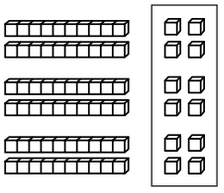
Name _____

LESSON 29.2

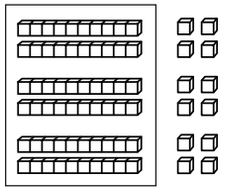
Multiply 2-Digit Numbers

Example $\begin{array}{r} 24 \\ \times\ 3 \\ \hline \end{array}$



(3 × 4 ones)

- Multiply the ones.
  3 × 4 ones = 12 ones
- Multiply the tens.
  3 × 2 tens = 6 tens
- Record the products under the original problem.
- Add the two products.



(3 × 2 tens)

$$\begin{array}{r} 24 \\ \times\ 3 \\ \hline 12 \\ +60 \\ \hline 72 \end{array} \quad \begin{array}{l} \\ \\ \leftarrow 3 \times 4 \text{ ones} \\ \leftarrow 3 \times 2 \text{ tens} \\ \leftarrow \text{total} \end{array}$$

Find the product. You may wish to use base-ten blocks.

1. $\begin{array}{r} 13 \\ \times\ 2 \\ \hline \\ + \\ \hline \\ \hline \end{array}$ ← product of ones ← product of tens

2. $\begin{array}{r} 23 \\ \times\ 4 \\ \hline \\ + \\ \hline \\ \hline \end{array}$ ← product of ones ← product of tens

3. $\begin{array}{r} 15 \\ \times\ 3 \\ \hline \\ + \\ \hline \\ \hline \end{array}$ ← product of ones ← product of tens

4. $\begin{array}{r} 16 \\ \times\ 5 \\ \hline \\ + \\ \hline \\ \hline \end{array}$ ← product of ones ← product of tens

5. $\begin{array}{r} 12 \\ \times\ 3 \\ \hline \\ + \\ \hline \\ \hline \end{array}$ ← product of ones ← product of tens

6. $\begin{array}{r} 22 \\ \times\ 5 \\ \hline \\ + \\ \hline \\ \hline \end{array}$ ← product of ones ← product of tens

7. $\begin{array}{r} 32 \\ \times\ 4 \\ \hline \end{array}$

8. $\begin{array}{r} 25 \\ \times\ 4 \\ \hline \end{array}$

9. $\begin{array}{r} 36 \\ \times\ 5 \\ \hline \end{array}$

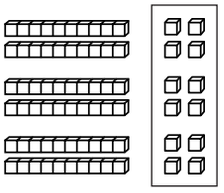
Name _____

LESSON 29.2

Multiply 2-Digit Numbers

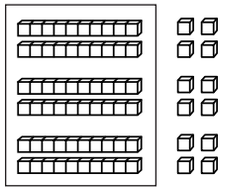
Example

$$\begin{array}{r} 24 \\ \times\ 3 \\ \hline \end{array}$$



(3 × 4 ones)

- Multiply the ones.
  3 × 4 ones = 12 ones
- Multiply the tens.
  3 × 2 tens = 6 tens
- Record the products under the original problem.
- Add the two products.



(3 × 2 tens)

$$\begin{array}{r} 24 \\ \times\ 3 \\ \hline 12 \\ +60 \\ \hline 72 \end{array}$$

← 3 × 4 ones
← 3 × 2 tens
← total

Find the product. You may wish to use base-ten blocks.

1.

$$\begin{array}{r} 13 \\ \times\ 2 \\ \hline 6 \\ +20 \\ \hline 26 \end{array}$$

← product of ones
← product of tens

2.

$$\begin{array}{r} 23 \\ \times\ 4 \\ \hline 12 \\ +80 \\ \hline 92 \end{array}$$

← product of ones
← product of tens

3.

$$\begin{array}{r} 15 \\ \times\ 3 \\ \hline 15 \\ +30 \\ \hline 45 \end{array}$$

← product of ones
← product of tens

4.

$$\begin{array}{r} 16 \\ \times\ 5 \\ \hline 30 \\ +50 \\ \hline 80 \end{array}$$

← product of ones
← product of tens

5.

$$\begin{array}{r} 12 \\ \times\ 3 \\ \hline 6 \\ +30 \\ \hline 36 \end{array}$$

← product of ones
← product of tens

6.

