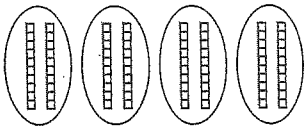
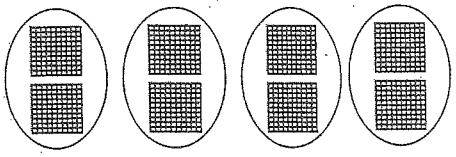
NS6-20: Multiples of 10

To multiply **4 × 20**, Allen makes 4 groups containing 2 tens blocks (20 = 2 tens).



$4 \times 20 = 4 \times 2 \text{ tens}$
$= 8 \text{ tens}$
$= 80$

To multiply **4 × 200**, Allen makes 4 groups containing 2 hundreds blocks (200 = 2 hundreds).



$4 \times 200 = 4 \times 2 \text{ hundreds}$
$= 8 \text{ hundreds}$
$= 800$

Allen notices a pattern:

4 × 2 = 8
4 × 20 = 80
4 × 200 = 800

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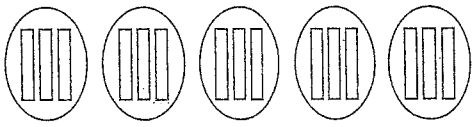
1. Draw a model for each multiplication statement, then calculate the answer. The first one is done.

a) 5×30



$5 \times 30 = 5 \times \underline{3} \text{ tens} = \underline{15} \text{ tens} = \underline{150}$

b) 3×40

$3 \times 40 = 3 \times \_\_\_\_ \text{ tens} = \_\_\_\_ \text{ tens} = \_\_\_\_$

2. Regroup to find the answer.

a) $3 \times 60 = 3 \times$ _____ tens = _____ tens = _____

b) $6 \times 50 = 6 \times$ _____ tens = _____ tens = _____

c) $4 \times 50 = 4 \times$ _____ tens = _____ tens = _____

d) $5 \times 40 = 5 \times$ _____ tens = _____ tens = _____

3. Complete the pattern by multiplying.

a) $5 \times 3 =$ _____
$5 \times 30 =$ _____
$5 \times 300 =$ _____

b) $6 \times 1 =$ _____
$6 \times 10 =$ _____
$6 \times 100 =$ _____

c) $3 \times 4 =$ _____
$3 \times 40 =$ _____
$3 \times 400 =$ _____

d) $4 \times 5 =$ _____
$4 \times 50 =$ _____
$4 \times 500 =$ _____

4. Multiply.

a) $7 \times 30 =$ _____
b) $30 \times 5 =$ _____
c) $3 \times 40 =$ _____
d) $80 \times 3 =$ _____
e) $4 \times 400 =$ _____
f) $500 \times 8 =$ _____
g) $5 \times 80 =$ _____
h) $300 \times 6 =$ _____
i) $3 \times 900 =$ _____
j) $700 \times 6 =$ _____
k) $8 \times 20 =$ _____
l) $700 \times 3 =$ _____

5. Draw a base ten model (using cubes to represent thousands) to show: $7 \times 1\,000 = 7\,000$.

6. Knowing that $6 \times 3 = 18$, how can you use this fact to multiply $6 \times 3\,000$? Explain.

NS6-21: Mental Math

To multiply 4×22,
Leela rewrites 22 as a sum: $22 = 20 + 2$

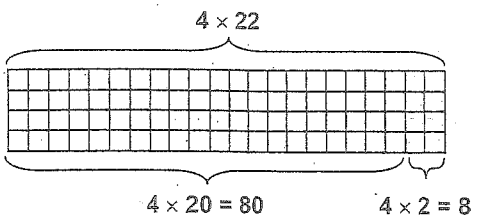
She first multiplies 4 by 20: $4 \times 20 = 80$

Next she multiplies 4 by 2: $4 \times 2 = 8$

Finally she adds the two results: $80 + 8 = 88$

So Leela can conclude that $4 \times 22 = 88$.

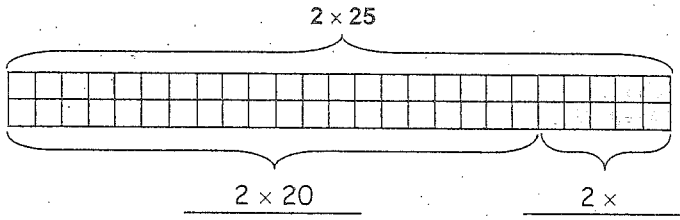
This picture shows why Leela's method works:



$4 \times 22 = (4 \times 20) + (4 \times 2) = 80 + 8 = 88$

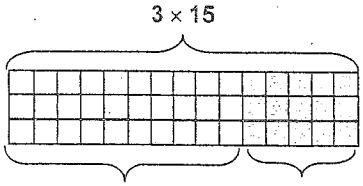
1. Use the picture to write the multiplication statement as a sum. The first one is started for you.

a)



$2 \times 25 = (2 \times \_\_\_\_) + (2 \times \_\_\_\_)$

b)



$3 \times 15 = (\_\_\_\_\_) + (\_\_\_\_\_)$

2. Multiply using Leela's method. The first one has been done for you.

a) $5 \times 13 =$ 5 × 10 + 5 × 3 = 50 + 15 = 65

b) $4 \times 21 =$ _____ + _____ = _____ = _____

c) $3 \times 43 =$ _____ + _____ = _____ = _____

d) $2 \times 432 =$ 2 × 400 + 2 × 30 + 2 × 2 = 800 + 60 + 4 = 864

e) $3 \times 312 =$ _____

f) $4 \times 321 =$ _____

3. Multiply in your head by multiplying the digits separately.

a) $3 \times 12 =$ _____ b) $3 \times 52 =$ _____ c) $6 \times 31 =$ _____ d) $7 \times 21 =$ _____

e) $5 \times 31 =$ _____ f) $3 \times 43 =$ _____ g) $6 \times 51 =$ _____ h) $2 \times 44 =$ _____

i) $4 \times 521 =$ _____ j) $3 \times 621 =$ _____ k) $5 \times 411 =$ _____ l) $2 \times 444 =$ _____

m) $3 \times 632 =$ _____ n) $4 \times 422 =$ _____ o) $4 \times 212 =$ _____ p) $2 \times 421 =$ _____

4. a) Stacy placed 821 books in each of 4 bookshelves. How many books did she place altogether?

b) Nickalo put 723 pencils in each of 3 boxes. How many pencils did he put in the boxes?