

LEVEL ELEVEN

THREE - UNIT NUMBERS

Developmental Mathematics

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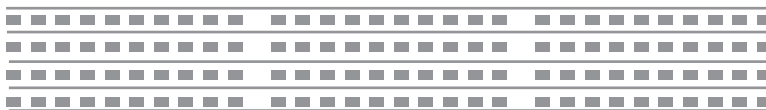
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1

ONES X TENS

Example 1.

The following picture represents a collection of stamps.



Discussion:

Study how the stamps are arranged.

- There are 4 rows of stamps.
 - In tens, there are 3 tens of stamps in each row.
- In all, there are 4×3 tens of stamps.

Using T for ten, we may write these two sentences as follows:

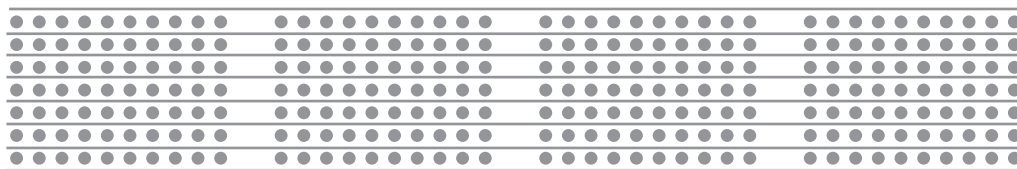
In tens, there are 3T of stamps in each row.

In all, there are $4 \times 3T = 12T$ stamps.

- In ones, there are 30 stamps in each row.
- In all, there are $4 \times 30 = 120$ stamps.

Example 2.

The following picture represents a collection of marbles.



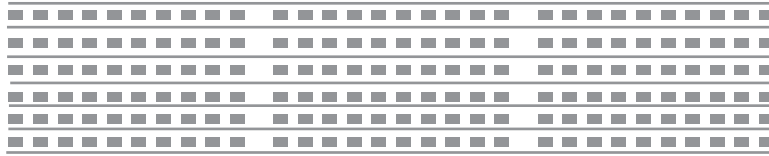
In all, how many marbles are there?

Discussion:

- How many rows are there? _____
- In tens, how many marbles are in each row? _____
- In all, how many marbles are there? _____
- In ones, how many marbles are in each row? _____
- In all, how many marbles are there? _____

Example 3.

The following picture represents $6 \times 3T$ or 6×30 .

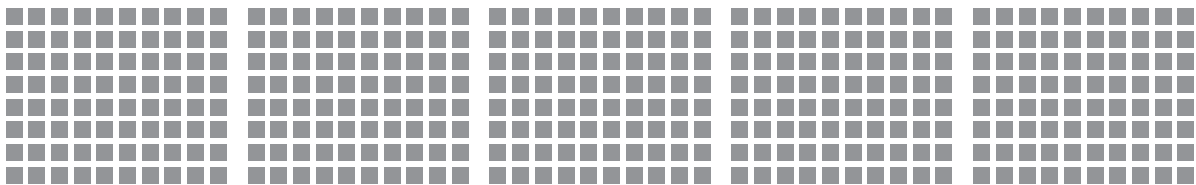


- In tens, how many items are there? _____
- In ones, how many items are there? _____

Example 4.

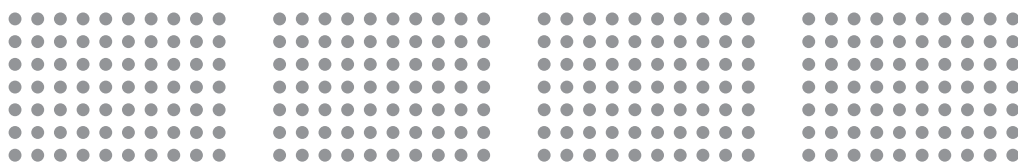
What does the picture represent? _____

- In tens, how many items are there? _____
- In ones, how many items are there? _____

Example 5.

Make the picture show $8 \times 5T$.

- In tens, how many items are there? _____
- In ones, how many items are there? _____

Example 6.

Make the picture show 7×40 .

