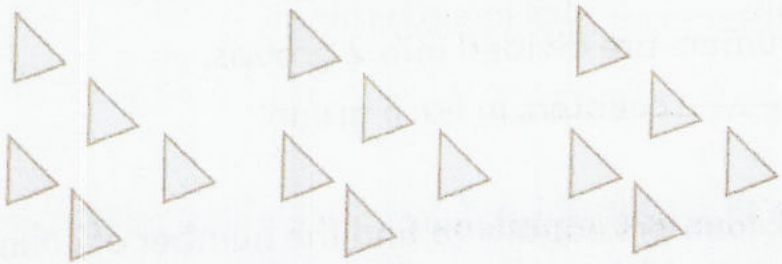
C. Circle each group of 4 to find the number of equal groups.



_____ counters are divided into groups of 4.

16 ÷ 4 = _____ equal groups

D. Circle each group of 5 to find the number of equal groups.



There are _____ equal groups.

15 ÷ 5 = _____

E. Use counters to find how many are in each group.

1. 20 counters

   5 equal groups

   _____ in each group

   _____ ÷ _____ = _____

2. 21 counters

7 equal groups

_____ in each group

21 ÷ _____ = _____

F. Use tiles to draw an array. Write the division sentence.

1. Draw 9 tiles in 3 equal rows.

There are _____ tiles in each row.

_____ ÷ _____ = _____

2. Draw 12 tiles in 4 equal rows.

There are _____ tiles in each row.

_____ ÷ _____ = _____

G. Match each division sentence to its unknown.

24 ÷ _____ = 3	○	○ 5
30 ÷ 6 = _____	○	○ 7
42 ÷ _____ = 6	○	○ 8

H. Word Problems

1. Jad and his 3 friends share 8 apples equally.
How many apples does each one get?



_____

_____

2. Lyn has 16 bracelets.
She equally hangs the bracelets on 2 hooks.
How many bracelets are on each hook?

_____

_____

3. Layal is drying 8 mittens on the heater.
Each of Layal's kids has 2 mittens.
How many kids does Layal have?

_____

_____

4. A florist makes 5 equal-sized bouquets of 25 flowers.
How many flowers are in each bouquet?



_____

_____

LESSON 14 DIVISION AS REPEATED SUBTRACTION

OBJECTIVE

- Relate division and subtraction.

THINK

Adam has 15 toy cars.
He wants to put each group of 5 toy cars in a box.
How many boxes does Adam need for his toy cars?



LEARN

One way: Use repeated subtraction.

Start with 15.

Subtract 5 until you reach 0.

Count the number of times you subtract 5.

❶ 15 − 5 = 10 ❷ 10 − 5 = 5 ❸ 5 − 5 = 0

We write: $15 \div 5 = 3$ or $5\overline{)15}$ $\quad 3$

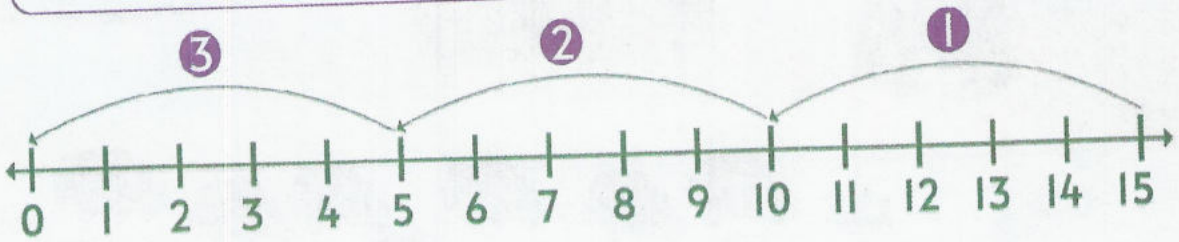
Number in All | Number in Each Group | Number of Groups

Another way: Use a number line.

Start at 15.

Count back by 5s to 0.

Count the number of jumps you make.



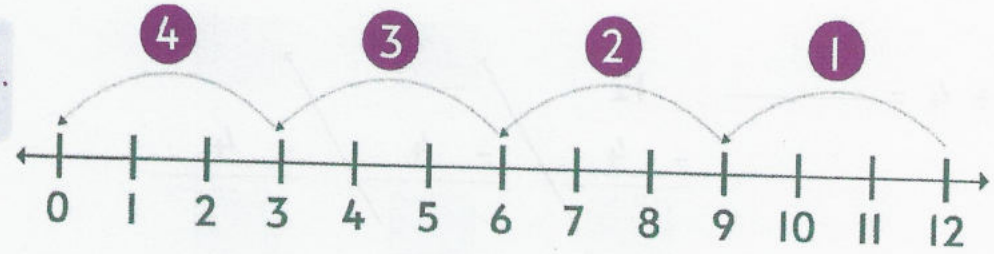
So, 15÷5 = _____.

Adam needs _____ boxes for his toy cars.

PRACTICE

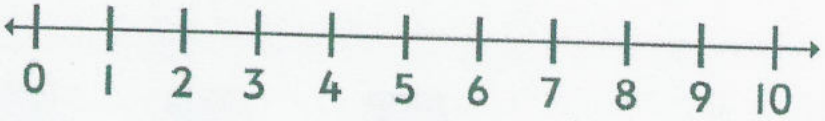
A. Use the number line to divide.

1.



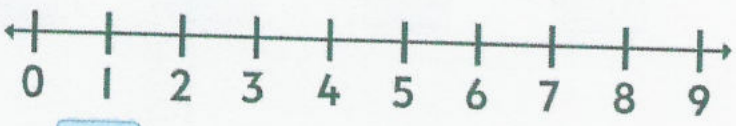
12 ÷ 3 = _____

2.



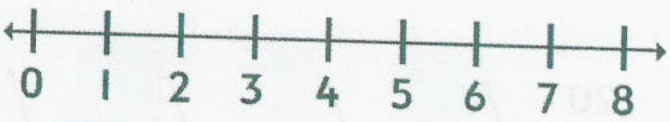
10 ÷ 5 = _____

3.



$3\overline{)9}$

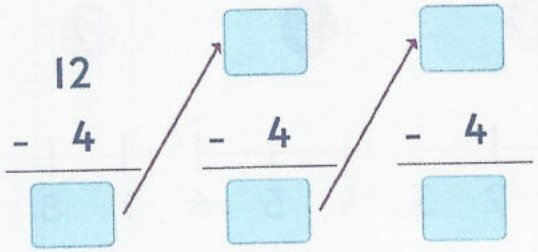
4.



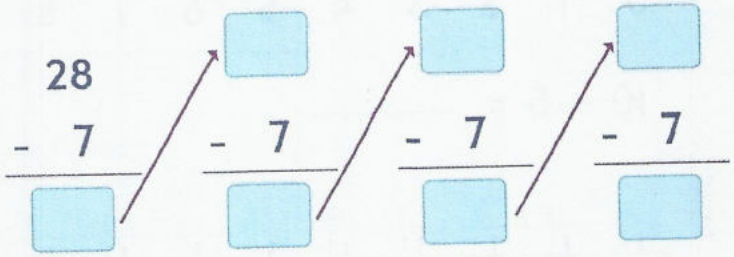
$4\overline{)8}$

B. Use repeated subtraction to divide.

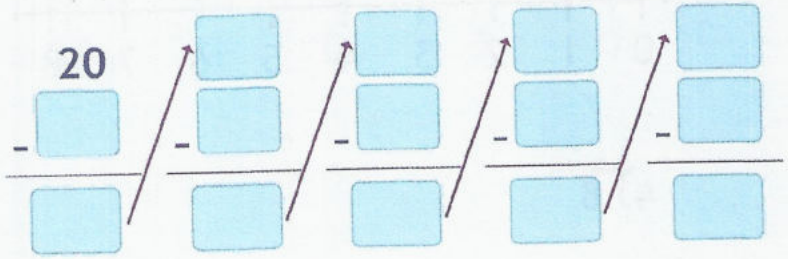
1. $12 \div 4 =$ _____



2. $7\overline{)28}$ = _____



3. $20 \div 4 =$ _____



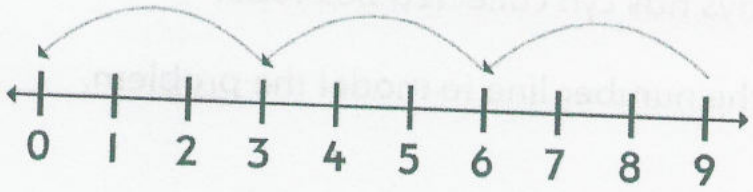
C. Write the division equation.

1. 36 - 9 = 27 → 27 - 9 = 18 → 18 - 9 = 9 → 9 - 9 = 0

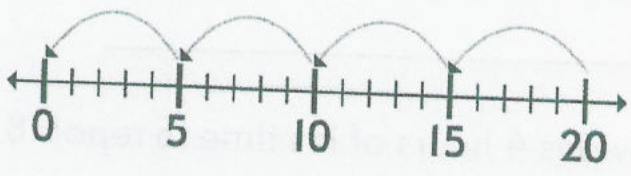
_____

2. 24 - 8 = 16 → 16 - 8 = 8 → 8 - 8 = 0

_____

3. 

_____

4. 

_____

D. Word Problems

1. Jana picks 14 apples. She places 7 apples in each bag.
How many bags does Jana use?

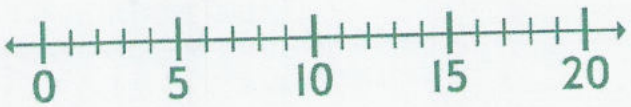
14 - 7 = ____

____ - 7 = ____

So, ____ ÷ 7 = ____.

2. Lyn collects 5 box tops each day. She has collected 20 box tops in all.
For how many days has Lyn collected box tops?

Draw jumps on the number line to model the problem.



3. A mechanic equally divides 4 hours of his time to repair 8 cars.
How many cars will he repair in one hour?

LESSON 15 RELATE DIVISION AND MULTIPLICATION

OBJECTIVE

- Use fact families to see how division and multiplication are related.

THINK

Lyn arranges 30 flowers in an array.

Find the multiplication and division equations to describe this array.

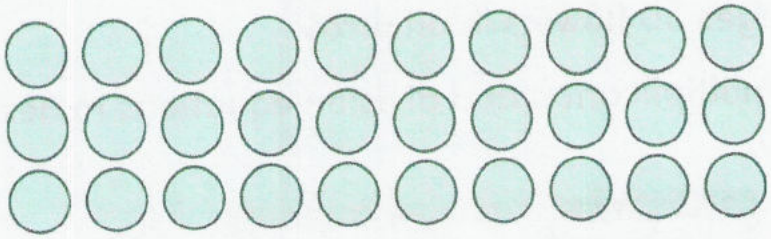


LEARN

Division and multiplication are related operations.

They are inverse operations because they undo each other.

The counters show 3 rows and 10 columns.



Multiplication

$3 \times 10 = 30$

- 3 ↑ Number of Rows
- 10 ↑ Number in Each Row
- 30 ↑ Number in All

Division

$30 \div 3 = 10$

- 30 ↑ Number in All
- 3 ↑ Number of Rows
- 10 ↑ Number in Each Row

A fact family shows how multiplication and division are related.

Fact family for 3, 10, and 30:

$3 \times 10 = 30$

$10 \times 3 = 30$

$30 \div 3 = 10$

$30 \div 10 = 3$

A fact family is a group of related facts that uses the same numbers.



