



Math Olympiad and Problem Solving Programs

F130 - Advanced Problem Solving

Problem Set 3.2 - Arithmetic Operations

Name:

Date:

1.
2.
3.
4. $30 \times 40 = (3 \times 10) \times (4 \times 10) = 3 \times 4 \times 10 \times 10 = 3 \times 4 \times$
5.
6. $444 + 444 + 444 = (400 + 44) + (400 + 44) + (400 + 44) = 400 + 400 + 400 + 44 + 44 + 44 = 3 \times 400 + 3 \times$
7.
8.
9.
10.
11.
12.
13. $40 \times 50 \times 60 = (4 \times 10) \times (5 \times 10) \times (6 \times 10) = 4 \times 5 \times 6 \times 10 \times 10 \times 10 = 4 \times 5 \times 6 \times$
14.
15. First break the parenthesis of the second portion by distributing the negative sign:
 $(2000 + 1999 + \dots + 1001 + 1000) - (1000 + 999 + \dots + 2 + 1)$
 $= 2000 + 1999 + \dots + 1001 + 1000 - 1000 - 999 - \dots - 2 - 1.$
Now rearrange the numbers to match up nicely:
 $2000 - 1000 + 1999 - 999 + \dots + 1003 - 3 + 1002 - 2 + 1001 - 1 + 1000.$
Perform the subtractions:
 $1000 + 1000 + 1000 + \dots + 1000.$
There are 1000 pairs of numbers being subtracted, plus one 1000 left over. So there are 1001
1000's being added together. Then
 $1000 + 1000 + \dots + 1000 = 1000 \times$.