- In tens, how many items are there? _____
- In ones, how many items are there? _____

EXERCISES**a. Multiply**

1. $3 \times 2T =$ _____

$3 \times 20 =$ _____

2. $3 \times 3T =$ _____

$3 \times 30 =$ _____

3. $2 \times 2T =$ _____

$2 \times 20 =$ _____

4. $2 \times 3T =$ _____

$2 \times 30 =$ _____

5. $7 \times 4T =$ _____

$7 \times 40 =$ _____

6. $2 \times 4T =$ _____

$2 \times 40 =$ _____

7. $4 \times 3T =$ _____

$4 \times 30 =$ _____

8. $3 \times 5T =$ _____

$3 \times 50 =$ _____

9. $5 \times 9T =$ _____

$5 \times 90 =$ _____

10. $6 \times 5T =$ _____

$6 \times 50 =$ _____

11. $5 \times 4T =$ _____

$5 \times 40 =$ _____

12. $4 \times 5T =$ _____

$4 \times 50 =$ _____

13. $7 \times 2T =$ _____

$7 \times 20 =$ _____

14. $4 \times 2T =$ _____

$4 \times 20 =$ _____

15. $6 \times 4T =$ _____

$6 \times 40 =$ _____

b. Multiply:

1. $6 \times 90 =$ _____

2. $7 \times 20 =$ _____

3. $9 \times 70 =$ _____

4. $7 \times 80 =$ _____

5. $8 \times 30 =$ _____

6. $6 \times 80 =$ _____

7. $9 \times 60 =$ _____

8. $5 \times 90 =$ _____

9. $7 \times 90 =$ _____

10. $6 \times 60 =$ _____

11. $7 \times 50 =$ _____

12. $6 \times 30 =$ _____

13. $5 \times 20 =$ _____

14. $8 \times 20 =$ _____

15. $9 \times 30 =$ _____

16. $8 \times 60 =$ _____

17. $6 \times 70 =$ _____

18. $7 \times 30 =$ _____

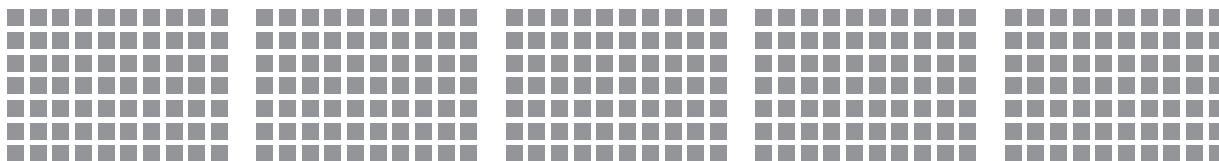
19. $7 \times 60 =$ _____

20. $8 \times 50 =$ _____

21. $8 \times 70 =$ _____

APPLICATIONS

1. The following picture represents the apple trees in an orchard.



How many trees are there? _____

2. The following picture represents the cars parked in a parking area.



How many cars are parked? _____

3. Make the picture show 5 x 60.

How many items are there? _____

4. You have 9 twenty-dollar bills.
How many dollars do you have? _____
5. You have 6 fifty-dollar bills.
How many dollars do you have? _____
6. You bought 8 forty-cent stamps.
• How many cents did you pay? _____
• How much money, in dollars, did you pay? _____
7. Dad had six 100-dollar bills.
He bought 3 suits for \$90 each.
• How many dollars did he spend? _____
• How many dollars does he have left? _____
- 8 Find the answer:
a. $700 - (3 \times 60)$ _____
b. $(9 \times 70) + (2 \times 90)$ _____
c. $7 \times (5 \times 8)$ _____

2

ONES X A NUMBER

Example 1.

You have 2 sets of stamps with 34 stamps in each set.

In all, how many stamps do you have?

Discussion:

The following picture represents the situation.



The arrangement is made of two parts: 2×34 and 2×4 .

$$2 \times 34 = 68$$

$$2 \times 4 = 8$$

$$\text{Altogether: } 2 \times 34 = 68$$

We may use boxes as shown below:

$$2 \times 34 = \begin{array}{|c|c|c|} \hline 100\text{'s} & 10\text{'s} & 1\text{'s} \\ \hline & 6 & 8 \\ \hline \end{array} = 68$$

Example 2.

The following picture represents 4×23 .



In all, how many items are there?

Discussion:

Using boxes, we can multiply step by step.

$$4 \times 23 = \begin{array}{|c|c|c|} \hline 100\text{'s} & 10\text{'s} & 1\text{'s} \\ \hline & 8 & 12 \\ \hline \end{array} = \begin{array}{|c|c|c|} \hline 100\text{'s} & 10\text{'s} & 1\text{'s} \\ \hline & 9 & 2 \\ \hline \end{array} = 92$$

Example 3.