PRACTICE

A. Use the array to complete the related facts.

1. ____ x 4 = 20

   ____ x ____ = 20

   ____ ÷ 5 = 4

   ____ ÷ ____ = 5



2. 4 x ____ = 24

   24 = ____ x ____

   ____ ÷ 4 = 6

   4 = ____ ÷ ____

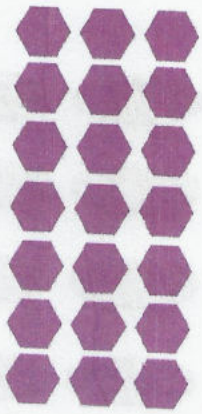


3. 7 x ____ = 21

   ____ ÷ 7 = 3

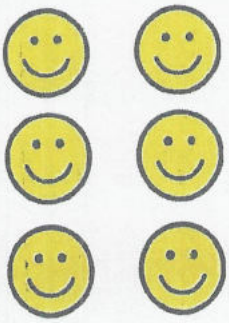
   21 = ____ x ____

   7 = ____ ÷ ____

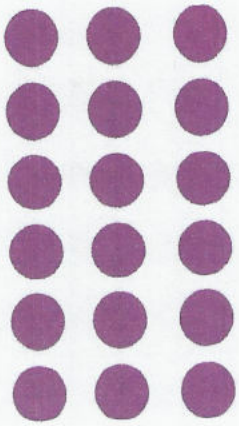


B. Write the fact family for each array.

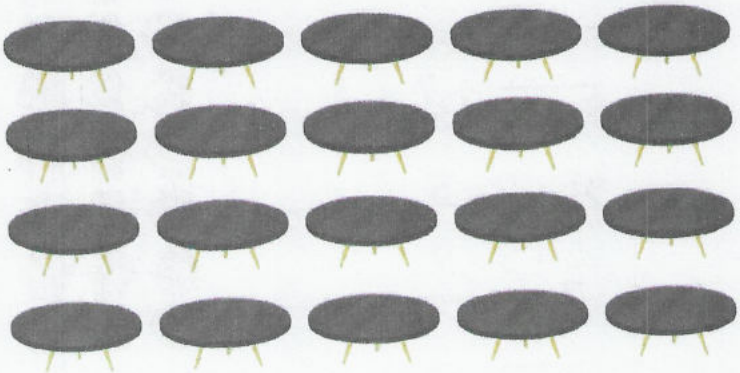
1. _____
_____
_____
_____



2. _____
_____
_____
_____



3. _____
_____
_____
_____



C. Complete the fact family for 2, 6, and 12.

_____ x 6 = _____ 12 ÷ _____ = _____

_____ x _____ = 12 _____ ÷ _____ = 2

D. Write the fact family for each set of numbers.

1. 2, 3, 6

_____

_____

_____

_____

2. 5, 5, 25

_____

_____

_____

_____

3. 4, 8, 32

_____

_____

_____

_____

E. Write the set of numbers for each fact family.

1. 5 x 9 = 45
   9 x 5 = 45
   45 ÷ 9 = 5
   45 ÷ 5 = 9

_____

2. 7 x 4 = 28
   4 x 7 = 28
   28 ÷ 7 = 4
   28 ÷ 4 = 7

_____

3. 3 x 3 = 9
   9 ÷ 3 = 3

_____

F. Word Problems

1. All 5 members of Adam's family went to the movies.
   Their tickets cost a total of 30$.
   How much did each ticket cost?

_____

_____

2. The petting zoo has 21 animals.
   There is an equal number of goats, ponies, and cows.
   How many animals of each type are there?

_____

_____

3. A veterinarian helps 20 pets from Monday to Friday.
   She helps an equal number of pets each day.
   How many pets does she help each day?

_____

_____

OBJECTIVE

- Read, write, and identify unit fractions of wholes.

THINK

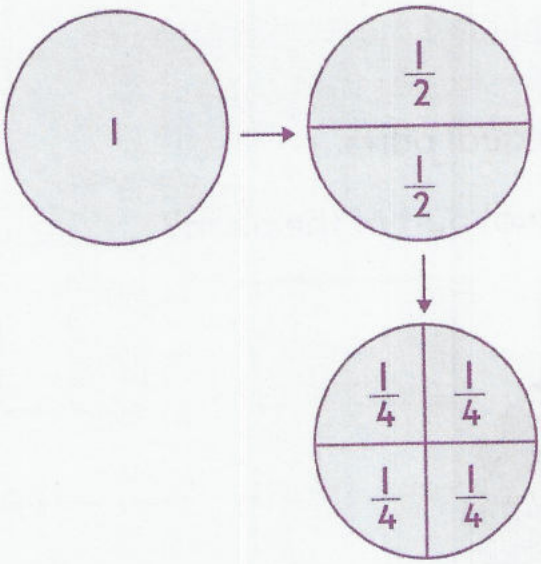
Adam divided a pizza into four equal parts.

What fraction represents one equal part of the pizza?



LEARN

A fraction is a number that names equal parts of a whole.



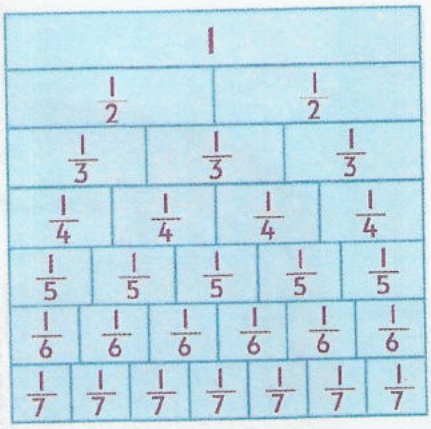
Divide a circle into 2 equal parts. Each part is half a circle.

Divide a circle into 4 equal parts. Each part is a quarter of a circle.
A quarter circle is the fourth of a circle.

A unit fraction represents one equal part of the whole.

It has 1 as its top number.

$\frac{1}{2}$: one half	$\frac{1}{5}$: one fifth
$\frac{1}{3}$: one third	$\frac{1}{6}$: one sixth
$\frac{1}{4}$: one fourth	$\frac{1}{7}$: one seventh



So, the fraction that represents one equal part of the pizza is $\frac{\square}{\square}$.

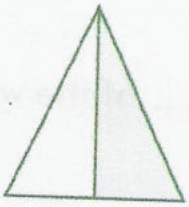
LESSON 16

PRACTICE

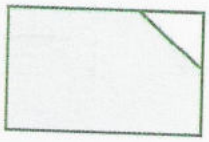
A. 1. Write whether the shape is divided into equal parts or unequal parts. Then circle the shapes that show $\frac{1}{2}$.



_____ parts



_____ parts

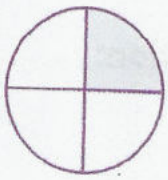


_____ parts



_____ parts

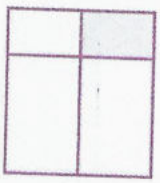
2. Write whether the shape is divided into equal parts or unequal parts. Then circle the shapes that show $\frac{1}{4}$.



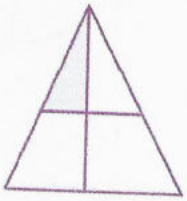
_____ parts



_____ parts



_____ parts

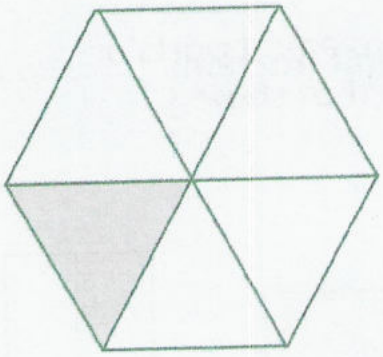


_____ parts

3. a. How many halves are there in a whole? _____

b. How many fourths are there in a whole? _____

B. Complete.



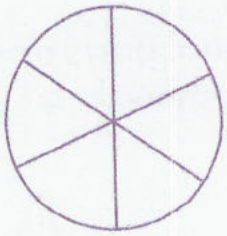
The whole is divided into ☐ equal parts.

$\frac{\square}{\square}$ of the whole is shaded.

_____ of the whole is shaded.

C. Write the number of equal parts. Shade one part. Then write its unit fraction.

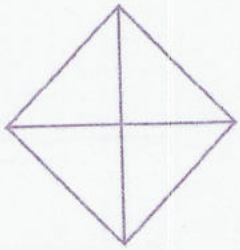
1.



☐ equal parts

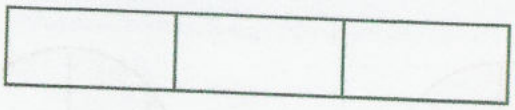
unit fraction: $\frac{\square}{\square}$

2.



☐ equal parts

unit fraction: $\frac{\square}{\square}$

3. 

☐ equal parts

unit fraction: $\frac{\square}{\square}$

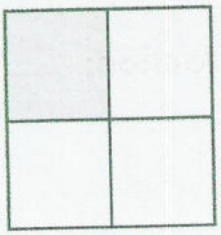
D. Divide the whole into equal parts. Then label each part with its unit fraction.

1. 4 fourths

2. 5 fifths

3. 6 sixths

E. Circle the correct unit fraction for the shaded section of each model.

1. 

$\frac{1}{3}$; $\frac{1}{4}$

2. 

$\frac{1}{8}$; $\frac{1}{6}$

3. 

$\frac{1}{5}$; $\frac{1}{6}$

F. Word Problem

The missing parts of the pictures show what Adam and Jad ate for dinner.

a. What fraction of the pizza did Jad eat?

_____

Adam	Jad
	
	

b. What fraction of the orange did Adam eat? Write the fraction in numbers and words.

$\frac{\square}{\square}$ _____

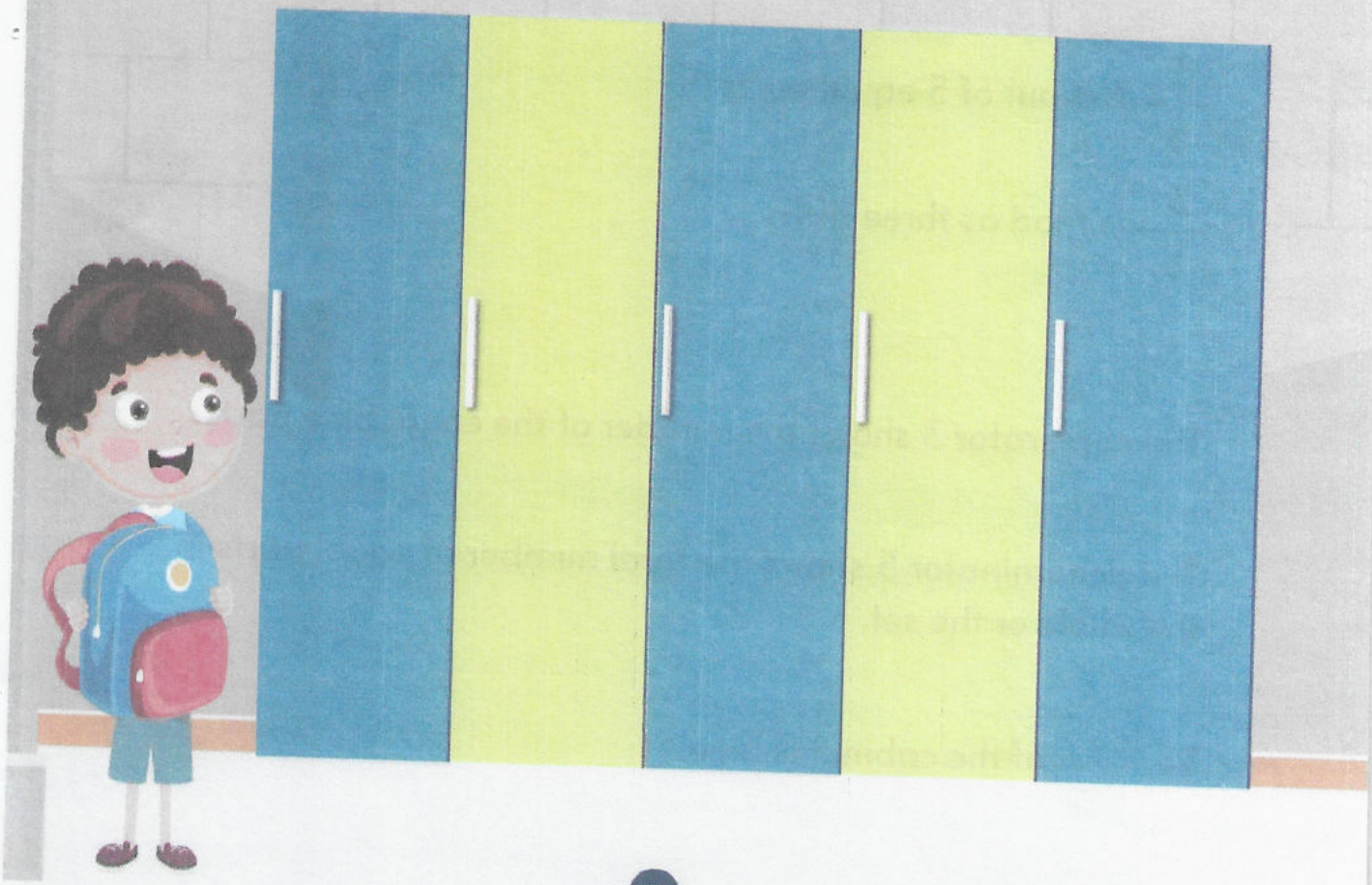
LESSON 17 FRACTION OF A WHOLE

OBJECTIVES

- Use fractions to name part of a whole.
- Use fractions to name part of a set.

