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Name: _____ Date: _____

9.2 Multiplying 10s and 100s Page 1

Student Book pages 312–313

GOAL

Use patterns to multiply 10s and 100s.

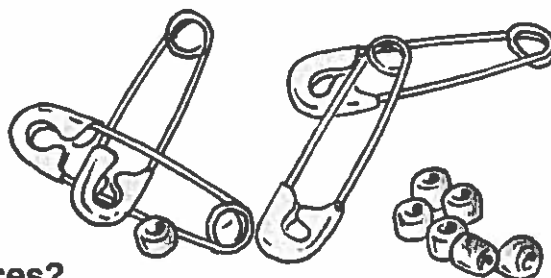
You will need

- base ten blocks

**Problem**

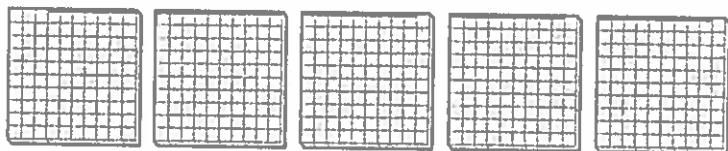
Diane is making safety pin necklaces.

She uses 100 beads and 10 safety pins to make each necklace.

**How many does she need to make 5 necklaces?****Step 1:** Use base ten blocks to model the number of beads in each necklace.

There are 100 beads in each necklace.

Use 5 hundreds blocks to show the beads.

**These blocks show 5×100 .**

Count by 100s to find out how many beads are needed for the 5 necklaces.

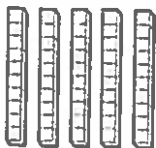
100, 200, _____, _____, _____

Diane needs _____ beads.

Step 2: Use base ten blocks to model the number of pins in each necklace.

There are 10 pins in each necklace.

Use 5 tens blocks to show the pins.

**These blocks show 5×10 .**

Count by 10s to find out how many pins are needed for the 5 necklaces.

10, 20, _____, _____, _____

Diane needs _____ pins.

9.2 Multiplying 10s and 100s Page 2

Step 3: You can use tables to organize your information and look for patterns.

Complete the tables below for up to 5 necklaces.

Number of necklaces		Number of beads
1	$1 \times 1 \text{ hundred} = 1 \text{ hundred}$	100
2	$2 \times 1 \text{ hundred} = 2 \text{ hundreds}$	200
3		
4		
5		500

Number of necklaces		Number of pins
1	$1 \times 1 \text{ ten} = 1 \text{ ten}$	10
2	$2 \times 1 \text{ ten} = 2 \text{ tens}$	20
3		
4		
5		50

Reflecting

What patterns do you see in your tables?

9.1 Exploring Multiplication

Student Book page 310

GOAL

Use your own strategies to solve everyday math problems.

Your class is having a pizza party.

Each pizza has 8 slices.

Each pizza costs \$10.

 **How much will the pizzas cost for your class party?**

How many students are in your class? _____

How can you find out how many slices your class needs?

How many slices does 1 pizza have? _____

How can you find out how many pizzas your class needs?

How much would all the pizza your class needs cost? Show your work below.

9.1 Exploring Multiplication

Student Book page 310

GOAL

Use your own strategies to solve everyday math problems.

Problem

Annie is having some friends over for pizza.

There will be 6 people.

Each person wants to have 2 slices of pizza.

Each pizza has 8 slices.

Each pizza costs \$9.



How much will the pizzas cost?

Step 1: How many slices of pizza will Annie need altogether?

There are 6 people.

They want 2 slices of pizza each.

$$6 \times 2 = \underline{\hspace{2cm}}$$

Step 2: How many slices are in 1 pizza?

How many slices are in 2 pizzas? $\times 2 =$

Are 2 pizzas enough?

Circle one: yes no

Step 3: How much does 1 pizza cost? \$

How much do 2 pizzas cost? $\times 2 =$ \$

How much will the pizza cost for all 6 people? \$

9.2 Multiplying 10s and 100s Page 1

Student Book pages 312–313

GOAL

Use patterns to multiply 10s and 100s.