$$\begin{array}{r} 22 \\ \times\ 5 \\ \hline 10 \\ +100 \\ \hline 110 \end{array}$$

← product of ones
← product of tens

7.

$$\begin{array}{r} 32 \\ \times\ 4 \\ \hline 128 \end{array}$$

8.

$$\begin{array}{r} 25 \\ \times\ 4 \\ \hline 100 \end{array}$$

9.

$$\begin{array}{r} 36 \\ \times\ 5 \\ \hline 180 \end{array}$$

Name _____

LESSON 10.3

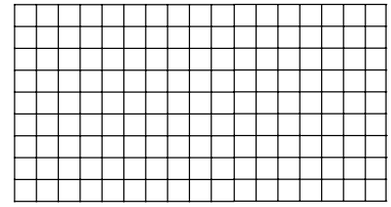
Multiply 2-Digit Numbers

You can use grid paper to help you find the product of a 1-digit number and a 2-digit number.

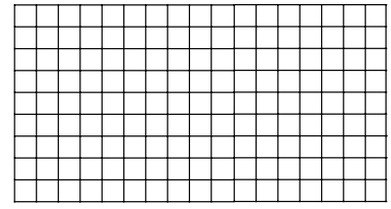
EXAMPLE

Find the product 7×15.

Step 1 Draw a rectangle with 7 rows and 15 columns.



Step 2 Draw a line after the tenth column to make two rectangles.

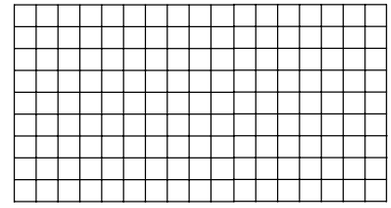


- There are 7 rows of 10. $7 \times 10 = 70$
- There are 7 rows of 5. $7 \times 5 = 35$
- There are 105 squares in all. $70 + 35 = 105$

So, $7 \times 15 = 105$.

---

1. Use grid paper to model 6×13.



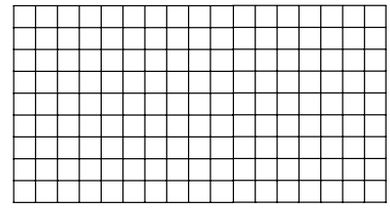
   a. How many rows of 10 are there? _____

   b. How many rows of 3 are there? _____

   c. How many squares are there in all? _____

   d. What is 6×13? _____

2. Use grid paper to model 4×11.



   a. How many rows of 10 are there? _____

   b. How many rows of 1 are there? _____

   c. How many squares are there in all? _____

   d. What is 4×11? _____

Name _____

LESSON 10.3

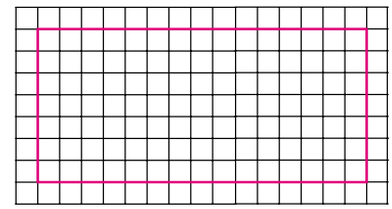
Multiply 2-Digit Numbers

You can use grid paper to help you find the product of a 1-digit number and a 2-digit number.

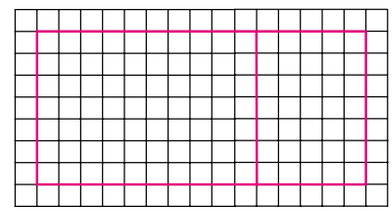
EXAMPLE

Find the product 7×15.

Step 1 Draw a rectangle with 7 rows and 15 columns.



Step 2 Draw a line after the tenth column to make two rectangles.

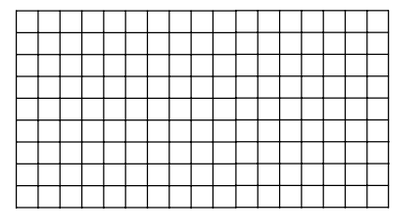


- There are 7 rows of 10. $7 \times 10 = 70$
- There are 7 rows of 5. $7 \times 5 = 35$
- There are 105 squares in all. $70 + 35 = 105$

So, $7 \times 15 = 105$.

