

MA Θ Competition Team HW Set 14

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Problem 1. For each of the expressions below, use cross-multiplication to evaluate the product. Write each step of the process (each digit of 10). See the slideshow for an example.

1. 23×14
2. 47×123
3. 312×45
4. 342×213
5. 54321×2468

Problem 2. For each of the expressions below, use cross-multiplication to evaluate the product. Do NOT use a calculator, do it in your head.

1. 12×11
2. 23×21
3. 67×43
4. 89×76
5. 123×42
6. 456×78
7. 234×121
8. 567×489
9. 3456×789
10. 98765×4321

Problem 3. Prove the result $\overline{n5^2} = \overline{(n)(n+1)25}$, where n is a positive integer and \overline{ab} denotes the concatenation of digits a and b . (Ex. $25^2 = 625 = \overline{(2)(2+1)25}$)

Problem 4. Prove how cross-multiplication works.