The Four 4s Problem

THE RULES:

(1) The expression must equal the correct value
(2) The expression must use EXACTLY four 4s (not five 4s, not three 4s)
(3) The expression must follow the order of operations
(4) The expression can use any operations you want (including square root and factorial), can use decimals (such as in 4/.4 = 10), can use the double digit number 44 (but that counts as two 4s).

MY HOMEWORK ON DAY 1 IS CHALLENGE #_____.

CHALLENGE 1:

(1) Fill in the missing operations to make these four 4s problems work.

a. 0 = (4 + 4) ____ (4 – 4)

b. 7 = 44 ____ 4 ____ 4

c. 17 = 4 ____ 4 + 4 ____ 4

d. 8 = 4.4 ____ .4 ____ 4

(2) Add parentheses to these four 4s problems to make them work.

a. $4 = 4 + 4 \div 4 + \sqrt{4}$

b. 64 = 4 + 4 × 4 + 4

c. 28 = 4 + 4 × 4 – 4

d. 52 = 4 ÷ .4 + 4 × 4

(3) Add parentheses AND fill in the missing operations to make these four 4s problems work.

a. 8 = 4 ____ 4 × 4 ____ 4

b. 0 = 4 × 4 ____ 4 – 4

c. $66 = 4 \_\_\_ 4 \_\_\_ 4 \_\_\_ + \sqrt{4}$

d. $81 = (4 \_\_\_ 4 \_\_\_ 4)^{4}$

CHALLENGE 2: Find three different solutions to these four 4s problems.

0 =

0 =

0 =

1 =

1 =

2 =

2 =

2 =

3 =

3 =

3 =

4 =

4 =

4 =

5 =

5 =

5 =

6 =

6 =

6 =

7 =

7 =

7 =

8 =

8 =

8 =

9 =

9 =

9 =

CHALLENGE 3: Find one solution to each of these four 4s problems.

10 =

11 =

12 =

14 =

15 =

16 =

17 =

20 =

22 =

32 =

36 =

38 =

40 =

43 =

44 =

45 =

48 =

50 =

52 =

60 =

62 =

64 =

66 =

68 =

80 =

88 =

<u>CHALLENGE 4</u>: Find one solution to each of these HARDER four 4s problems *(NOTE: many of these require the use of decimals, roots and exponents).*

13 =

18 =

26 =

28 =

29 =

30 =

34 =

42 =

46 =

54 =

55 =

56 =

63 =

65 =

90 =

84 =

92 =

86 =

100 =

CHALLENGE 5: Find one solution to each of these VERY HARD four 4s problems
(NOTE: You will have to use factorial in these. Factorial is represented by a !, and if you put a ! after a number, it means multiply that number times every whole number smaller than it. For example, 3! = 3 x 2 x 1 = 6, and 4! = 4 x 3 x 2 x 1 = 24)

19, 21, 23, 25, 27, 31, 35, 37, 47, 49, 51, 53, 57, 59, 61, 67, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 85, 87, 89, 91, 93, 94, 95, 96, 97, 98, 99

WRITE YOUR ANSWERS ON A SEPARATE SHEET FOR THIS CHALLENGE!