---

1. Use grid paper to model 6×13.



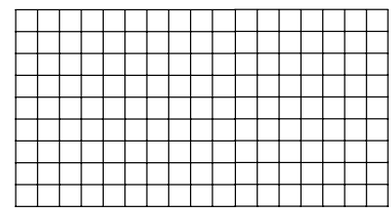
   a. How many rows of 10 are there? 6

   b. How many rows of 3 are there? 6

   c. How many squares are there in all? 78

   d. What is 6×13? 78

2. Use grid paper to model 4×11.



   a. How many rows of 10 are there? 4

   b. How many rows of 1 are there? 4

   c. How many squares are there in all? 44

   d. What is 4×11? 44

Name _____

LESSON 7.3

Multiply by 2-Digit Numbers

You can multiply by two-digit numbers by breaking apart one of the factors.

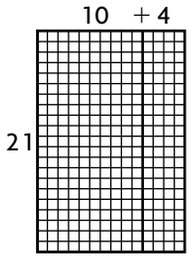
To find 21 × 14, you can break apart 14 into 1 ten 4 ones.

Step 1 Multiply by the ones.

$$\begin{array}{r} 21 \\ \times\ 4 \\ \hline \end{array}$$

Step 2 Multiply by the tens.

$$\begin{array}{r} 21 \\ \times 10 \\ \hline 210 \end{array}$$



Step 3 Add the products.

$$\begin{array}{r} 21 \\ \times\ 14 \\ \hline 84 \leftarrow 4 \times 21 \\ +210 \leftarrow 10 \times 21 \\ \hline 294 \end{array}$$

So, 21 × 14 = 294.

Complete to find the product.

1.
$$\begin{array}{r} 13 \\ \times 12 \\ \hline \quad \leftarrow \_\_\_\_ \times \_\_\_\_ \\ +\_\_\_\_ \leftarrow \_\_\_\_ \times \_\_\_\_ \\ \hline \end{array}$$

2.
$$\begin{array}{r} 22 \\ \times 15 \\ \hline \quad \leftarrow \_\_\_\_ \times \_\_\_\_ \\ +\_\_\_\_ \leftarrow \_\_\_\_ \times \_\_\_\_ \\ \hline \end{array}$$

3.
$$\begin{array}{r} 30 \\ \times 17 \\ \hline \quad \leftarrow \_\_\_\_ \times \_\_\_\_ \\ +\_\_\_\_ \leftarrow \_\_\_\_ \times \_\_\_\_ \\ \hline \end{array}$$

4.
$$\begin{array}{r} 28 \\ \times 14 \\ \hline \quad \leftarrow \_\_\_\_ \times \_\_\_\_ \\ +\_\_\_\_ \leftarrow \_\_\_\_ \times \_\_\_\_ \\ \hline \end{array}$$

5.
$$\begin{array}{r} 40 \\ \times 19 \\ \hline \quad \leftarrow \_\_\_\_ \times \_\_\_\_ \\ +\_\_\_\_ \leftarrow \_\_\_\_ \times \_\_\_\_ \\ \hline \end{array}$$

6.
$$\begin{array}{r} 45 \\ \times 15 \\ \hline \quad \leftarrow \_\_\_\_ \times \_\_\_\_ \\ +\_\_\_\_ \leftarrow \_\_\_\_ \times \_\_\_\_ \\ \hline \end{array}$$

7.
$$\begin{array}{r} 37 \\ \times 15 \\ \hline \quad \leftarrow \_\_\_\_ \times \_\_\_\_ \\ +\_\_\_\_ \leftarrow \_\_\_\_ \times \_\_\_\_ \\ \hline \end{array}$$

8.
$$\begin{array}{r} 28 \\ \times 16 \\ \hline \quad \leftarrow \_\_\_\_ \times \_\_\_\_ \\ +\_\_\_\_ \leftarrow \_\_\_\_ \times \_\_\_\_ \\ \hline \end{array}$$

Name _____

LESSON 7.3

Multiply by 2-Digit Numbers

You can multiply by two-digit numbers by breaking apart one of the factors.

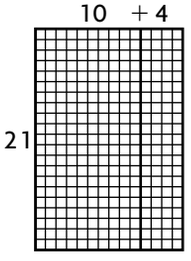
To find 21 × 14, you can break apart 14 into 1 ten 4 ones.

