



fun with NUMBERS



Lesson #1:

sometimes the answer's inside the equation ... right in front of you the solution is obvious

determine the fewest number of females possible among this group ...

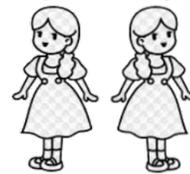
two Grandmothers



two Mothers



two granddaughters



the correct answer is revealed below, after the final lesson ...

Lesson #2:

multiplying by 11 – it's easy when the numbers are from 1-10 – let's see what else is possible ...

$$11 \times 2 = 22 \text{ DUH}$$

$$11 \times 3 = 33 \text{ DUH AGAIN!!}$$

although $2 + 3 = 5$ it's not possible that 23 times 11 would equal 55 ... but would it equal ?

Lesson #3:

11×23 – this might be easier to multiply than you realize ... let's take a look ...

$$11 \times 23 = 253$$

it's interesting how the " $2 + 3 = 5$ " calculation seems to fit in the final result ...

Lesson #4:

11×23 ... let's take a closer look at how we got to that result ... it seems simple ...

$$\begin{array}{r} 23 \\ \times 11 \\ \hline 2 \underline{(2+3=5)} 3 \\ 253 \end{array}$$

$$\begin{array}{r} 34 \\ \times 11 \\ \hline 3 \underline{(3+4=7)} 4 \\ 374 \end{array}$$

$$\begin{array}{r} 53 \\ \times 11 \\ \hline 5 \underline{(5+3=8)} 3 \\ 583 \end{array}$$

... interesting, but the middle digit won't always be less than "10" ... what then ?

Lesson #5:

$\begin{array}{r} 64 \\ \times 11 \\ \hline 6 \overset{(6+4=10)}{4} \\ 7 \overset{1}{\times} 04 \\ \hline 704 \end{array}$	$\begin{array}{r} 75 \\ \times 11 \\ \hline 7 \overset{(7+5=12)}{5} \\ 8 \overset{1}{\times} 25 \\ \hline 825 \end{array}$	$\begin{array}{r} 86 \\ \times 11 \\ \hline 8 \overset{(8+6=14)}{6} \\ 9 \overset{1}{\times} 46 \\ \hline 946 \end{array}$
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Lesson #6:

$\begin{array}{r} 634 \\ \times 11 \\ \hline 6 \overset{(6+3=9)}{\overset{(3+4=7)}{4}} \\ 6,974 \end{array}$	$\begin{array}{r} 798 \\ \times 11 \\ \hline 7 \overset{(7+9=16)}{\overset{(9+8=17)}{8}} \\ 8,7 \overset{1}{\times} \overset{1}{7} 8 \\ \hline 8,778 \end{array}$	$\begin{array}{r} 7,859 \\ \times 11 \\ \hline 7 \overset{(7+8=15)}{\overset{(8+5=13)}{\overset{(5+9=14)}{9}}} \\ 8 \overset{1}{\times} \overset{1}{\times} \overset{1}{\times} 59 \\ \hline 86,449 \end{array}$
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her daughter is ...

and her daughter is ...



... while her granddaughter is ...