Multiply step by step:

$$6 \times 145 = \begin{array}{|c|c|c|} \hline 100\text{'s} & 10\text{'s} & 1\text{'s} \\ \hline 6 & 24 & 30 \\ \hline \end{array} = \begin{array}{|c|c|c|} \hline 100\text{'s} & 10\text{'s} & 1\text{'s} \\ \hline 8 & 7 & 0 \\ \hline \end{array} = \underline{\hspace{2cm}}$$

EXERCISES

1.

$$4 \times 92 = \begin{array}{|c|c|c|} \hline 100's & 10's & 1's \\ \hline & & \\ \hline \end{array} = \begin{array}{|c|c|c|} \hline 100's & 10's & 1's \\ \hline & & \\ \hline \end{array} = \underline{\hspace{2cm}}$$

2.

$$3 \times 317 = \begin{array}{|c|c|c|} \hline 100's & 10's & 1's \\ \hline & & \\ \hline \end{array} = \begin{array}{|c|c|c|} \hline 100's & 10's & 1's \\ \hline & & \\ \hline \end{array} = \underline{\hspace{2cm}}$$

3.

$$4 \times 215 = \begin{array}{|c|c|c|} \hline 100's & 10's & 1's \\ \hline & & \\ \hline \end{array} = \begin{array}{|c|c|c|} \hline 100's & 10's & 1's \\ \hline & & \\ \hline \end{array} = \underline{\hspace{2cm}}$$

4.

$$6 \times 95 = \begin{array}{|c|c|c|} \hline 100's & 10's & 1's \\ \hline & & \\ \hline \end{array} = \begin{array}{|c|c|c|} \hline 100's & 10's & 1's \\ \hline & & \\ \hline \end{array} = \underline{\hspace{2cm}}$$

5.

$$8 \times 76 = \begin{array}{|c|c|c|} \hline 100's & 10's & 1's \\ \hline & & \\ \hline \end{array} = \begin{array}{|c|c|c|} \hline 100's & 10's & 1's \\ \hline & & \\ \hline \end{array} = \underline{\hspace{2cm}}$$

6.

$$5 \times 136 = \begin{array}{|c|c|c|} \hline 100's & 10's & 1's \\ \hline & & \\ \hline \end{array} = \begin{array}{|c|c|c|} \hline 100's & 10's & 1's \\ \hline & & \\ \hline \end{array} = \underline{\hspace{2cm}}$$

7.

$$7 \times 138 = \begin{array}{|c|c|c|} \hline 100's & 10's & 1's \\ \hline & & \\ \hline \end{array} = \begin{array}{|c|c|c|} \hline 100's & 10's & 1's \\ \hline & & \\ \hline \end{array} = \underline{\hspace{2cm}}$$

8.

$$8 \times 124 = \begin{array}{|c|c|c|} \hline 100's & 10's & 1's \\ \hline & & \\ \hline \end{array} = \begin{array}{|c|c|c|} \hline 100's & 10's & 1's \\ \hline & & \\ \hline \end{array} = \underline{\hspace{2cm}}$$

9.

$$3 \times 248 = \begin{array}{|c|c|c|} \hline 100's & 10's & 1's \\ \hline & & \\ \hline \end{array} = \begin{array}{|c|c|c|} \hline 100's & 10's & 1's \\ \hline & & \\ \hline \end{array} = \underline{\hspace{2cm}}$$

10.

$$4 \times 225 = \begin{array}{|c|c|c|} \hline 100's & 10's & 1's \\ \hline & & \\ \hline \end{array} = \begin{array}{|c|c|c|} \hline 100's & 10's & 1's \\ \hline & & \\ \hline \end{array} = \underline{\hspace{2cm}}$$

GROUPING MENTALLY

You can do the grouping mentally.

Example 1.

$$3 \times 246 =$$

100's	10's	1's

- 3×6 ones = 18 ones
18 ones must be grouped into 1 ten and 8 ones.
Write 8 in the ones box and remember that you have 1 ten to be added to the tens you obtain later.
- 3×4 tens = 12 tens
12 tens + 1 ten = 13 tens
13 tens must be grouped together into 1 hundred and 3 tens.
Write 3 in the tens box and remember that you have 1 hundred to be added to the hundreds you obtain later.
- 3×2 hundreds = 6 hundreds
6 hundreds + 1 hundred = 7 hundreds
Write 7 in the hundreds box.
- The answer is _____

Example 2.

Multiply:

$$5 \times 184 =$$

100's	10's	1's

$$=$$

- 5×4 ones = 20 ones.
20 ones must be grouped into 2 tens and 0 ones.
Write 0 in the ones place and remember that you have 2 tens to be added to the tens you obtain later.
- 5×8 tens = 40 tens
40 tens + 2 tens = 42 tens
42 tens must be grouped into 4 hundreds and 2 tens.
Write 2 in the tens box and remember that you have 4 hundreds to be added to the hundreds you obtain later.
- 5×1 hundred = 5 hundreds
5 hundreds + 4 hundreds = 9 hundreds
Write 9 in the hundreds box.