THINK

A cabinet is divided into 5 equal parts. 3 parts are blue, and 2 are yellow.
What fraction of the cabinet is blue?



LEARN

A fraction can name more than one equal part of a whole or a set.



Number of blue parts = 3
Number of parts altogether = 5

The fraction of the whole in blue is $\frac{3}{5}$. 3 ← Numerator, 5 ← Denominator

$\frac{3}{5}$ is 3 out of 5 equal parts.

$\frac{3}{5}$ is read as three fifths.

The numerator 3 shows the number of the equal blue parts.

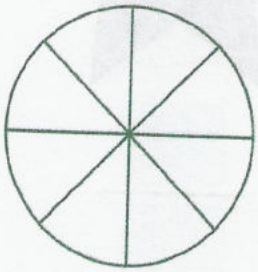
The denominator 5 shows the total number of equal parts in the whole or the set.

So, $\frac{\square}{\square}$ of the cabinet is blue.

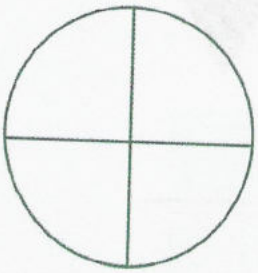
PRACTICE

A. Shade the circle to model the fraction. Then write the fraction in numbers.

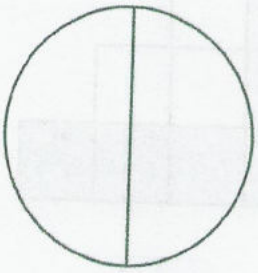
1. six out of eight



2. three fourths



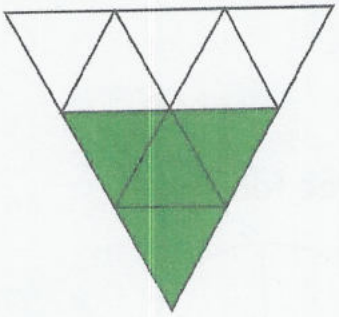
3. one out of two

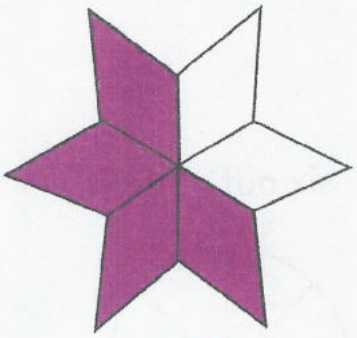


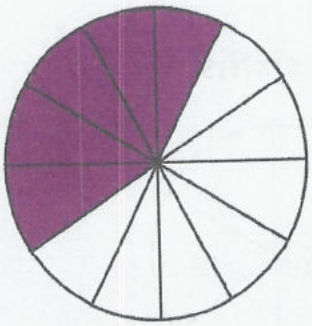
4. five sixths

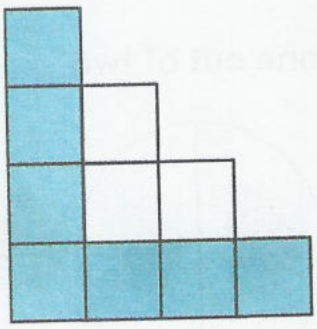


B. Write the fraction that names the colored part.

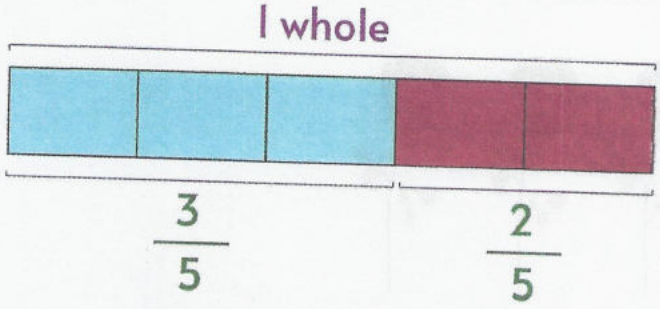
1. 

2. 

3. 

4. 

C. Complete.

1. 

$\frac{3}{5}$ and $\frac{\square}{\square}$ make 1 whole.

2. 

$\frac{1}{7}$ and $\frac{\square}{\square}$ make 1 whole.

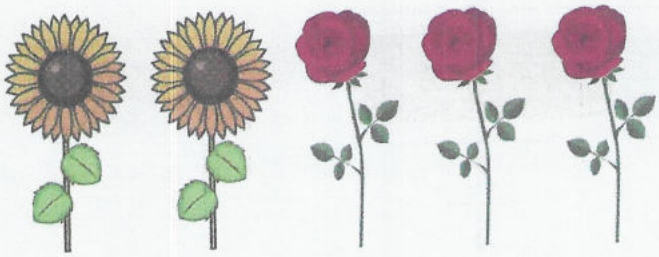
3. 

_____ of the apples is red.

_____ of the apples are green.

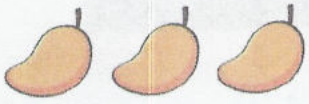
- There are 3 equal parts in this set of apples.
- 1 part is a red apple.
- $\frac{1}{3}$ is 1 out of 3 equal parts.

4. What fraction of the flowers are sunflowers?



$\frac{\square}{\square}$ of the flowers are sunflowers.

5. There are 8 pieces of fruit in this set.



$\frac{3}{8}$ are pears.



$\frac{\square}{\square}$ are bananas.

$\frac{8}{8}$ = 1 whole

D. Word Problem

Jana has 4 ribbons.
3 of the ribbons are blue, and 1 is red.
Write the fraction that represents the blue ribbons.

LESSON 18 EQUIVALENT FRACTIONS

OBJECTIVE

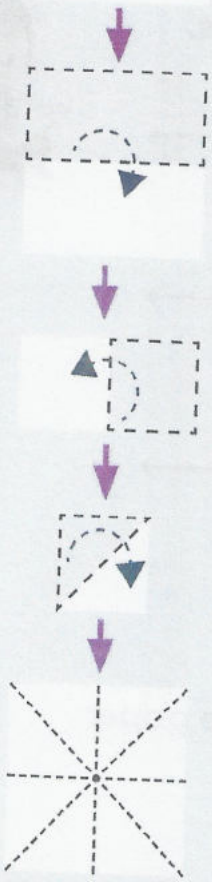
- Use models to identify equivalent fractions.

THINK

Jana folded a square piece of paper three times, and then she unfolded it.

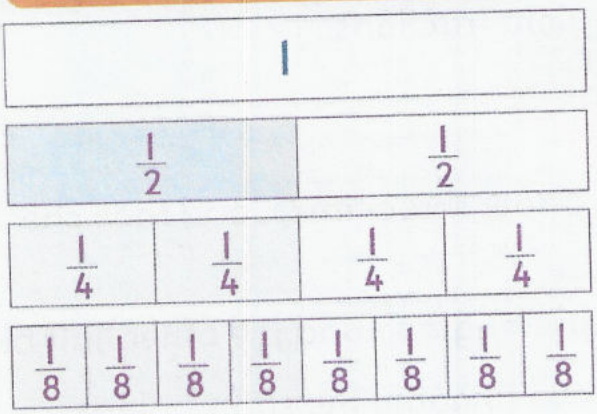
She colored half of the square paper green and the other half blue.

Find as many fractions as you can to name the same colored part.





LEARN



The fractions $\frac{1}{2}$, $\frac{2}{4}$, and $\frac{4}{8}$ have different numerators and denominators.

$\frac{1}{2}$ is equal to $\frac{2}{4}$.

$\frac{1}{2}$ is equal to $\frac{4}{8}$.

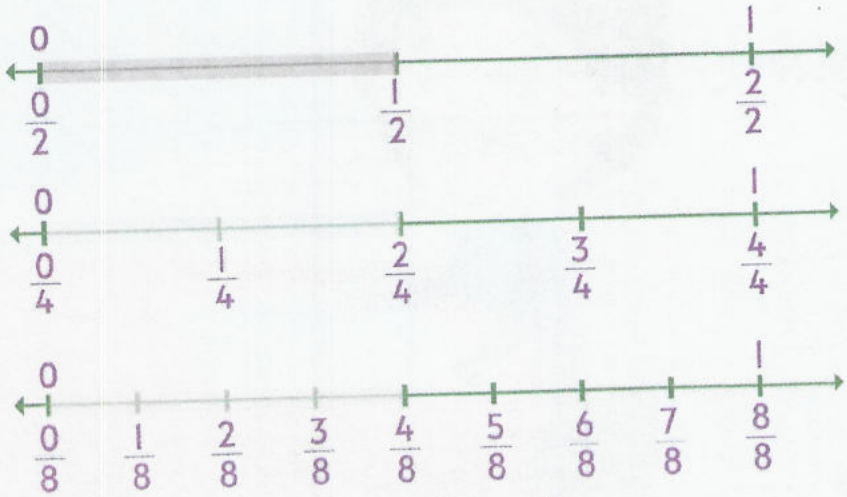
$\frac{1}{2}$, $\frac{2}{4}$, and $\frac{4}{8}$ are called equivalent fractions.

Equivalent fractions are two or more fractions that name the same part of a whole.

$\frac{1}{2}$, $\frac{2}{4}$, and $\frac{4}{8}$ name the same part of a whole.



Use the number line to find the equivalent fractions.



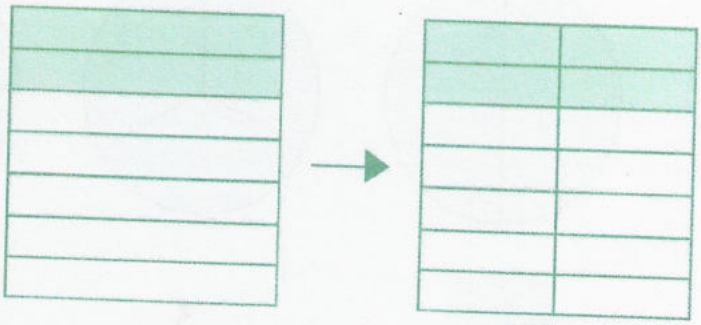
The number lines show $\frac{1}{2} = \frac{2}{4} = \frac{4}{8}$.

$\frac{1}{2}$ of the paper is the same as $\frac{2}{4}$ or $\frac{4}{8}$ of the paper.

PRACTICE

A. Find the equivalent fractions.

1.



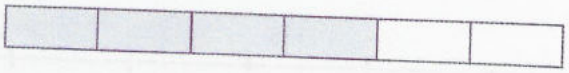
$\frac{2}{7}$ $\frac{\square}{\square}$

$\frac{2}{7}$ is equivalent to $\frac{\square}{\square}$.

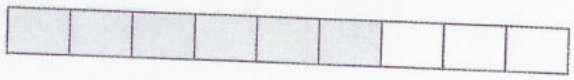
2. $\frac{2}{3}$ of the bar is shaded.



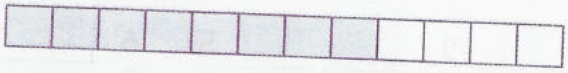
$\frac{2}{3} = \frac{\square}{6}$



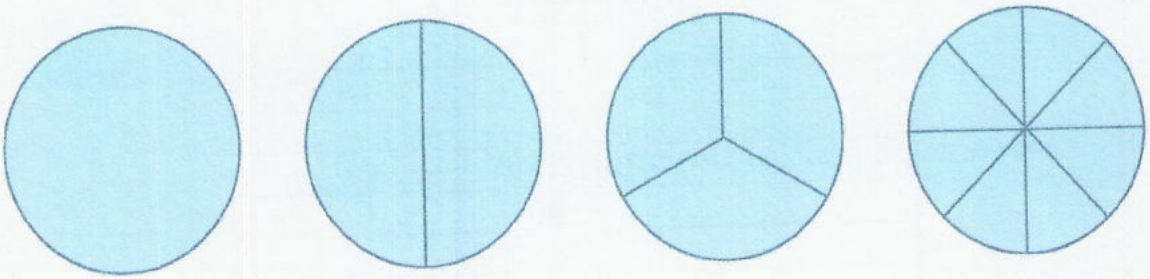
$\frac{2}{3} = \frac{\square}{9}$



$\frac{2}{3} = \frac{\square}{12}$



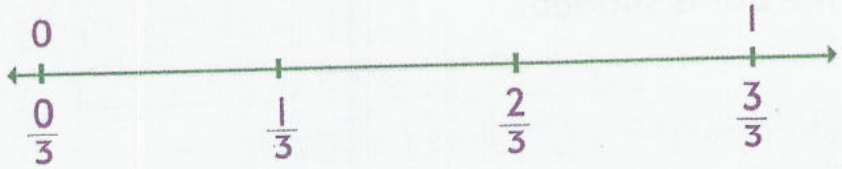
B. What are the missing numerators and denominators?