Step 1 Multiply by the ones.

$$\begin{array}{r} 21 \\ \times\ 4 \\ \hline \end{array}$$

Step 2 Multiply by the tens.

$$\begin{array}{r} 21 \\ \times 10 \\ \hline 210 \end{array}$$



Step 3 Add the products.

$$\begin{array}{r} 21 \\ \times\ 14 \\ \hline 84 \leftarrow 4 \times 21 \\ +210 \leftarrow 10 \times 21 \\ \hline 294 \end{array}$$

So, 21 × 14 = 294.

Complete to find the product.

1. 13 × 12

26 ← 2 × 13
+130 ← 10 × 13
156

2. 22 × 15

110 ← 5 × 22
+220 ← 10 × 22
330

3. 30 × 17

210 ← 7 × 30
+300 ← 10 × 30
510

4. 28 × 14

112 ← 4 × 28
+280 ← 10 × 28
392

5. 40 × 19

360 ← 9 × 40
+400 ← 10 × 40
760

6. 45 × 15

225 ← 5 × 45
+450 ← 10 × 45
675

7. 37 × 15

185 ← 5 × 37
+370 ← 10 × 37
555

8. 28 × 16

168 ← 6 × 28
+280 ← 10 × 28
448

Name _____

Multiply 3- and 4-Digit Numbers

You can use place value and the expanded form of a 3- or 4-digit number to multiply it by another number.

Step 1 Write the expanded form of the 3-digit or 4-digit number.
Step 2 Multiply each addend by the one-digit number.
Step 3 Add these numbers.

Multiply. 4×324		Multiply. $3 \times 2{,}642$	
Expand	**Multiply by 4**	**Expand**	**Multiply by 3**
300	1,200	2,000	6,000
20	80	600	1,800
4	+ 16	40	120
	1,296 ← **Sum**	2	+ 6
			7,926 ← **Sum**

Use place value and the expanded form of the 3-digit or 4-digit number to find the product.

1. 2×456

Expand	**Multiply by 2**
400	_____
50	_____
6	+ _____
	_____ ← **Sum**

2. 3×619

Expand	**Multiply by** _____
_____	_____
_____	_____
_____	+ _____
	_____ ← **Sum**

3. 5×631

Expand	**Multiply by** _____
_____	_____
_____	_____
_____	+ _____
	_____ ← **Sum**

4. $4 \times 2{,}351$

Expand	**Multiply by** _____
_____	_____
_____	_____
_____	_____
_____	+ _____
	_____ ← **Sum**

5. $3 \times 4{,}263$

Expand	**Multiply by** _____
_____	_____
_____	_____
_____	_____
_____	+ _____
	_____ ← **Sum**

6. $8 \times 3{,}142$

Expand	**Multiply by** _____
_____	_____
_____	_____
_____	_____
_____	+ _____
	_____ ← **Sum**

Name _____

Multiply 3- and 4-Digit Numbers

You can use place value and the expanded form of a 3- or 4-digit number to multiply it by another number.

Step 1 Write the expanded form of the 3-digit or 4-digit number.
Step 2 Multiply each addend by the one-digit number.
Step 3 Add these numbers.

Multiply. 4 × 324

Expand	Multiply by 4
300	1,200
20	80
4	+ 16
	1,296 ← **Sum**

Multiply. 3 × 2,642

Expand	Multiply by 3
2,000	6,000
600	1,800
40	120
2	+ 6
	7,926 ← **Sum**

Use place value and the expanded form of the 3-digit or 4-digit number to find the product.

1. 2 × 456

Expand	Multiply by 2
400	800
50	100
6	+ 12
	912 ← **Sum**

2. 3 × 619

Expand	Multiply by 3
600	1,800
10	30
9	+ 27
	1,857 ← **Sum**

3. 5 × 631

Expand	Multiply by 5
600	3,000
30	150
1	+ 5
	3,155 ← **Sum**

4. 4 × 2,351

Expand	Multiply by 4
2,000	8,000
300	1,200
50	200
1	+ 4
	9,404 ← **Sum**

5. 3 × 4,263

Expand	Multiply by 3
4,000	12,000
200	600
60	180
3	+ 9
	12,789 ← **Sum**

6. 8 × 3,142

Expand	Multiply by 8
3,000	24,000
100	800
40	320
2	+ 16
	25,136 ← **Sum**

Name _____

LESSON 12.1

Multiply 2-Digit Numbers

Solve 12×15 by using the partial-products method.