EXERCISES

1.

$$2 \times 48 = \begin{array}{|c|c|c|} \hline 100\text{'s} & 10\text{'s} & 1\text{'s} \\ \hline & & \\ \hline \end{array} = \underline{\hspace{2cm}}$$

2.

$$3 \times 34 = \begin{array}{|c|c|c|} \hline 100\text{'s} & 10\text{'s} & 1\text{'s} \\ \hline & & \\ \hline \end{array} = \underline{\hspace{2cm}}$$

3.

$$7 \times 82 = \begin{array}{|c|c|c|} \hline 100\text{'s} & 10\text{'s} & 1\text{'s} \\ \hline & & \\ \hline \end{array} = \underline{\hspace{2cm}}$$

4.

$$5 \times 29 = \begin{array}{|c|c|c|} \hline 100\text{'s} & 10\text{'s} & 1\text{'s} \\ \hline & & \\ \hline \end{array} = \underline{\hspace{2cm}}$$

5.

$$9 \times 67 = \begin{array}{|c|c|c|} \hline 100\text{'s} & 10\text{'s} & 1\text{'s} \\ \hline & & \\ \hline \end{array} = \underline{\hspace{2cm}}$$

6.

$$6 \times 84 = \begin{array}{|c|c|c|} \hline 100\text{'s} & 10\text{'s} & 1\text{'s} \\ \hline & & \\ \hline \end{array} = \underline{\hspace{2cm}}$$

7.

$$8 \times 95 = \begin{array}{|c|c|c|} \hline 100\text{'s} & 10\text{'s} & 1\text{'s} \\ \hline & & \\ \hline \end{array} = \underline{\hspace{2cm}}$$

8.

$$5 \times 86 = \begin{array}{|c|c|c|} \hline 100\text{'s} & 10\text{'s} & 1\text{'s} \\ \hline & & \\ \hline \end{array} = \underline{\hspace{2cm}}$$

9.

$$4 \times 213 = \begin{array}{|c|c|c|} \hline 100\text{'s} & 10\text{'s} & 1\text{'s} \\ \hline & & \\ \hline \end{array} = \underline{\hspace{2cm}}$$

10.

$$3 \times 172 = \begin{array}{|c|c|c|} \hline 100\text{'s} & 10\text{'s} & 1\text{'s} \\ \hline & & \\ \hline \end{array} = \underline{\hspace{2cm}}$$

11.

$$5 \times 121 = \begin{array}{|c|c|c|} \hline 100\text{'s} & 10\text{'s} & 1\text{'s} \\ \hline & & \\ \hline \end{array} = \underline{\hspace{2cm}}$$

12.

$$2 \times 463 = \begin{array}{|c|c|c|} \hline 100\text{'s} & 10\text{'s} & 1\text{'s} \\ \hline & & \\ \hline \end{array} = \underline{\hspace{2cm}}$$

13.

$$3 \times 243 = \begin{array}{|c|c|c|} \hline 100\text{'s} & 10\text{'s} & 1\text{'s} \\ \hline & & \\ \hline \end{array} = \underline{\hspace{2cm}}$$

14.

$$4 \times 218 = \begin{array}{|c|c|c|} \hline 100\text{'s} & 10\text{'s} & 1\text{'s} \\ \hline & & \\ \hline \end{array} = \underline{\hspace{2cm}}$$

15.

$$6 \times 159 = \begin{array}{|c|c|c|} \hline 100\text{'s} & 10\text{'s} & 1\text{'s} \\ \hline & & \\ \hline \end{array} = \underline{\hspace{2cm}}$$

16.

$$5 \times 173 = \begin{array}{|c|c|c|} \hline 100\text{'s} & 10\text{'s} & 1\text{'s} \\ \hline & & \\ \hline \end{array} = \underline{\hspace{2cm}}$$

17.

$$8 \times 116 = \begin{array}{|c|c|c|} \hline 100\text{'s} & 10\text{'s} & 1\text{'s} \\ \hline & & \\ \hline \end{array} = \underline{\hspace{2cm}}$$

18.

$$3 \times 315 = \begin{array}{|c|c|c|} \hline 100\text{'s} & 10\text{'s} & 1\text{'s} \\ \hline & & \\ \hline \end{array} = \underline{\hspace{2cm}}$$

19.

$$9 \times 96 = \begin{array}{|c|c|c|} \hline 100\text{'s} & 10\text{'s} & 1\text{'s} \\ \hline & & \\ \hline \end{array} = \underline{\hspace{2cm}}$$

20.

$$7 \times 83 = \begin{array}{|c|c|c|} \hline 100\text{'s} & 10\text{'s} & 1\text{'s} \\ \hline & & \\ \hline \end{array} = \underline{\hspace{2cm}}$$

NO BOXES

You can, of course, do without the boxes as shown below.