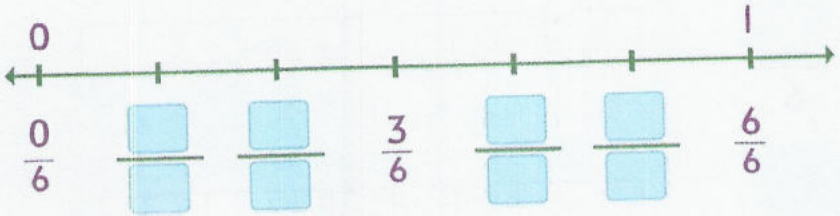
$$1 = \frac{\square}{2} = \frac{3}{\square} = \frac{\square}{\square}$$

C. Fill in the missing fractions on the number lines. Use the number lines to find the equivalent fractions.

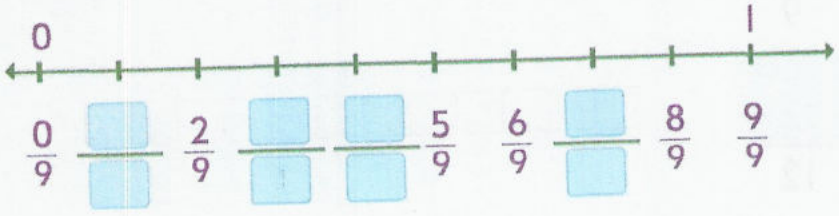
1.



2.



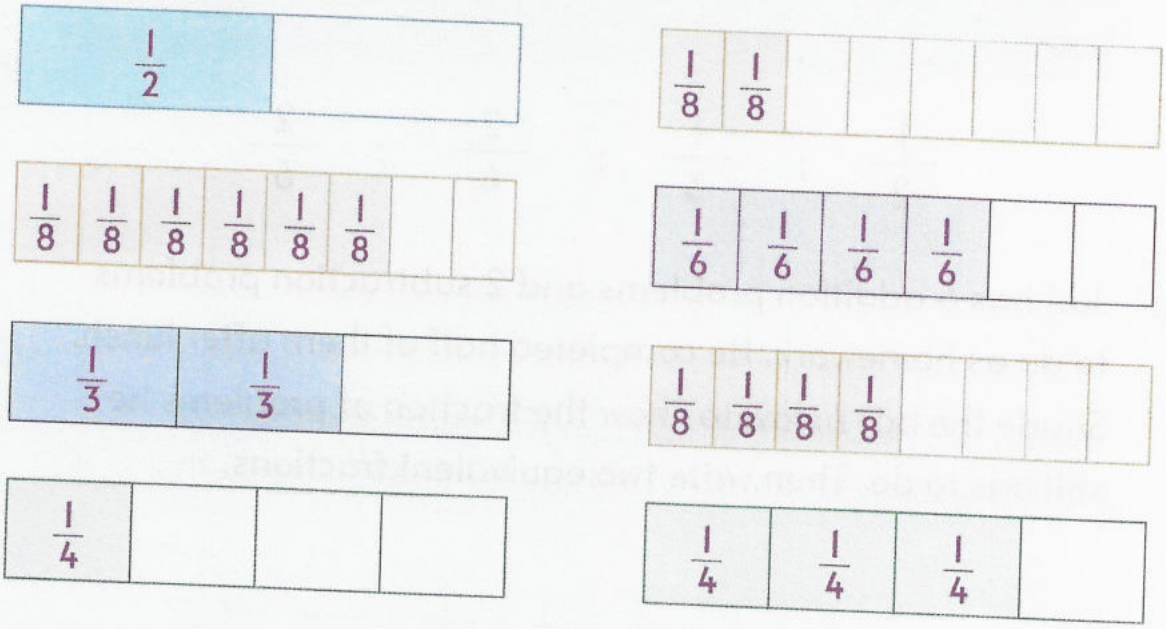
3.



4. $\frac{1}{3} = \frac{\square}{\square} = \frac{\square}{\square}$

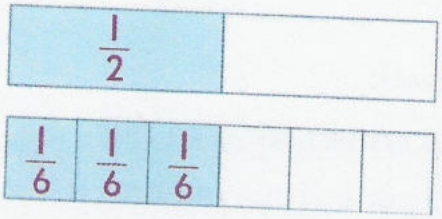
5. $\frac{2}{3} = \frac{\square}{\square} = \frac{\square}{\square}$

D. Match each pair of the equivalent fractions.



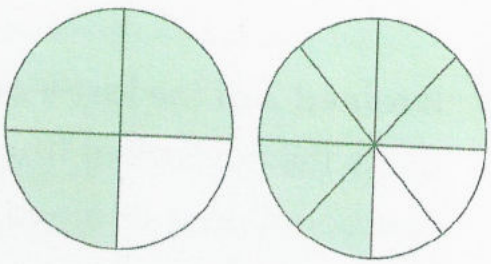
E. Complete to show the equivalent fractions.

1.



$\frac{1}{2} = \frac{\square}{6}$

2.



$\frac{\square}{4} = \frac{6}{8}$

F. Word Problems

1. Adam makes 6 paper boats. 3 paper boats are yellow, 2 are red, and 1 is blue.
   Circle the equivalent fractions that represent the red paper boats.

$$\frac{1}{2} \quad ; \quad \frac{1}{3} \quad ; \quad \frac{2}{4} \quad ; \quad \frac{2}{6}$$

2. Jad has 6 addition problems and 2 subtraction problems to do as homework. He completed half of them after lunch. Shade the bar below to show the fraction of problems he still has to do. Then write two equivalent fractions.



3. It rained 2 of the last 4 days in March.
   Circle the equivalent fractions that correspond to the number of days it rained over the last 4 days of March.
   Draw a model that supports your answer.

$$\frac{2}{4} \quad ; \quad \frac{1}{2} \quad ; \quad \frac{4}{2} \quad ; \quad \frac{3}{4}$$

LESSON 19 COMPARE FRACTIONS

OBJECTIVES

- Compare fractions with the same numerator.
- Compare fractions with the same denominator.

THINK

Adam likes raspberry pie. Jad likes strawberry pie.

Help each of Adam and Jad choose the bigger portion of the pie.



LEARN

$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$	$\frac{1}{6}$

$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$

When 2 fractions have the same numerator, the greater fraction is the one with the smaller denominator.



The model shows that $\frac{1}{6}$ is greater than $\frac{1}{8}$.

So, $\frac{1}{6} > \frac{1}{8}$.

Then Adam will choose $\frac{\square}{\square}$ of the pie.

$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$

$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{4}$

When 2 fractions have the same denominator, the greater fraction is the one with the greater numerator.

The model shows that $\frac{3}{4}$ is greater than $\frac{1}{4}$.



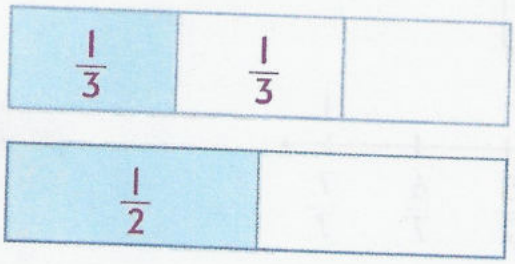
So, $\frac{3}{4} > \frac{1}{4}$.

Then Jad will choose $\frac{\square}{\square}$ of the pie.

PRACTICE

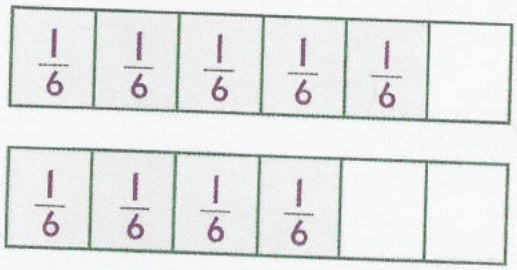
A. Use the models to compare. Write >, <, or =.

1.



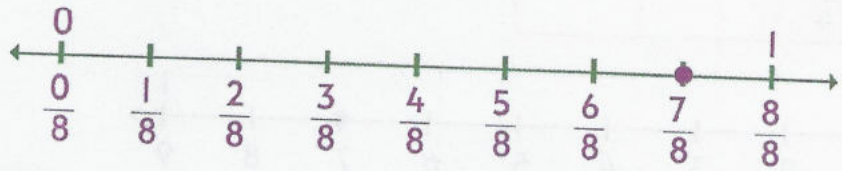
$\frac{1}{3} \bigcirc \frac{1}{2}$

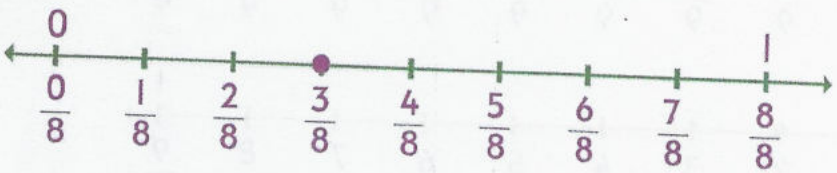
2.



$\frac{5}{6} \bigcirc \frac{4}{6}$

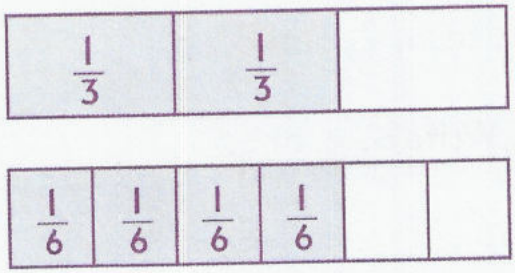
3.





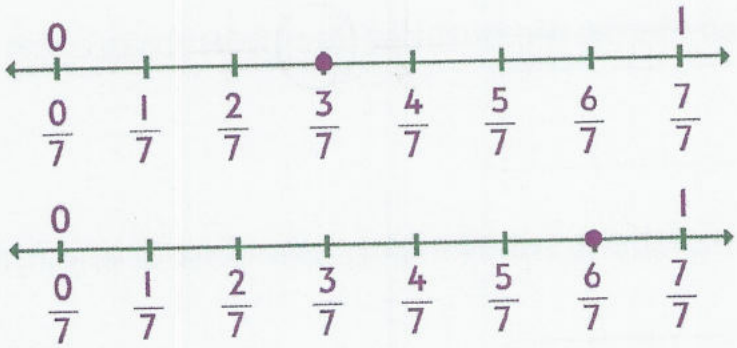
$\frac{7}{8} \bigcirc \frac{3}{8}$

4.



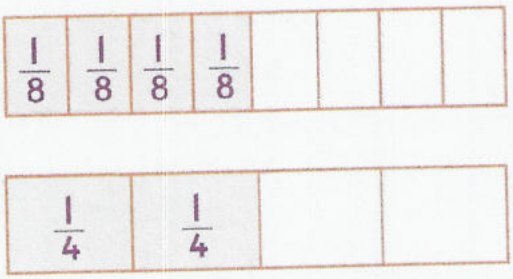
$\frac{2}{3} \bigcirc \frac{4}{6}$

5.



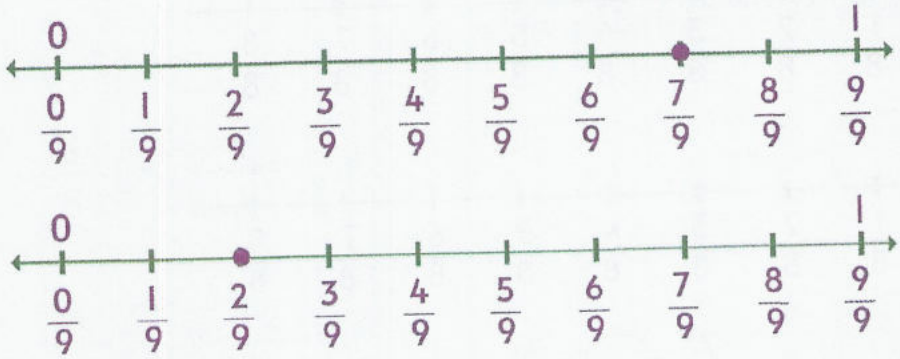
$\frac{3}{7} \bigcirc \frac{6}{7}$

6.