You will need

- base ten blocks



Checking

1. How many beads and pins does Diane need for 7 bracelets?

Step 1: Each bracelet needs 100 beads.

Use base ten blocks to help fill in the chart below.

Number of bracelets		Number of beads
1	$1 \times 1 \text{ hundred} = \underline{\hspace{2cm}}$	
2	$2 \times 1 \text{ hundred} = \underline{\hspace{2cm}}$	
3	$3 \times 1 \text{ hundred} = \underline{\hspace{2cm}}$	
4		
5		
6		
7		

Step 2: Each bracelet needs 50 pins.

Use base ten blocks to help fill in the chart below.

Number of bracelets		Number of pins
1	$1 \times 5 \text{ tens} = \underline{\hspace{2cm}} \text{ tens}$	
2	$2 \times 5 \text{ tens} = \underline{\hspace{2cm}} \text{ tens}$	
3	$3 \times 5 \text{ tens} = \underline{\hspace{2cm}} \text{ tens}$	
4		
5		
6		
7		

Diane needs _____ beads and _____ pins to make 7 bracelets.

9.2 Multiplying 10s and 100s Page 2

Practising

2. Multiply.

a) $7 \times 10 = \underline{\quad\quad} \times 1 \text{ ten}$
 $= \underline{\quad\quad} \text{ tens}$
 $= \underline{\quad\quad}$

b) $3 \times 40 = \underline{\quad\quad} \times \underline{\quad\quad} \text{ tens}$
 $= \underline{\quad\quad} \text{ tens}$
 $= \underline{\quad\quad}$

c) $50 \times 4 = \underline{\quad\quad} \text{ tens} \times \underline{\quad\quad}$
 $= \underline{\quad\quad} \text{ tens}$
 $= \underline{\quad\quad}$

d) $9 \times 200 = \underline{\quad\quad} \times \underline{\quad\quad} \text{ tens}$
 $= \underline{\quad\quad} \text{ tens}$
 $= \underline{\quad\quad}$

4. Find the missing number.

a) $400 = \underline{\quad\quad} \times 100$

b) $60 = \underline{\quad\quad} \times 10$

c) $80 = \underline{\quad\quad} \times 10$

d) $700 = 7 \times \underline{\quad\quad}$

Hint: Think of equal groups of tens and hundreds.

Chapter 9
Lesson 2

Multiplying 10s and 100s

GOAL

Use patterns to multiply 10s and 100s.

1. Multiply.

a) $4 \times 1 = \underline{\hspace{2cm}}$

b) $4 \times 2 = \underline{\hspace{2cm}}$

c) $4 \times 5 = \underline{\hspace{2cm}}$

$4 \times 10 = \underline{\hspace{2cm}}$

$4 \times 20 = \underline{\hspace{2cm}}$

$4 \times 50 = \underline{\hspace{2cm}}$

$4 \times 100 = \underline{\hspace{2cm}}$

$4 \times 200 = \underline{\hspace{2cm}}$

$4 \times 500 = \underline{\hspace{2cm}}$

2. Multiply.

a) $5 \times 10 = \underline{\hspace{2cm}}$

e) $2 \times 200 = \underline{\hspace{2cm}}$

i) $7 \times 300 = \underline{\hspace{2cm}}$

b) $60 \times 3 = \underline{\hspace{2cm}}$

f) $9 \times 30 = \underline{\hspace{2cm}}$

j) $90 \times 4 = \underline{\hspace{2cm}}$

c) $8 \times 100 = \underline{\hspace{2cm}}$

g) $500 \times 5 = \underline{\hspace{2cm}}$

k) $10 \times 6 = \underline{\hspace{2cm}}$

d) $70 \times 4 = \underline{\hspace{2cm}}$

h) $40 \times 6 = \underline{\hspace{2cm}}$

l) $4 \times 800 = \underline{\hspace{2cm}}$

3. Kate found four \$100 bills.

How much money did she find?

4. Lang is building a model of the school using blocks.

He bought 8 sets of 30 blocks.

How many blocks does he have in total?

Multiplying by 10

Name _____

Multiply 10×16 .