Example 1.

To do the multiplication given to the right:

$$3 \times 235 = \underline{705}$$

- $3 \times 5 = 15$ ones.
15 ones must be grouped into 1 ten and 5 ones.
Write 5 in the ones place and remember that you have 1 ten to add to the tens you obtain later.
- 3×3 tens = 9 tens.
9 tens + 1 ten = 10 tens.
10 tens must be grouped into 1 hundred and 0 tens.
Write 0 in the tens place and remember that you have 1 hundred to add to the hundreds you obtain later.
- 3×2 hundreds = 6 hundreds.
6 hundreds + 1 hundred = 7 hundreds.
Write 7 in the hundreds place.

EXERCISES

Write the answer:

- | | | |
|----------------------------|----------------------------|----------------------------|
| 1. $3 \times 97 =$ _____ | 2. $8 \times 78 =$ _____ | 3. $7 \times 67 =$ _____ |
| 4. $6 \times 85 =$ _____ | 5. $5 \times 86 =$ _____ | 6. $4 \times 95 =$ _____ |
| 7. $4 \times 76 =$ _____ | 8. $6 \times 66 =$ _____ | 9. $9 \times 67 =$ _____ |
| 10. $2 \times 374 =$ _____ | 11. $3 \times 291 =$ _____ | 12. $4 \times 215 =$ _____ |
| 13. $3 \times 124 =$ _____ | 14. $2 \times 435 =$ _____ | 15. $5 \times 113 =$ _____ |
| 16. $4 \times 217 =$ _____ | 17. $3 \times 276 =$ _____ | 18. $6 \times 132 =$ _____ |
| 19. $5 \times 162 =$ _____ | 20. $3 \times 317 =$ _____ | 21. $4 \times 237 =$ _____ |
| 22. $4 \times 227 =$ _____ | 23. $4 \times 243 =$ _____ | 24. $7 \times 125 =$ _____ |
| 25. $3 \times 272 =$ _____ | 26. $6 \times 128 =$ _____ | 27. $2 \times 455 =$ _____ |
| 28. $5 \times 156 =$ _____ | 29. $3 \times 327 =$ _____ | 30. $8 \times 115 =$ _____ |
| 31. $4 \times 125 =$ _____ | 32. $6 \times 135 =$ _____ | 33. $2 \times 375 =$ _____ |

Study how the following multiplications are carried out step by step.

Example 2.

- $2 \times 4 = 8$
- $2 \times 0T = 0T$
- $2 \times 3H = 6H$

$$2 \times 304 = \underline{608}$$

Example 3.

- $7 \times 9 = 63$
63 ones are grouped into 6 tens and 3 ones.
- $7 \times 0T = 0T$
 $0T + 6T = 6T$
- $7 \times 1H = 7H$

$$7 \times 109 = \underline{763}$$

Example 4.

- $8 \times 5 = 40$
40 ones are grouped into 4 tens and 0 ones.
- $8 \times 0T = 0T$
 $0T + 4T = 4T$
- $8 \times 1H = 8H$

$$8 \times 105 = \underline{840}$$

EXERCISES

Write the answer:

a. $5 \times 130 =$ _____	$2 \times 470 =$ _____	$3 \times 270 =$ _____
$8 \times 120 =$ _____	$7 \times 130 =$ _____	$4 \times 230 =$ _____
$6 \times 140 =$ _____	$3 \times 260 =$ _____	$5 \times 140 =$ _____
$5 \times 180 =$ _____	$6 \times 150 =$ _____	$5 \times 160 =$ _____
b. $3 \times 202 =$ _____	$2 \times 304 =$ _____	$3 \times 207 =$ _____
$9 \times 106 =$ _____	$4 \times 207 =$ _____	$6 \times 108 =$ _____
$2 \times 306 =$ _____	$7 \times 105 =$ _____	$4 \times 205 =$ _____
$4 \times 204 =$ _____	$2 \times 307 =$ _____	$3 \times 307 =$ _____
c. $7 \times 120 =$ _____	$6 \times 105 =$ _____	$3 \times 280 =$ _____
$4 \times 240 =$ _____	$3 \times 307 =$ _____	$6 \times 160 =$ _____
$4 \times 209 =$ _____	$4 \times 180 =$ _____	$2 \times 407 =$ _____
$3 \times 290 =$ _____	$3 \times 209 =$ _____	$5 \times 170 =$ _____