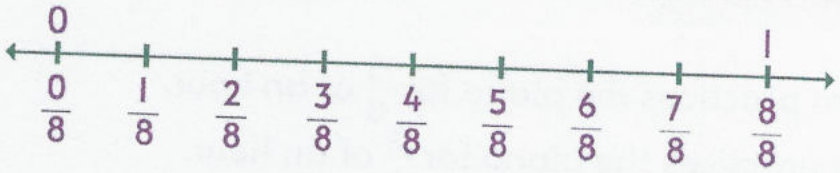
$\frac{4}{8} \bigcirc \frac{2}{4}$

7.



$\frac{7}{9} \bigcirc \frac{2}{9}$

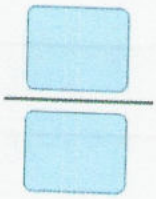
B. Use the number line for exercises 1, 2, and 3.



1. Circle all the fractions on the number line that are greater than $\frac{5}{8}$.

2. Draw a box around all the fractions on the number line that are less than $\frac{3}{8}$.

3. Write the fraction that is greater than $\frac{3}{8}$ but less than $\frac{5}{8}$.



C. Compare. Write >, <, or = .

1. $\frac{1}{2}$ ◯ $\frac{5}{2}$

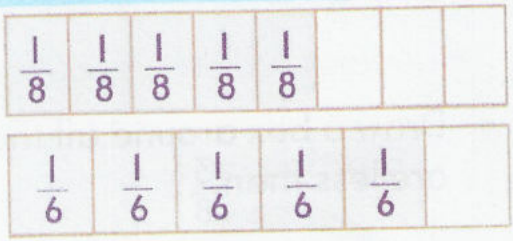
2. $\frac{9}{9}$ ◯ $\frac{8}{8}$

3. $\frac{2}{3}$ ◯ $\frac{4}{6}$

4. $\frac{4}{6}$ ◯ $\frac{4}{7}$

D. Word Problems

1. Adam practices the piano for $\frac{5}{8}$ of an hour.
   Jana practices the piano for $\frac{5}{6}$ of an hour.
   Use the model to determine who practices the piano for a longer period of time.



2. Amer mixes $\frac{1}{3}$ cup of raisins and $\frac{2}{3}$ cup of cereal in a bowl.
   Are there more raisins or cereal in the bowl? Explain.

3. Judy realizes that more than $\frac{4}{8}$ of her summer vacation has passed.
   a. Circle the fraction that is greater than $\frac{4}{8}$.

$$\frac{5}{8} \quad ; \quad \frac{3}{8} \quad ; \quad \frac{2}{8}$$

   b. Write another fraction that is greater than $\frac{4}{8}$.

OBJECTIVE

- Measure the intervals of time in hours and minutes.

THINK

Adam watched a movie.
The movie started at 4:10 p.m. It ended at 5:45 p.m.
How long did the movie last?

Starting time



Ending time





LEARN

The total amount of time that passes from the starting time to the ending time is called the elapsed time or time interval of any event.

We read 4:10 as four ten. 4:10 is 10 minutes after 4 o'clock. We say the time is ten minutes past four.

We read 5:45 as five forty-five. 5:45 is 15 minutes before 6 o'clock. We say the time is fifteen minutes to six.

The time between midnight and noon is written with a.m.
The time between noon and midnight is written with p.m.

How do you find the elapsed time?

<u>One way:</u> Use clocks.

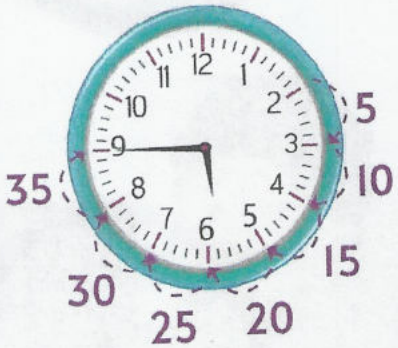
Step 1
Find the starting time.



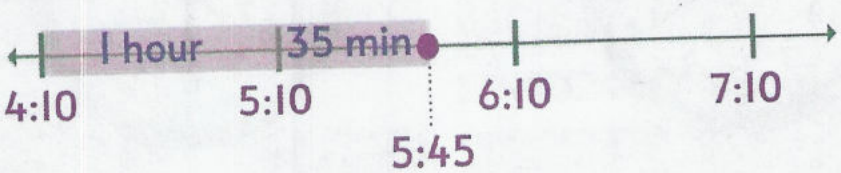
Step 2
Count the hours.



Step 3
Count the minutes.



<u>Another way:</u> Use a number line.



The elapsed time is 1 hour 35 minutes.

So, the movie lasted for____ hour____ minutes.

PRACTICE

A. How many times can you write your name in 1 minute?

_____

_____

B. What time is it?

1. 

   ☐ : ☐

2. 

   ☐ : ☐

3. 

   ☐ : ☐

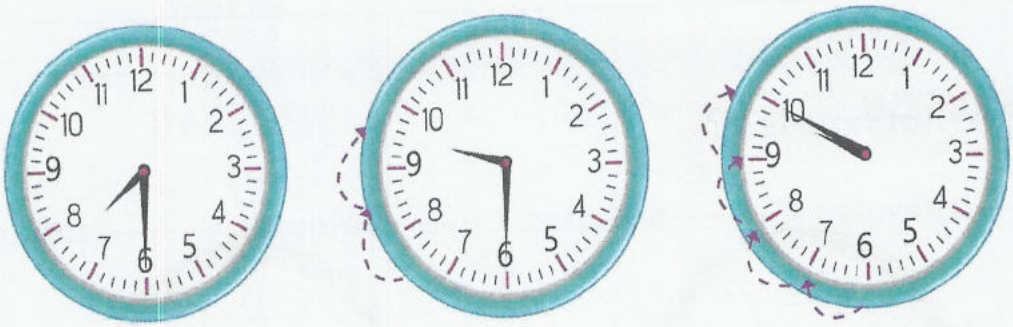
4. 

   ☐ : ☐

C. Use the following clocks to find the elapsed time.

1. Starting time: 7:30 p.m.

   Ending time: 9:50 p.m.



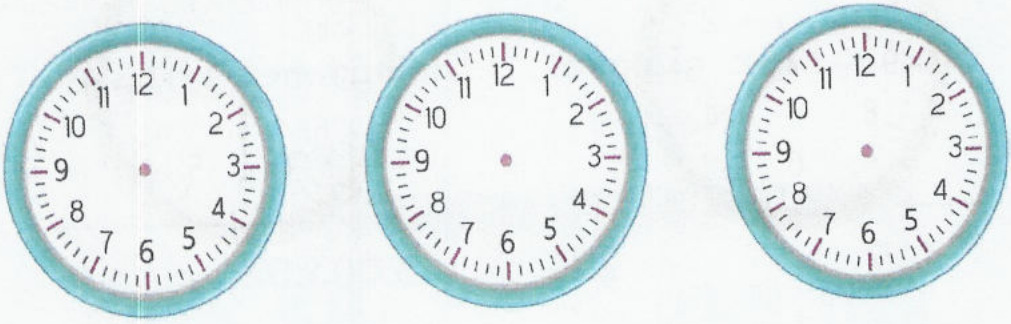
Hours from 7:30 p.m. to 9:30 p.m. are _____.

Minutes from 9:30 p.m. to 9:50 p.m. are _____.

The elapsed time is _____ hours _____ minutes.

2. Starting time: 10:30 a.m.

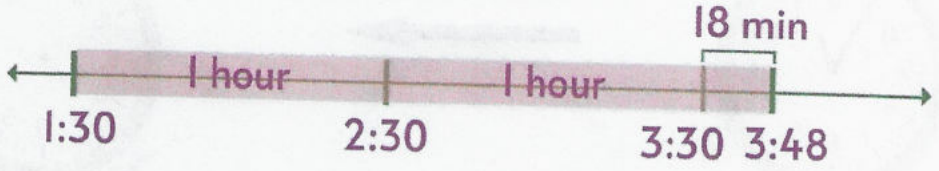
   Ending time: 3:00 p.m.



The elapsed time is _____ hours _____ minutes.

D. The following are the times of the parades. Use the number line to find the time interval for each parade.

1. Starting time: 1:30 p.m. Ending time: 3:48 p.m.



____ minutes + ____ minutes + ____ minutes = ____ minutes

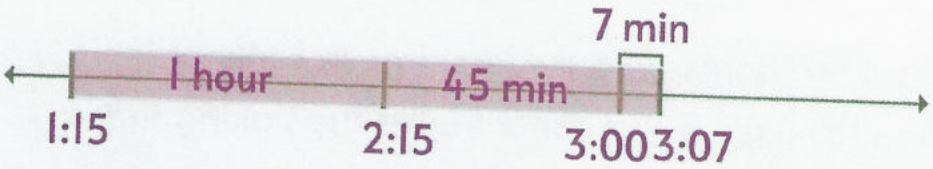
2. Starting time: 9:00 a.m. Ending time: 11:37 a.m.



____ minutes + ____ minutes + ____ minutes = ____ minutes

E. The following are times of a baseball game. Find the elapsed time.

Starting time: 1:15 p.m. Ending time: 3:07 p.m.



____ minutes + ____ minutes + ____ minutes = ____ minutes

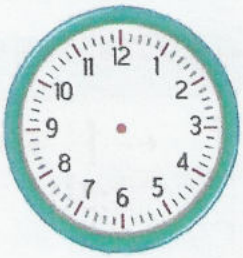
F. Write the time. Then draw the hands on the clock to show the time interval.

1. _____ a.m.



35 minutes earlier →

_____ a.m.

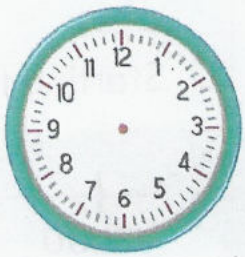


2. _____ a.m.



40 minutes later →

_____ a.m.



G. Word Problem

Jad's mom makes a list of the times she needs to bake different items.

Items	Baking Time in Minutes
Bread	31
Granola bars	21
Cake	45
Cookies	15

a. What items will take less than $\frac{1}{2}$ an hour to bake?

_____

_____

b. What two items will take less time to bake than the cake if Jad's mom adds the baking times together?

_____

_____

LESSON 21 BAR GRAPHS

OBJECTIVE

- Make a bar graph with scales using data from picture graphs and tally charts.

THINK

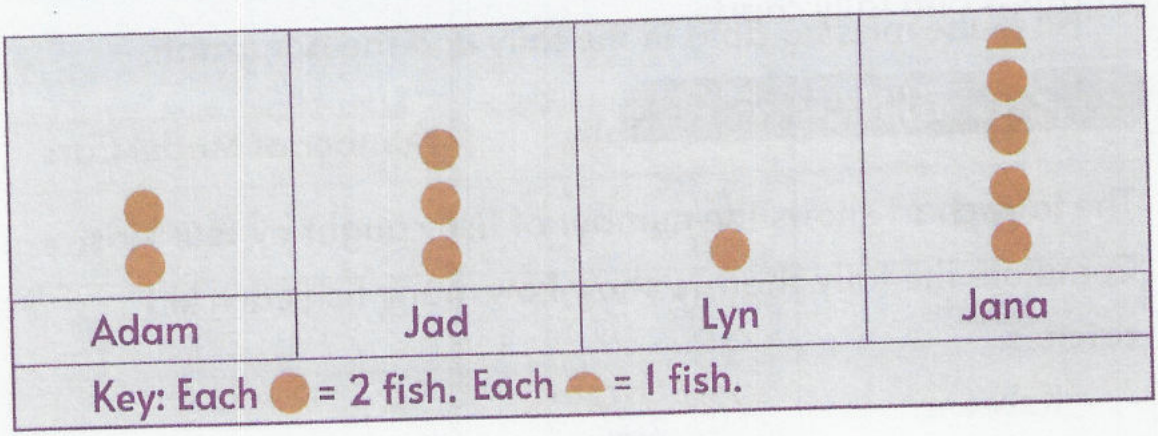
The tally chart shows the number of fish caught by four kids. Complete the tally chart to show how many fish each kid catches.



