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*Answers and/or discussion are included in the lesson.

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Multiplication Models and Strategies (SG pp. 370–371)
Questions 1–5
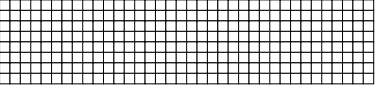
1.* Estimates will vary. Possible estimate: $30 \times 4 = 120$

2.* 128 tiles

3.* Possible response: Both methods break a product into simpler products. Then you add the partial products. It is like breaking a 32×4 rectangle into a 30×4 rectangle and a 2×4 rectangle. When Mara multiplies the 4 by the tens in 32, that matches the large 4×30 rectangle. When Mara multiplies the 4 by the ones in 32, that matches the small 4×2 rectangle.

4. Richard's answer is reasonable. 26 is close to 25. $25 \times 3 = 75$, and 78 is close to that.

5. A.* Possible response: Jason breaks the 26 into tens and ones, $20 + 6$, like Richard does. Then he records partial products like Richard does. He multiplies the tens times 3, 20×3, and records 60. He multiplies the ones times 3, 6×3, and records 18. They both add the partial products, $60 + 18$, to get the same product, 78.

B.* Possible response: It looks different. Richard's problem is recorded in a vertical fashion. Jason's problems are written side by side. Jason multiplied 20×3 first. Richard multiplied 6×3 first.

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Homework (SG p. 372)
Questions 1–15

1.

$$
\begin{array}{r}
37 \\
\times\ 8 \\
\hline
56 \\
+\ 240 \\
\hline
296
\end{array}
$$

2. 72

3. 387

4. 174

5. 207

6. 117

7. 306

8. 316

9. 126

10. 408

11. 424

12. 210

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13. 111; Stories and pictures will vary. Sample story: There were 37 sets of triplets. 30 sets of triplets were boys and 7 sets of triplets were girls. How many children were there?

    Sample solution: 30×3 boys $+\ 7 \times 3$ girls $= 111$ children

    Sample picture:

    B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B
    B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B
    B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B B

    G G G G G G G
    G G G G G G G
    G G G G G G G

14. Possible response: $4 \times 80 = 320$ so 4×79 should be 4 less than that. 316 is reasonable.

15. Luis recorded $3 \times 5 = 15$. He should have multiplied 30×5 and recorded 150.

Name _____ Date _____

Solving Problems Mara's Way

For Questions 1–3, break the rectangles into tens and ones. Write number sentences on the two new rectangles. Then fill in the boxes and blanks to complete the problems.

1. A.
$$\begin{array}{r} 36 \\ \times\, 8 \\ \hline 48 \end{array}$$
$+\ \boxed{}$
$\boxed{}$

_____ × _____ + _____ × _____ =

B. How was 48 computed in the problem above?

C. How does the product in the first box match the rectangles you drew?

D. Explain how you know your answer is reasonable.

2. A.
$$\begin{array}{r} 28 \\ \times\, 4 \\ \hline \boxed{} \end{array}$$
$+\ 32$
$\boxed{}$

_____ × _____ + _____ × _____ =

B. How did you find the product in the first box?
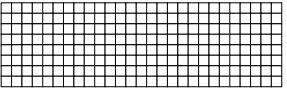
C. Explain how you know your answer is reasonable.

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✓ **Check-In: Questions 3-8**

3. A.
$$\begin{array}{r} 27 \\ \times\, 8 \\ \hline 160 \end{array}$$
$+\ \boxed{}$
$\boxed{}$

_____ × _____ + _____ × _____ =

B. How was 160 computed in the problem above?

C. How does the product in the first box match the rectangles you drew?

D. Explain how you know your answer is reasonable.
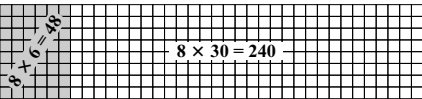
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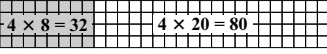### Solving Problem's Mara's Way
(SAB pp. 531–534)
Questions 1–8

1. A.
$$\begin{array}{r} 36 \\ \times\, 8 \\ \hline 48 \end{array}$$
$+\ \boxed{240}$
$\boxed{288}$

$8 \times 6 = 48$; $8 \times 30 = 240$
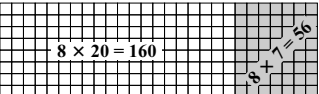
$\underline{\ 8\ } \times \underline{\ 6\ } + \underline{\ 8\ } \times \underline{\ 30\ } = 240$

B. $8 \times 6 = 48$

C. $8 \times 30 = 240$ is like 8 rows of 30 squares in the larger rectangle.

D. Explanations will vary. Possible response: $30 \times 8 = 240$ and 40×8 is 320. 36 is in between 30 and 40 and 288 is in between 240 and 320 so I know it is a reasonable answer.

2. A.
$$\begin{array}{r} 28 \\ \times\, 4 \\ \hline \boxed{80} \end{array}$$
$+\ 32$
$\boxed{112}$

$4 \times 8 = 32$; $4 \times 20 = 80$

$\underline{\ 4\ } \times \underline{\ 8\ } + \underline{\ 4\ } \times \underline{\ 20\ } = 112$

B. $20 \times 4 = 80$

C. Explanations will vary. Possible response: 4 quarters is $25¢ \times 4 = 100¢$. 28×4 should be a little more so 112 is reasonable.

3. A.
$$\begin{array}{r} 27 \\ \times\, 8 \\ \hline 160 \end{array}$$
$+\ \boxed{56}$
$\boxed{216}$

$8 \times 20 = 160$; $8 \times 7 = 56$

$\underline{\ 8\ } \times \underline{\ 20\ } + \underline{\ 8\ } \times \underline{\ 7\ } = 216$

B. $8 \times 20 = 160$

C. 56 is the same as 7 squares in each of the 8 rows in the smaller rectangle.

D. Explanations will vary. Possible response: 27 is close to 30. $30 \times 8 = 240$. 27×8 should be a little less than 240, so 216 is a reasonable answer.

4.
$$\begin{array}{r} 36 \\ \times\ 4 \\ \hline 24 \\ +\ 120 \\ \hline 144 \end{array}$$

$30 \times 4 = 120$ and $40 \times 4 = 160$. So 144 is reasonable because it is between my estimates.

5.
$$\begin{array}{cc} 20 & 7 \\ \times\ 8 & \times\ 8 \\ \hline 160\ + & 56 \end{array} = 216$$

The answer is close to $25 \times 8 = 200$. So 216 is reasonable.

6.
$$\begin{array}{r} 72 \\ \times\ 4 \\ \hline 280 \\ +\ 8 \\ \hline 288 \end{array}$$

The answer is close to $70 \times 4 = 280$. So 288 is reasonable.

7.
$$\begin{array}{cc} 40 & 2 \\ \times\ 5 & \times\ 5 \\ \hline 200\ + & 10 \end{array} = 210$$

The answer is close to my estimate of $40 \times 5 = 200$.

8.
$$\begin{array}{r} 64 \\ \times\ 7 \\ \hline 28 \\ +\ 420 \\ \hline 448 \end{array}$$

$60 \times 7 = 420$. That is close to 448.

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