Associative Law of Multiplication (E)

Name: _____

Date: _____

Re-write each expression with different parentheses to change the order of operations.
Example: $(8 \times 5) \times 12 = 8 \times (5 \times 12)$

1. $(1 \times 6) \times 9 =$

2. $9 \times (4 \times 16) =$

3. $29 \times (6 \times 16) =$

4. $(44 \times 33) \times 11 =$

5. $12 \times (84 \times 44) =$

6. $((3 \times 4) \times 11) \times 7 =$

7. $13 \times ((21 \times 9) \times 2) =$

8. $(3 \times 14) \times (47 \times 34) =$

9. $((90 \times 19) \times 27) \times 54 =$

10. $59 \times ((77 \times 28) \times 2) =$

Are the expressions in each question equal? Check a few to confirm.

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Example: $(8 \times 5) \times 12 = 8 \times (5 \times 12)$

1. $(1 \times 6) \times 9 = 1 \times (6 \times 9)$

2. $9 \times (4 \times 16) = (9 \times 4) \times 16$

3. $29 \times (6 \times 16) = (29 \times 6) \times 16$

4. $(44 \times 33) \times 11 = 44 \times (33 \times 11)$

5. $12 \times (84 \times 44) = (12 \times 84) \times 44$

6. $((3 \times 4) \times 11) \times 7 = (3 \times 4) \times (11 \times 7)$
   $= (3 \times (4 \times 11)) \times 7 = 3 \times ((4 \times 11) \times 7) = 3 \times (4 \times (11 \times 7))$

7. $13 \times ((21 \times 9) \times 2) = ((13 \times 21) \times 9) \times 2$
   $= (13 \times 21) \times (9 \times 2) = (13 \times (21 \times 9)) \times 2 = 13 \times (21 \times (9 \times 2))$

8. $(3 \times 14) \times (47 \times 34) = ((3 \times 14) \times 47) \times 34$
   $= (3 \times (14 \times 47)) \times 34 = 3 \times ((14 \times 47) \times 34) = 3 \times (14 \times (47 \times 34))$

9. $((90 \times 19) \times 27) \times 54 = (90 \times 19) \times (27 \times 54)$
   $= (90 \times (19 \times 27)) \times 54 = 90 \times ((19 \times 27) \times 54) = 90 \times (19 \times (27 \times 54))$

10. $59 \times ((77 \times 28) \times 2) = ((59 \times 77) \times 28) \times 2$
    $= (59 \times 77) \times (28 \times 2) = (59 \times (77 \times 28)) \times 2 = 59 \times (77 \times (28 \times 2))$

Are the expressions in each question equal? Check a few to confirm.