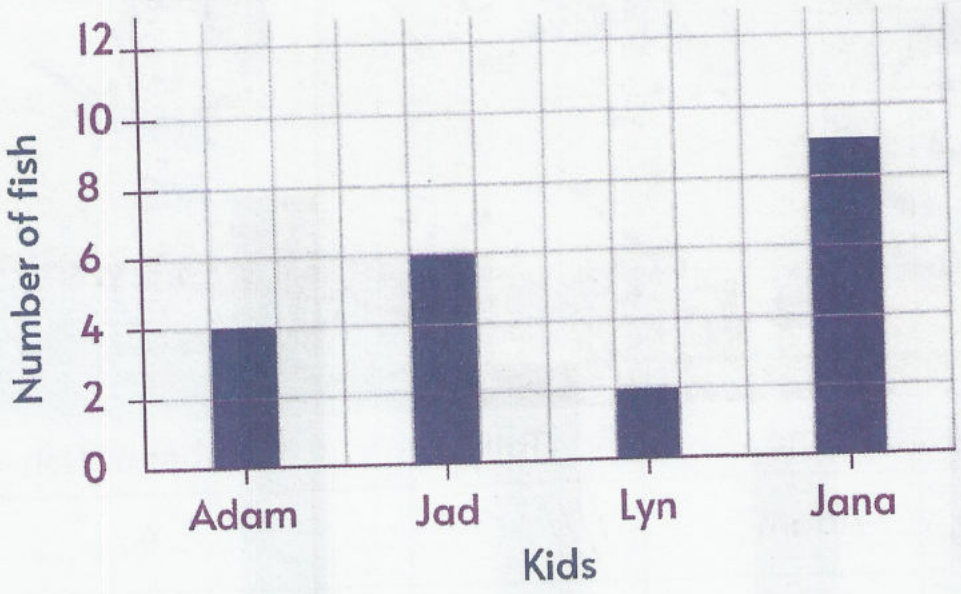
Name	Tally	Number of Fish
Adam	////	4
Jad	//// /	6
Lyn	//	
Jana	//// ////	

LEARN

This picture graph shows the number of fish caught by the four kids.



The vertical bar graph shows the same data.



Adam catches _____ fish.

Jad catches _____ fish.

Lyn catches _____ fish.

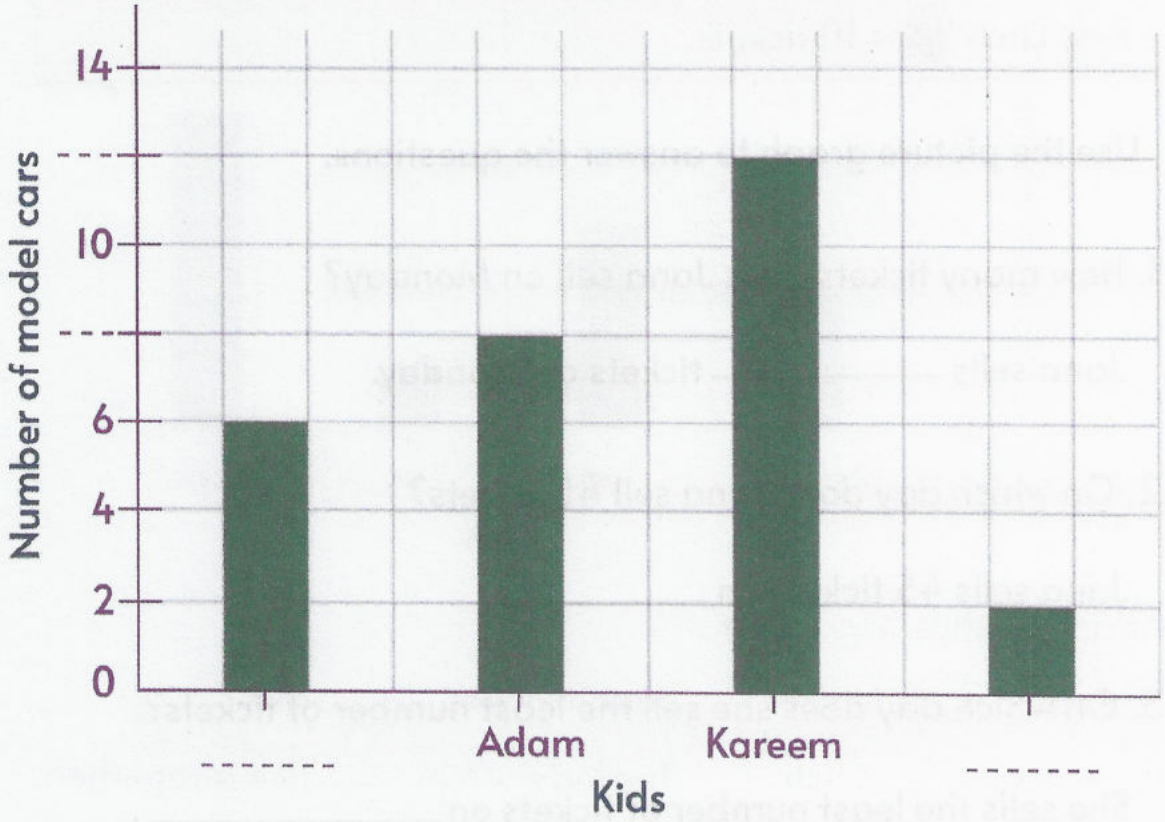
Jana catches _____ fish.

The kids catch _____ fish altogether.

PRACTICE

A. The bar graph shows the data in the tally chart.
Fill in the missing data in the tally and the bar graph.

Name	Tally	Number of Model Cars
Jad	𝍸 /	6
Adam	𝍸 ///	------
Kareem	𝍸 𝍸 //	------
Lyn	//	2



B. Jana sells tickets from Monday to Friday.
The picture graph below shows the number of tickets sold by Jana.

Monday	
Tuesday	
Wednesday	
Thursday	
Friday	
Key: Each  = 10 tickets.	

Use the picture graph to answer the questions.

1. How many tickets does Jana sell on Monday?

Jana sells _____ tickets on Monday.

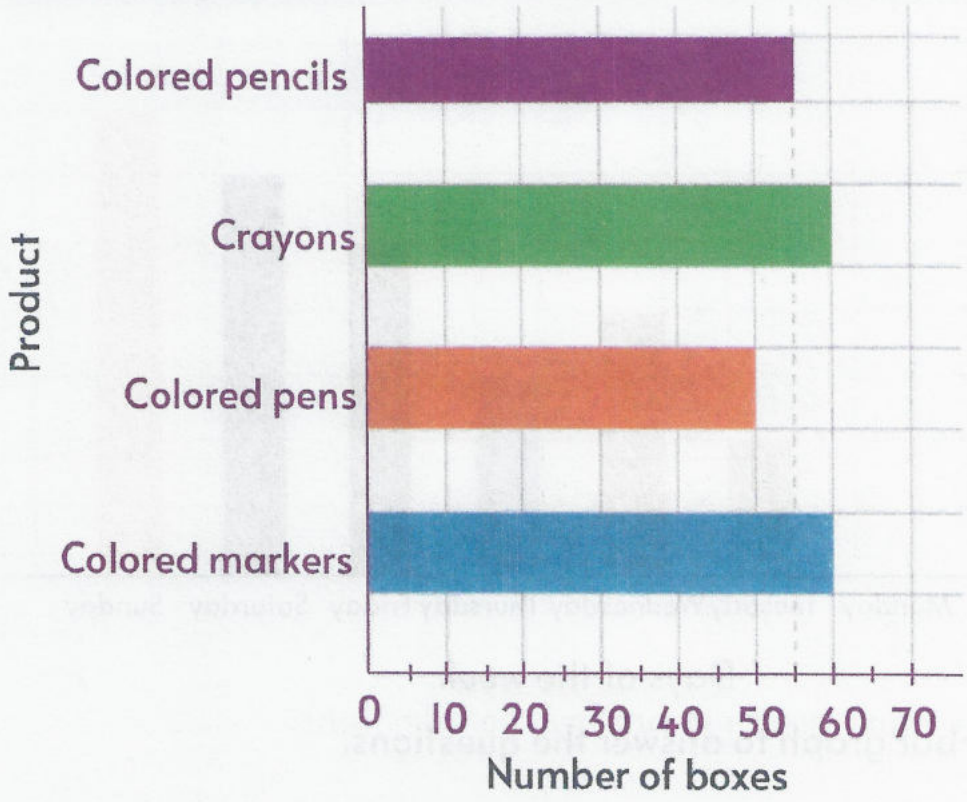
2. On which day does Jana sell 45 tickets?

Jana sells 45 tickets on _____.

3. On which day does she sell the least number of tickets?

She sells the least number of tickets on _____.

C. Lyn's dad owns an art store. He draws a horizontal bar graph to show the number of boxes for each product in his store.



Use the bar graph to fill in the blanks.

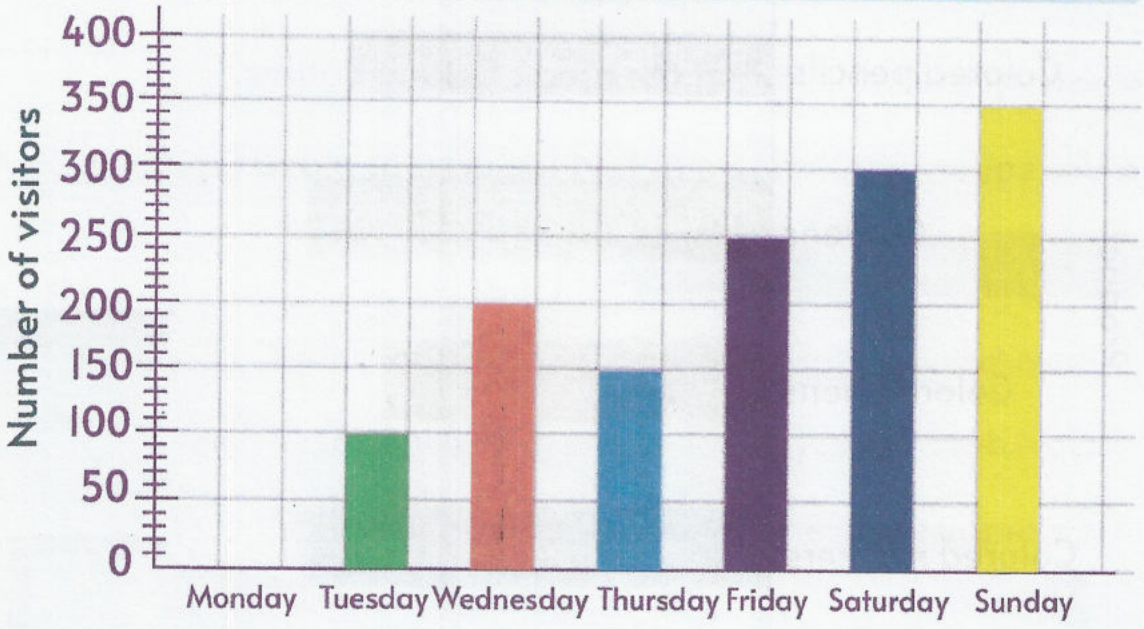
1. There are 50 boxes of one kind of product.
   What product is it? _____

2. There are _____ more boxes of crayons than colored pencils.

3. The art store has the same number of boxes of _____
   as _____.

4. The art store has 10 fewer boxes of _____
   than colored markers.

D. The bar graph below shows the number of adults and children who visit a zoo from Monday to Sunday.



Use the bar graph to answer the questions.

1. On which day do 100 people visit the zoo?

_____

2. Which day has the most visitors?

_____

3. Which day has no visitors?

_____

4. On which day are there 150 more people than on Thursday?

_____

5. On which day are there 50 fewer people than on Friday?

_____

OBJECTIVES

- Understand the meaning of area.
- Use square units to find the area of plane figures.
- Use square centimeters to find the area of plane figures.

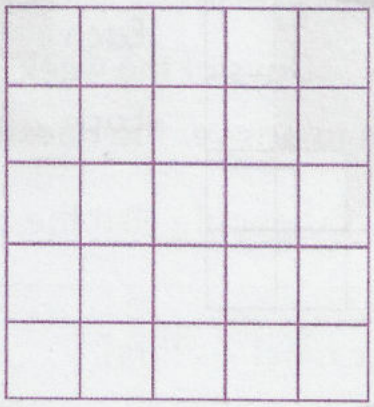
THINK

Adam has 4 square tiles and 2 half-square tiles.

Help Adam make figures on the grid using these tiles.