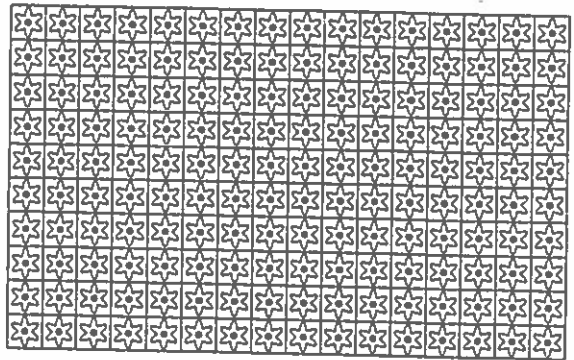
Think: $1 \times 16 = 16$, so
 $10 \times 16 = 160$



When you multiply by 10,
 think of multiplying by 1.
 Then write a 0.



$$1 \times 16 = 16$$



$$10 \times 16 = 160$$

Complete each sentence.

1. Since I know $23 \times 1 = \underline{23}$,
 I also know $23 \times 10 = \underline{230}$.

3. Since I know $98 \times 1 = \underline{\quad}$,
 I also know $98 \times 10 = \underline{\quad}$.

5. Since I know $60 \times 1 = \underline{\quad}$,
 I also know $60 \times 10 = \underline{\quad}$.

2. Since I know $45 \times 1 = \underline{\quad}$,
 I also know $45 \times 10 = \underline{\quad}$.

4. Since I know $1 \times 36 = \underline{\quad}$,
 I also know $10 \times 36 = \underline{\quad}$.

6. Since I know $1 \times 72 = \underline{\quad}$,
 I also know $10 \times 72 = \underline{\quad}$.

Multiply these pairs of factors.

7. $85 \times 1 = \underline{\quad}$

$85 \times 10 = \underline{\quad}$

8. $38 \times 1 = \underline{\quad}$

$38 \times 10 = \underline{\quad}$

9. $572 \times 1 = \underline{\quad}$

$572 \times 10 = \underline{\quad}$

10. $1 \times 443 = \underline{\quad}$

$10 \times 443 = \underline{\quad}$

11. $20 \times 1 = \underline{\quad}$

$20 \times 10 = \underline{\quad}$

12. $1 \times 76 = \underline{\quad}$

$10 \times 76 = \underline{\quad}$

Multiply.

13. $10 \times 35 = \underline{\quad}$

14. $69 \times 10 = \underline{\quad}$

15. $546 \times 10 = \underline{\quad}$

16. $41 \times 10 = \underline{\quad}$

17. $10 \times 768 = \underline{\quad}$

18. $10 \times 80 = \underline{\quad}$

9.3 Multiplying Using Arrays Page 1

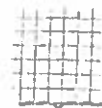
Student Book pages 314–317

GOAL

Use arrays to visualize easier ways to multiply.

You will need

- grid paper

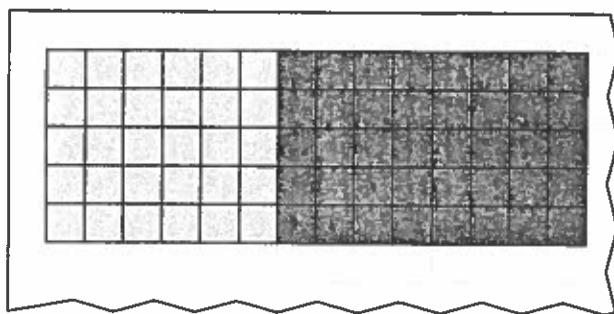


- pencil
crayons



Checking

1. a) Complete the number sentence to show how the 5-by-14 array is shaded.



Look at the light grey part of the array.

How many rows are there in all? _____

How many light grey squares are in each row? _____

There are $5 \times$ _____ squares in the light grey part of the array.

Look at the dark grey part of the array.

How many rows are there in all? _____

How many dark grey squares are in each row? _____

There are $5 \times$ _____ squares in the dark grey part of the array.

The 5-by-14 array combines the 2 smaller arrays.

