Four students in Ms. Soto's fifth grade class made errors on a multiplication assignment. The four incorrect problems are shown below. Find each student's error, explain why his or her work is incorrect, and show how to get the correct answer. You may want to draw a sketch of an area model on this paper or use grid paper to help you.

1. Find the error.

Explain the error:

This student starts the problem by correctly computing 4 x 6 and recording 24. Then the student seems to add the 4 in the tens place with the 2 tens recorded next it and as a result multiplies 4 x 6 tens. The student should take 4 x 4 tens and then add 2 tens. This same error seems to occur when the student multiplies by 20. The student adds the 4 in the tens place with the 1 recorded next it and as a result multiplies 20 x 5 tens. The student should take 20 x 4 tens and then add 1 hundred.

Correct answer:

$$
\begin{array}{r}
1\,\overset{1}{\cancel{2}} \\
46 \\
\times\ 24 \\
\hline
184 \\
920 \\
\hline
1104
\end{array}
$$

184 ← 4 x 46 = 184
920 ← 20 x 46 = 920
184 + 920 = 1104

2. Find the error.

Explain the error:

This student seems to treat the digits in each number as one-digit numbers and multiplies. The student computes 4 x 2 and records 8 in the ones place, 3 x 1 and records 3 in the tens place, and 3 x 6 and records 18 in the hundreds and thousands place.

Correct answer:

$$
\begin{array}{r}
612 \\
\times\ 34 \\
\hline
2448 \\
18360 \\
\hline
20808
\end{array}
$$

2448 ← 4 x 612 = 2448
18360 ← 30 x 612 = 18360
2448 + 18360 = 20808

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3. Find the error.

```
   3
  47
x 35
 235
1510
─────
1745
```

Explain the error:

This student correctly multiplies 5 times 47 and records 235. Then the student seems to know 30 x 7 = 210, but only records a 1 in the tens place. The student neglects to record the 2 hundreds. As a result, the student multiplies 3 tens by 4 tens, and incorrectly adds 3 hundreds. It appears the student adds 3 hundreds because of the previously recorded 3. To avoid this error, the student should cross off the 3 and record 2 hundreds when multiplying 30 x 7.

Correct answer:

```
   23
   47
x  35
  235  ←── 5 x 47 = 235   ┐
 1410  ←── 30 x 47 = 1410 ┘ 235 + 1410 = 1645
 1645
```

4. Find the error.

```
 3 4
   26
x 58
 208
 130
─────
 338
```

Explain the error:

This student seems to multiply and record 8 x 26 correctly. Then the student seems to multiply 5 times 26, instead of 5 tens, or 50, times 26. Fifty times 26 equals 1300 rather than 130.

Correct answer:

```
 3 4
   26
x  58
  208  ←── 8 x 26 = 208   ┐
 1300  ←── 50 x 26 = 1300 ┘ 208 + 1300 = 1508
 1508
```

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