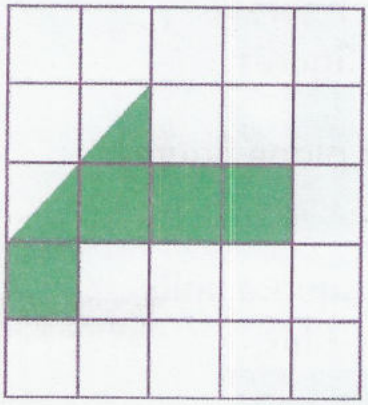
How many square units are covered on the grid?

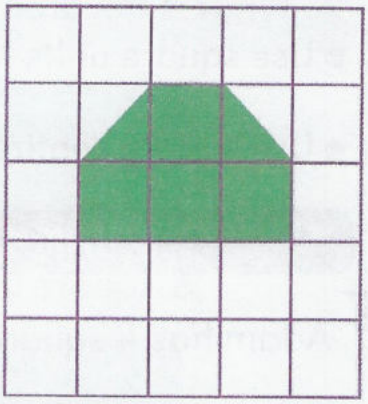


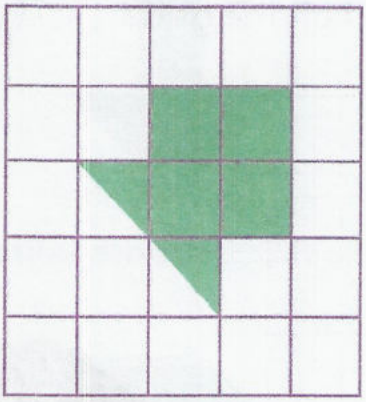




LEARN







Each  is 1 square unit.

Each  is $\frac{1}{2}$ a square unit.



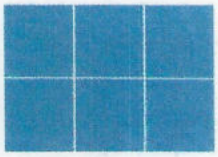
_____ square units are covered on the grid.

Area is the number of square units needed to cover a figure.

So, the area of each figure is _____ square units.

PRACTICE

A. What is the area of each of the following figures?



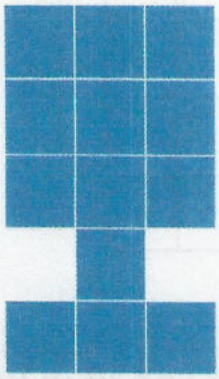
(a)

6 square units



(b)

_____ square units



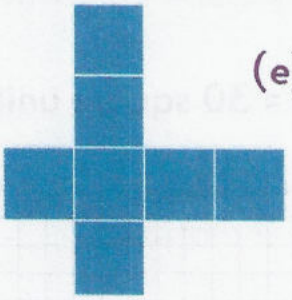
(c)

_____ square units



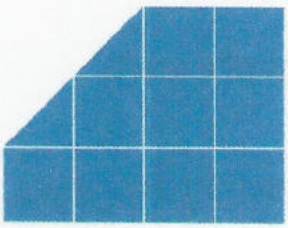
(d)

_____ square units



(e)

_____ square units



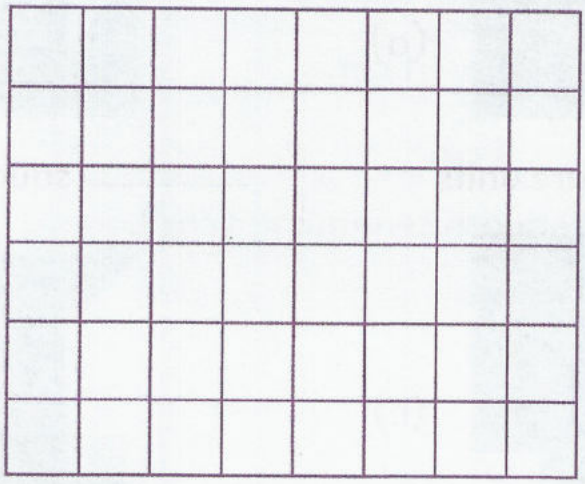
(f)

_____ square units

What figure has the smallest area? _____

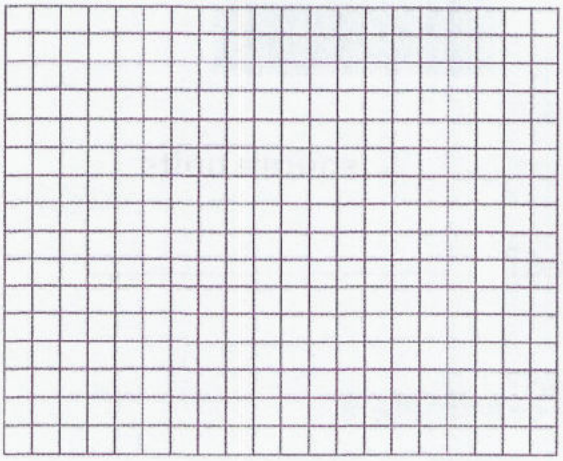
What figure has the greatest area? _____

B. Shade in the grid below to show a shape having an area of 24 square units.

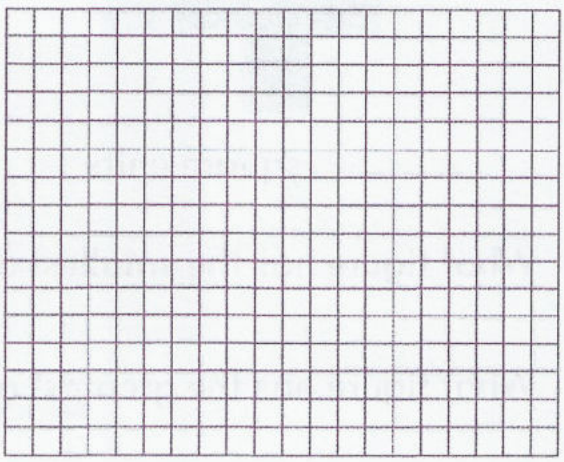


C. Draw rectangles of the given areas that can fit in the grids below.

Area = 16 square units

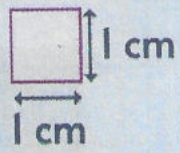


Area = 30 square units



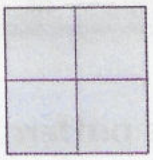
D. Find the area of each of the following squares in square centimeters.

This is a 1 cm square.

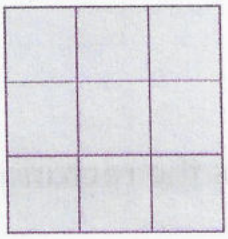


Its area is 1 square centimeter (cm^2).

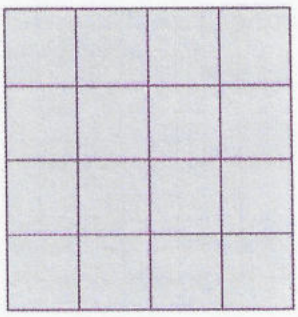


1. 

_____ square centimeters

2. 

_____ square centimeters

3. 

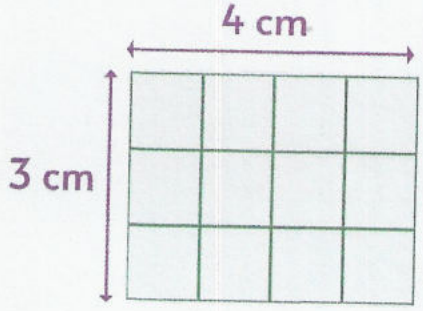
_____ square centimeters

E. Word Problems

1. Each side of the puzzle measures 6 centimeters.
What is the area of this puzzle?



2. Jad tiles the rectangle below using his square pattern blocks.
Find the area of Jad's rectangle in square centimeters.
Then draw and label another rectangle that has the same area but different side lengths.



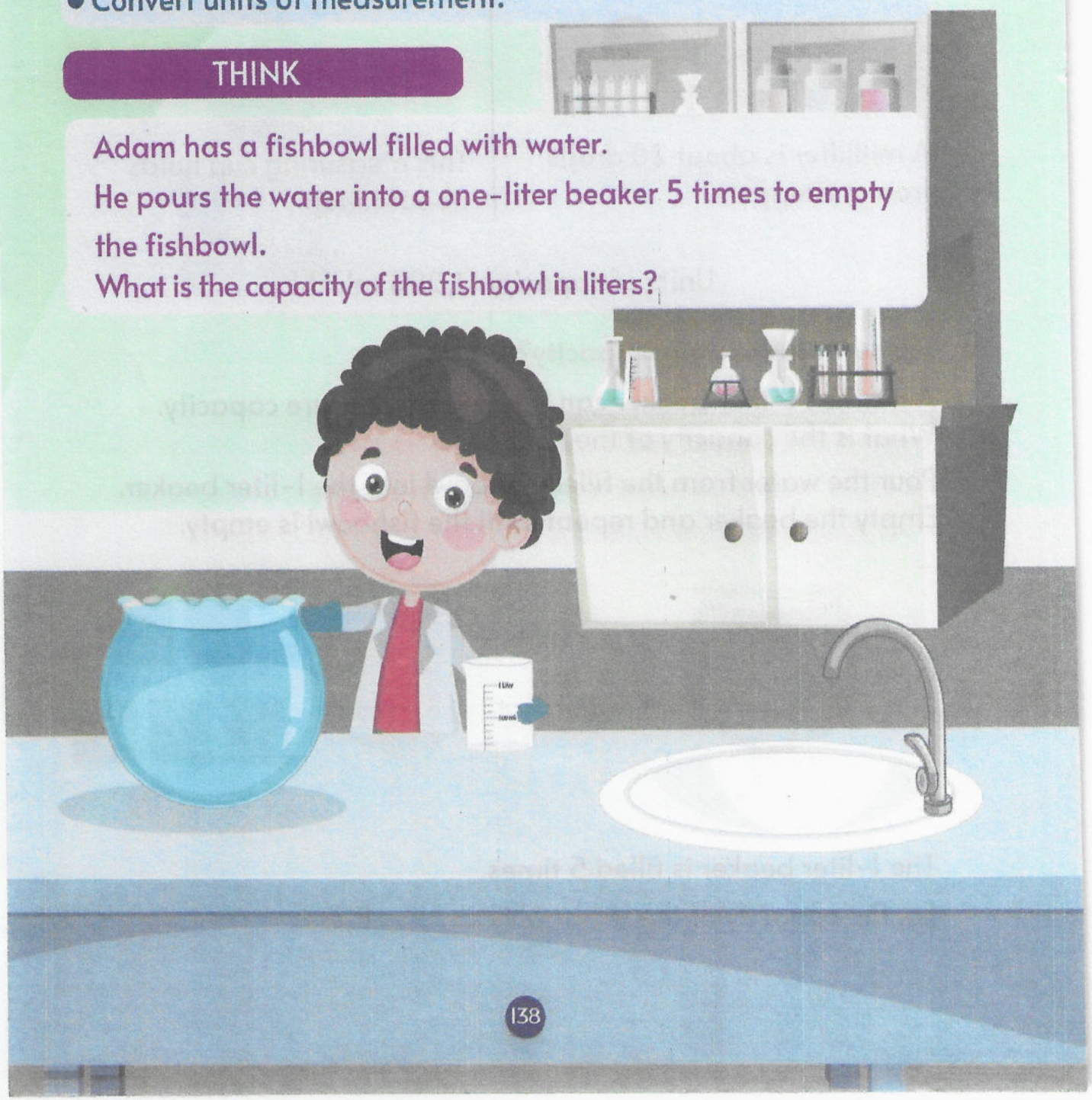
LESSON 23 CAPACITY

OBJECTIVES

- Estimate the volume of liquids in liters and milliliters.
- Find the capacity of a container.
- Convert units of measurement.

THINK

Adam has a fishbowl filled with water.
He pours the water into a one-liter beaker 5 times to empty the fishbowl.
What is the capacity of the fishbowl in liters?



LEARN

Capacity (liquid volume) is the amount of liquid in a container. It is measured in liquid units. Two metric units of capacity are milliliter(mL) and liter(L).



A milliliter is about 20 drops from a dropper.