Complete the number sentence below.

$$5 \times 14 = 5 \times \underline{\quad\quad\quad} + 5 \times \underline{\quad\quad\quad}$$

- b) Complete the number sentences to calculate 5×14 .

$$5 \times 14 = 5 \times \underline{\quad\quad\quad} + 5 \times \underline{\quad\quad\quad}$$

$$5 \times 14 = \underline{\quad\quad\quad} + \underline{\quad\quad\quad}$$

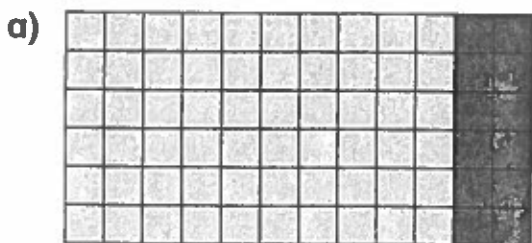
$$5 \times 14 = \underline{\quad\quad\quad}$$

9.3 Multiplying Using Arrays Page 2

Practising

3. Look at the different shades in the arrays below.

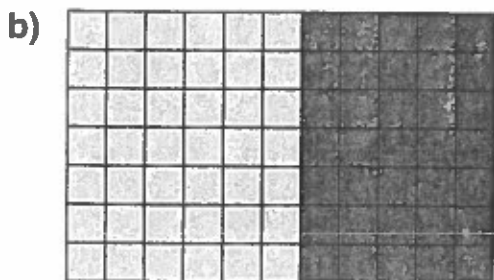
Complete the number sentences.



$$6 \times 12 = 6 \times 10 + 6 \times \underline{\hspace{2cm}}$$

$$6 \times 12 = \underline{\hspace{2cm}} + \underline{\hspace{2cm}}$$

$$6 \times 12 = \underline{\hspace{2cm}}$$



$$7 \times 11 = \underline{\hspace{2cm}} \times \underline{\hspace{2cm}} + \underline{\hspace{2cm}} \times \underline{\hspace{2cm}}$$

$$7 \times 11 = \underline{\hspace{2cm}} + \underline{\hspace{2cm}}$$

$$7 \times 11 = \underline{\hspace{2cm}}$$

9. Sketch arrays on grid paper to show that each statement is true.

a) $5 \times 23 = 5 \times 20 + 5 \times 3$

b) $5 \times 23 = 5 \times 10 + 5 \times 10 + 5 \times 3$

c) $5 \times 23 = 5 \times 7 + 5 \times 7 + 5 \times 7 + 5 \times 2$

9.3 Multiplying Using Arrays Page 1

Student Book pages 314–317

GOAL

Use arrays to visualize easier ways to multiply.

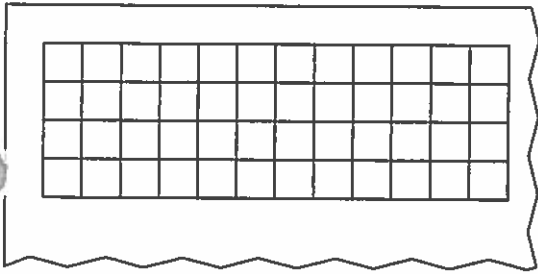
Problem

Alec has a game board that has 4 rows of 12 spaces.

 How can you calculate the number of spaces on Alec's 4-by-12 game board?

Step 1: The game board has 4 rows of 12 spaces.

Sketch it on grid paper.



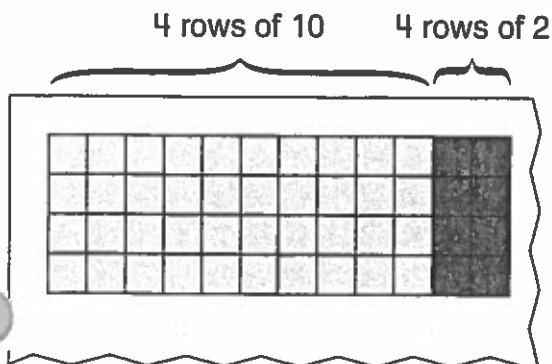
Step 2: 4×12 tells the number of spaces.

You already know $4 \times 10 =$ _____.

You also know that $4 \times 2 =$ _____.

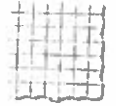
Split the 4-by-12 array into a 4-by-10 array and a 4-by-2 array.