Step 1

$$\begin{array}{r} 15 \\ \times\ 12 \\ \hline \end{array}$$

Step 2

$$\begin{array}{r} 15 \\ \times\ 12 \\ \hline \end{array}$$

Step 3

$$\begin{array}{r} 15 \\ \times\ 12 \\ \hline \end{array}$$

Step 4

$$\begin{array}{r} 15 \\ \times\ 12 \\ \hline \end{array}$$

Partial Products

		1	**5**
	×	**1**	**2**
$2 \times 5 =$		1	0
$2 \times 10 =$		2	0
$10 \times 5 =$		5	0
$10 \times 10 =$	1	0	0
product →	1	8	0

Step 5

Add partial products together.

$10 + 20 + 50 + 100 = 180$

The product of 12 and 15 is 180.

Multiply by using the partial-products method.

1.

		3	**1**
	×	**1**	**7**
$7 \times 1 =$			
$7 \times 30 =$			
$10 \times 1 =$			
$10 \times 30 =$			
product →			

2.

		4	**6**
	×	**2**	**8**
$8 \times 6 =$			
$8 \times 40 =$			
$20 \times 6 =$			
$20 \times 40 =$			
product →			

3.

		7	**9**
	×	**5**	**6**
$6 \times 9 =$			
$6 \times 70 =$			
$50 \times 9 =$			
$50 \times 70 =$			
product →			

4. $\begin{array}{r} 82 \\ \times 25 \\ \hline \end{array}$

5. $\begin{array}{r} 63 \\ \times 47 \\ \hline \end{array}$

6. $\begin{array}{r} 92 \\ \times 34 \\ \hline \end{array}$

Name _____

LESSON 12.1

Multiply 2-Digit Numbers

Solve 12×15 by using the partial-products method.

Step 1

$$\begin{array}{r} 15 \\ \times\ 12 \\ \hline \end{array}$$

Step 2

$$\begin{array}{r} 15 \\ \times\ 12 \\ \hline \end{array}$$

Step 3

$$\begin{array}{r} 15 \\ \times\ 12 \\ \hline \end{array}$$

Step 4

$$\begin{array}{r} 15 \\ \times\ 12 \\ \hline \end{array}$$

Step 5

Add partial products together.

$10 + 20 + 50 + 100 = 180$

The product of 12 and 15 is 180.

Partial Products

		1	**5**
	×	**1**	**2**
$2 \times 5 =$		1	0
$2 \times 10 =$		2	0
$10 \times 5 =$		5	0
$10 \times 10 =$	1	0	0
product →	1	8	0

Multiply by using the partial-products method.

1.

		3	**1**
	×	**1**	**7**
$7 \times 1 =$			7
$7 \times 30 =$	2	1	0
$10 \times 1 =$		1	0
$10 \times 30 =$	3	0	0
product →	5	2	7

2.

		4	**6**
	×	**2**	**8**
$8 \times 6 =$		4	8
$8 \times 40 =$	3	2	0
$20 \times 6 =$	1	2	0
$20 \times 40 =$	8	0	0
product →	1,	2	8	8

3.

		7	**9**
	×	**5**	**6**
$6 \times 9 =$		5	4
$6 \times 70 =$	4	2	0
$50 \times 9 =$	4	5	0
$50 \times 70 =$	3,	5	0	0
product →	4,	4	2	4

4.

$$\begin{array}{r} 82 \\ \times 25 \\ \hline 10 \\ 400 \\ 40 \\ 1{,}600 \\ \hline 2{,}050 \end{array}$$

5.

$$\begin{array}{r} 63 \\ \times 47 \\ \hline 21 \\ 420 \\ 120 \\ 2{,}400 \\ \hline 2{,}961 \end{array}$$

6.

$$\begin{array}{r} 92 \\ \times 34 \\ \hline 8 \\ 360 \\ 60 \\ 2{,}700 \\ \hline 3{,}128 \end{array}$$