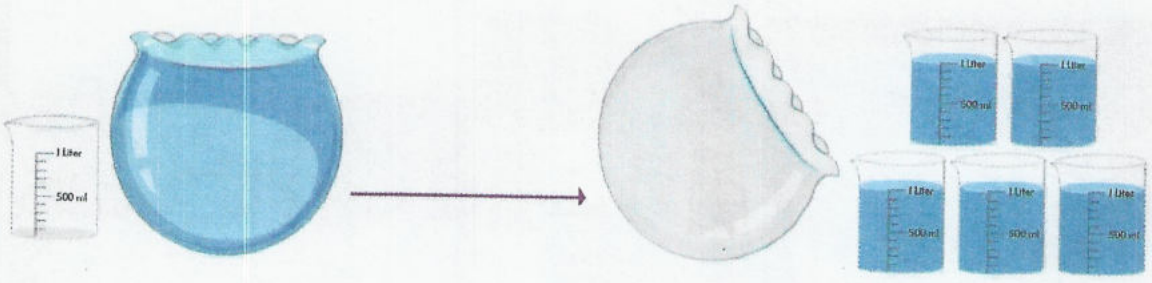
This measuring cup holds about 1 liter.

Units of capacity: 1,000 mL= 1 L

How do you measure capacity?

A marked 1-liter beaker can be used to measure capacity.
What is the capacity of the fishbowl?

Pour the water from the filled fishbowl into the 1-liter beaker. Empty the beaker and repeat until the fishbowl is empty.



The 1-liter beaker is filled 5 times.

So, the capacity of the fishbowl is _____ liters.

PRACTICE

A. Match the right pairs.



● About 1,000 L

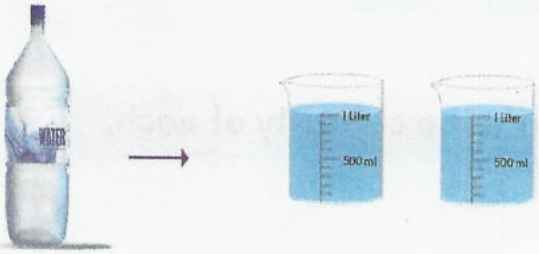


● 10 L



● 30 mL

B. Complete.

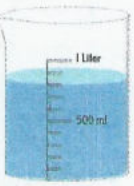


The bottle holds 2 liters of water.
Its capacity is _____ liters.

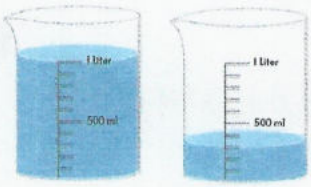
C. Determine the capacity of each of the following containers.

1.  → 

The capacity of the mug is ____ mL.

2.  → 

The capacity of the bottle is ____ mL.

3.  → 

The capacity of the jar is ____ L ____ mL.

D. Circle the unit used to measure the capacity of each.

1. Soup can

L	mL

2. Water pitcher

L	mL

3. Swimming pool

L	mL

E. Circle the better estimate for each.

1. 

40 L	40 mL

2. 

1 L	5 mL

3. 

2 L	250 mL

4. Teacup

15 L	150 mL

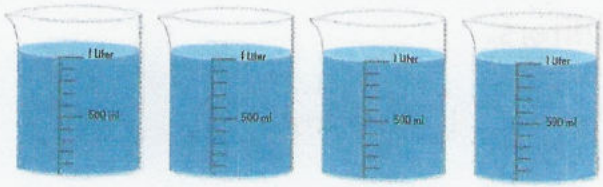
5. Bathtub

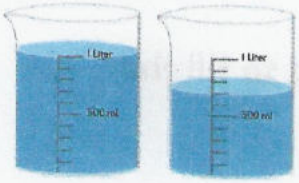
115 L	115 mL

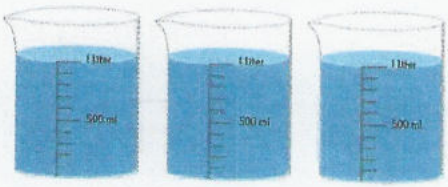
6. Bottle cap

3 L	3 mL

F. What is the total capacity?

1. 

2. 

3. 

G. Word Problems

1. Adam received a gift basket with a 500-milliliter jar of grape jam and a 250-milliliter jar of strawberry jam.
   How much jam did he receive in all?

_____

_____

2. Jana pours 750 milliliters of gravy into a 1-liter container.
   a. Convert 1 liter to milliliters.

   1 L = _____ mL

   b. How much more gravy does she need to fill the container? Explain.

_____

_____

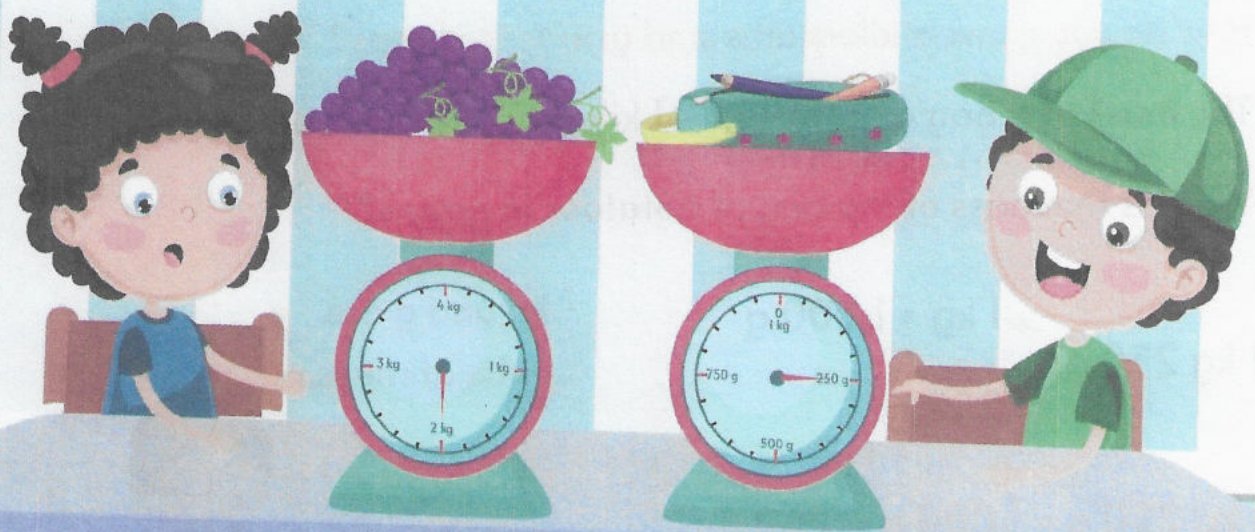
LESSON 24 MASS

OBJECTIVES

- Read scales in kilograms and grams.
- Find the mass of objects using different scales.
- Convert units of measurement.

THINK

Jana uses a scale to find the mass of the grapes.
Adam uses another scale to find the mass of the pencil case.
What is the mass of the grapes?
What is the mass of the pencil case?



LEARN

The kilogram(kg) is used to find the mass of heavy objects.
The gram(g) is used to find the mass of light objects.
Use kilograms to find the mass of objects that are more than 1 kilogram.
Use grams to find the mass of objects that are less than 1 kilogram.
The mass of the grapes is 2 kilograms.
The pencil case has a mass of 250 grams.

1 kg = 1,000 g

How do you convert kilograms and grams to grams?

The mass of a bag of potatoes is 1 kilogram 250 grams.

What is the mass of the bag of potatoes in grams?

1 kg 250 g → 1 kg = 1,000 g
1 kg 250 g → 250 g

kg and g are units of mass.



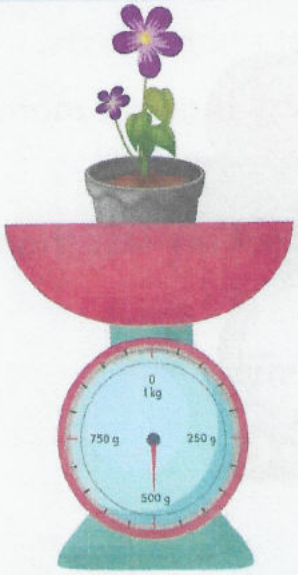
1 kg 250 g = 1,000 g + 250 g
= 1,250 g

The mass of the bag of potatoes is _____ grams.

PRACTICE

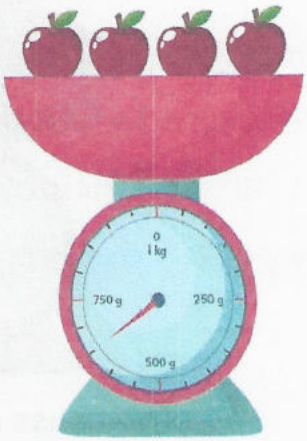
A. Read each scale to find the mass of each object.

1.



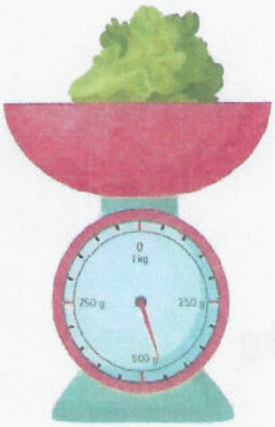
The mass of the flower pot is ☐ grams.

2.



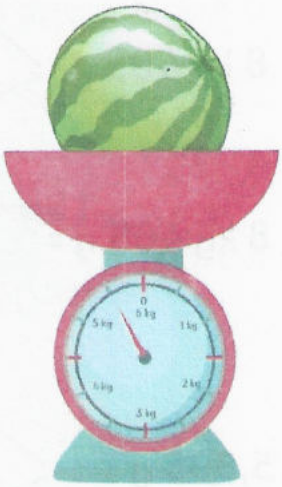
The mass of the apples is ☐ grams.

3.



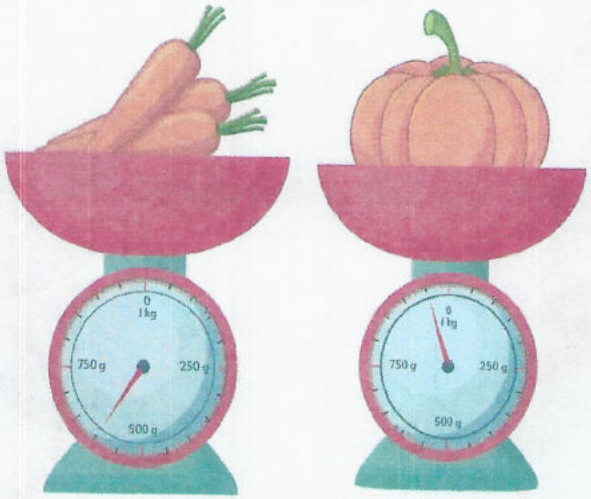
The mass of the lettuce is ☐ grams.

4.



The mass of the watermelon is ☐ grams.

B. The carrots have a mass of 600 grams.
What is the mass of the pumpkin?



The mass of the pumpkin is ☐ grams.

C. Complete.

1. 8 kg 405 g
   - ☐ kg = ☐ g
   - ☐ g

   8 kg 405 g = ☐ g

2. 5,805 g
   - ☐ g = ☐ kg
   - ☐ g

   5,805 g = ☐ kg ☐ g

3. 5 kg = ——— g

4. 2,479 g = ——— kg ——— g

D. a. Which is heavier, the fish or the chicken?



1100 g



1 kg 250 g

1 kg 250g = ——— g + ——— g = ——— g

_____

b. How much heavier is it?

_____

_____

E. Mark the object that is about 204 grams.

(a) a laptop

(b) a bed

(c) a car

(d) a cup of sugar

F. Word Problems

1. Adam bought a bag of nuts with a mass of 850 grams. He used 220 grams of the nuts in a recipe. What is the mass of the nuts that remain in the bag?

_____

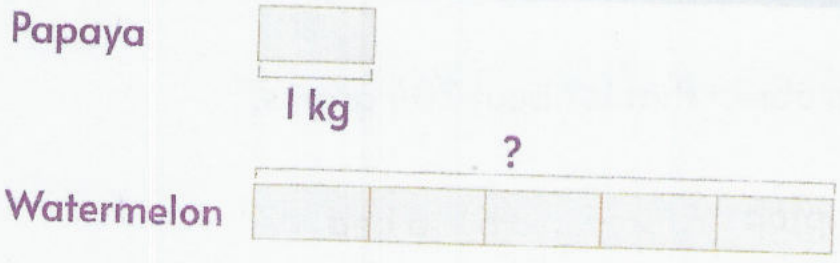
_____

2. Jana bought some red potatoes with a mass of 410 grams and some white potatoes with a mass of 665 grams. Did Jana buy more or less than 1 kilogram of potatoes? How do you know?

_____

_____

3. A watermelon is 5 times heavier than a papaya. If the papaya weighs 1 kg, find the mass of the watermelon.



The mass of the watermelon = 5 units = 5 x 1 kg = ____kg = ____g