Colour and label both arrays as shown below.



You will need

- grid paper



- pencil
crayons



L

Name: _____ Date: _____

9.3 Multiplying Using Arrays Page 2

Step 3: 4 rows of 10 = 4×10

4 rows of 2 = 4×2

Use $4 \times 10 + 4 \times 2$ to calculate 4×12 .

$$4 \times 12 = 4 \times 10 + 4 \times 2$$

$$4 \times 12 = \underline{\hspace{2cm}} + \underline{\hspace{2cm}}$$

$$4 \times 12 = \underline{\hspace{2cm}}$$

So, there are _____ spaces on Alec's game board.

Reflecting

How does splitting an array into smaller arrays help you to multiply?

What other ways can you split the 4-by-12 array to calculate 4×12 ?

Scaffolding for Lesson 3, Questions 4 & 5

STUDENT BOOK PAGE 316

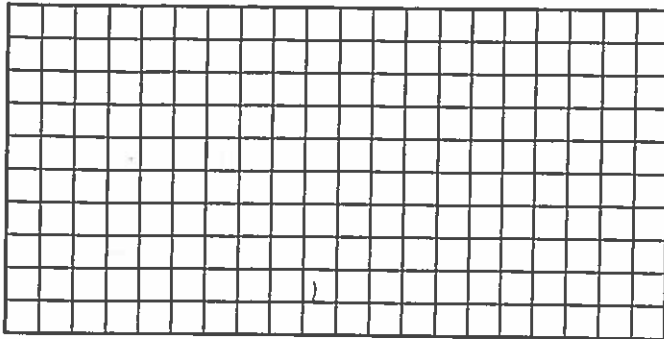
4. Jiri planted 7 rows of 18 trees. How many trees did he plant?

There are _____ rows with _____ trees in each.

So, there are _____ \times _____ trees in all.

I can model this problem with an array that has _____ rows and _____ columns.

Draw the array on this grid.



Find and colour 2 smaller arrays inside the array.
Find the products of the 2 smaller arrays and add them together.

$$7 \times 18 = 7 \times \underline{\quad} + 7 \times \underline{\quad}$$

$$7 \times 18 = \underline{\quad} + \underline{\quad}$$

$$7 \times 18 = \underline{\quad}$$

Jiri planted _____ trees.

5. Complete.

a) $6 \times 21 = 6 \times 20 + 6 \times 1$

$$6 \times 21 = \underline{\quad} + \underline{\quad}$$

$$6 \times 21 = \underline{\quad}$$

c) $5 \times 32 = 5 \times 30 + 5 \times \underline{\quad}$

$$5 \times 32 = \underline{\quad} + \underline{\quad}$$

$$5 \times 32 = \underline{\quad}$$

b) $4 \times 16 = 4 \times 8 + 4 \times 8$

$$4 \times 16 = \underline{\quad} + \underline{\quad}$$

$$4 \times 16 = \underline{\quad}$$

d) $5 \times 28 = 5 \times \underline{\quad} + 5 \times \underline{\quad}$

$$5 \times 28 = \underline{\quad} + \underline{\quad}$$

$$5 \times 28 = \underline{\quad}$$

Chapter 9
Lesson 3

Multiplying Using Arrays

pg. 317 6-8

GOAL

Use arrays to visualize easier ways to multiply.

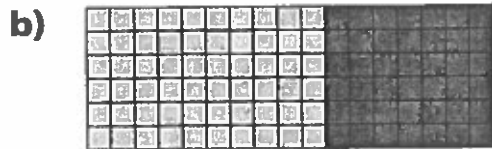
1. Fill in the blanks.



$3 \times 14 = 3 \times 10 + 3 \times \underline{\quad}$

$3 \times 14 = \underline{\quad} + \underline{\quad}$

$3 \times 14 = \underline{\quad}$



$6 \times 17 = 6 \times 10 + 6 \times \underline{\quad}$

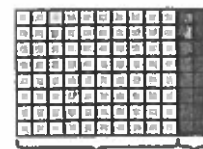
$6 \times 17 = \underline{\quad} + \underline{\quad}$

$6 \times 17 = \underline{\quad}$

At-Home Help

You can use an array to help you multiply. For example:

I want to calculate 8×12 .
I already know that $8 \times 10 = 80$.



8 rows of 10 8 rows of 2
 $8 \times 10 = 80$ $8 \times 2 = 16$

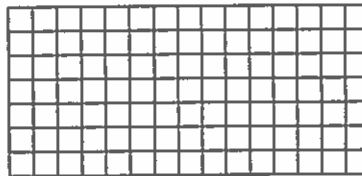
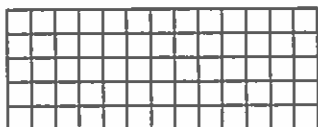
$8 \times 12 = 8 \times 10 + 8 \times 2$
 $8 \times 12 = 80 + 16$
 $8 \times 12 = 96$

2. Sketch arrays to help you multiply.

a) $5 \times 13 = \underline{\quad}$

b) $7 \times 15 = \underline{\quad}$

c) $2 \times 17 = \underline{\quad}$



3. Sketch an array to show that this statement is true.

$4 \times 26 = 4 \times 20 + 4 \times 6$



L

Name: _____ Date: _____

9.4 Modelling Multiplication Page 1

Student Book pages 318–321

GOAL

Modelling multiplication as equal groups.

Problem

Annie is making 54 leather bags.

She sews 3 designs on each bag.

**How many designs will Annie sew?**

Use expanded form to calculate.

5 tens + 4 ones

 × 3**Step 1:** 5 tens × 3 = _____**Step 2:** 4 ones × 3 = _____**Step 3:** 15 tens = _____**Step 4:** 12 ones = _____**Step 5:** 15 tens = _____ (see Step 3)

+ 12 ones = _____ (see Step 4)

Total = _____

Annie sewed _____ designs.

9.4 Modelling Multiplication Page 2

Reflecting

How does grouping tens and ones help you with multiplication?

Scaffolding for Lesson 4, Questions 4 & 5

STUDENT BOOK PAGE 320

4. A box holds 5 pencils. How many pencils are in 85 boxes?

$$\begin{array}{r}
 8 \text{ tens} + 5 \text{ ones} \\
 \times 5 \\
 \hline
 \text{_____ tens} \\
 + \text{_____ ones} \\
 \hline
 \end{array}$$

$$5 \times 8 = \underline{\quad}$$

There are _____ pencils in 85 boxes.

5. Alasia made a bracelet with 6 rows of 64 beads.

- a) How do you think Alasia knew she would need more than 350 beads?

Alasia can think of a number close to 64 that's easy to calculate with, like _____.

Since $6 \times \underline{\quad} = \underline{\quad}$, she knows she needs more than 350 beads.

- b) How many beads did she use altogether?

$$\begin{array}{r}
 6 \text{ tens} + 4 \text{ ones} \\
 \times 6 \\
 \hline
 \text{_____ tens} \\
 + \text{_____ ones} \\
 \hline
 \end{array}$$

$$6 \times 4 = \underline{\quad}$$

Alasia used _____ beads altogether.

Chapter 9
Lesson 4

Multiplying Using Expanded Form

GOAL

Multiply 2-digit numbers by 1-digit numbers using expanded form.

1. Multiply.

a) $5 \times 22 = \square$

$$\begin{array}{r} 20 + 2 \\ \times 5 \\ \hline \end{array}$$

b) $3 \times 64 = \square$

$$\begin{array}{r} 60 + 4 \\ \times 3 \\ \hline \end{array}$$

2. Multiply using expanded form.

a) 2×19

c) 5×33

e) 4×26

b) 3×51

d) 6×82

f) 2×48

At-Home Help

You can use expanded form to multiply 2-digit numbers by 1-digit numbers. For example:

I want to know 4×36 .

36 is the same as $30 + 6$,
or 3 tens + 6 ones.

I will multiply each part
separately by 4.

$$\begin{array}{r} 30 + 6 \\ \times 4 \\ \hline 120 \\ + 24 \\ \hline 144 \end{array}$$

$$4 \times 36 = 144$$

3. Michael's school has 7 classrooms. There are 23 students in each class.
How many students are at the school?