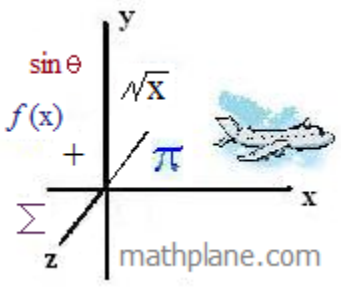
2013 Puzzle

(And, a solution)



2013

Using 2, 0, 1, 3, and any combination of math symbols/operations, write equations that compute to every number between 1 and 25.
(Mathplane solution time: 6:15)

Note: Each digit must be used exactly once!

Examples:

0 $= 0 \times 213$
$= 2 + 1 - 0 - 3$
$= 23^{0} - 1$

1

2

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2-0-1-3 Hints

(Useful math operations/symbols)

factorials:
$0! = 1$
$3! = 3 \times 2 \times 1 = 6$

greatest integer function (floor function)

$\lfloor 5.6 \rfloor = 5$

least integer function (ceiling function)

$\lceil 5.6 \rceil = 6$

One Solution -→

2013

Using 2, 0, 1, 3, and any combination of math symbols/operations, write equations that compute to every number between 1 and 25.
(Mathplane solution time: 6:15)

Possible Solutions

Note: Each digit must be used exactly once!

Examples:

0 $= 0 \times 213$
$= 2 + 1 - 0 - 3$
$= 23^{0} - 1$

1 $= 0 \times 23 + 1$

2 $= 0 \times 31 + 2$ $= 32^{0} + 1$

3 $= 3 + (21 \times 0)$

4 $= 3 + 2 - 1 + 0$ $= 3^{0} + 1 + 2$

5 $= (2 + 3) \times 1 + 0$ $= \frac{1}{.2} + (3 \times 0)$

6 $= 0 + 1 + 2 + 3$

7 $= 2^{3} - 1 - 0$

8 $= \frac{10}{2} + 3$

9 $= 3^{2} + (1 \times 0)$

10 $= \frac{30}{(2 + 1)}$

11 $= 10 + (3 - 2)$

12 $= 12 + (3 \times 0)$ $= 2 \times 3! \times 1 + 0$

13 $= 13 + (0 \times 2)$ $= 12 + 3^{0}$

14 $= 2 \times (10 - 3)$

15 $= 10 + 2 + 3$

16 $= (0 + 1 + 3)^{2}$

17 $= (20 - 3) \times 1$

18 $= 20 - (3 - 1)$

19 $= 21 + 0! - 3$

20 $= 21 - 3^{0}$

21 $= 21 + (3 \times 0)$

22 $= 23 - 1 + 0$ $= (3 + 1)! - 2 + 0$

23 $= 23 + (1 \times 0)$

24 $= 23 + 1 + 0$

25 $= 23 + 1 + 0!$ $= (3! - 1)^{2} + 0$

***Challenge: Using the same rules, find equations that compute to 26 -50.

2013

Part 2 Challenge:

Using 2, 0, 1, 3, and any combination of math symbols/operations, write equations that compute to every number between 26 and 50.
(mathplane solution: 33 minutes)

Note: Each digit must be used exactly once!

Examples:

0 $= 0 \times 213$
$= 2 + 1 - 0 - 3$
$= 23^{0} - 1$

26

27

28

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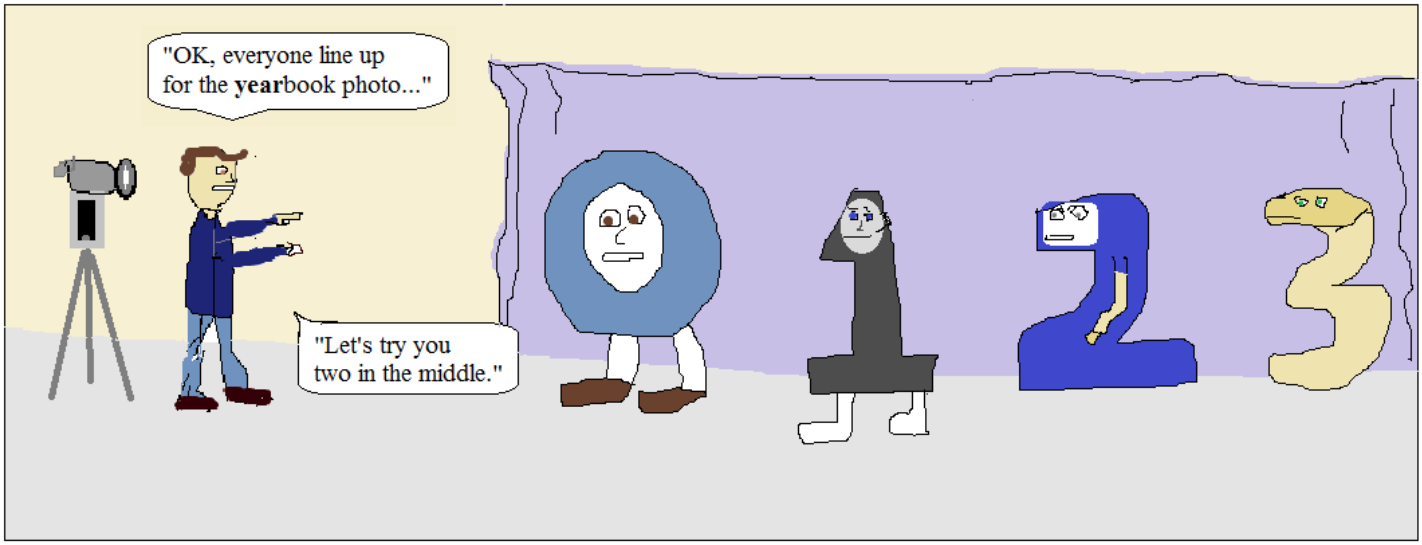
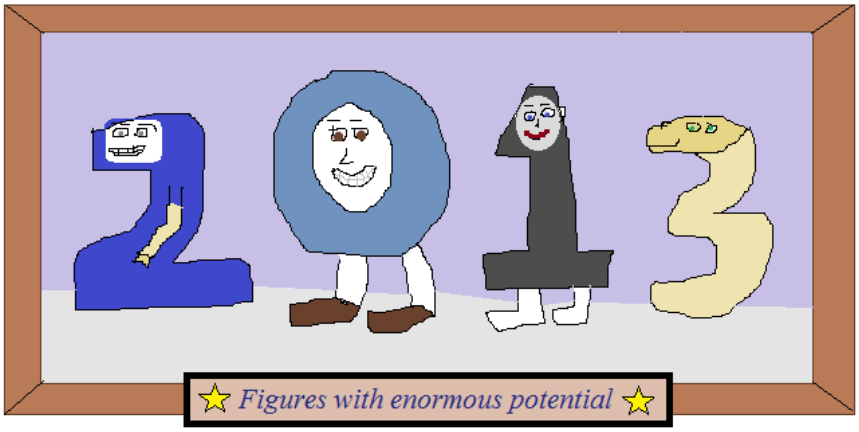


A Year to Remember

(Picture perfect!)



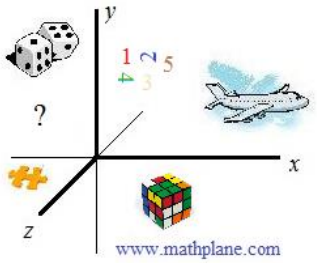
LanceAF #65 (1-1-2013)
www.mathplane.com

Challenge SOLUTIONS -→

2013

Part 2 Challenge:

Using 2, 0, 1, 3, and any combination of math symbols/operations, write equations that compute to every number between 26 and 50. (mathplane solution: 33 minutes)



Possible Solutions

Note: Each digit must be used exactly once!

Examples:

0 $= 0 \times 213$
$= 2 + 1 - 0 - 3$
$= 23^{0} - 1$

26 $= (1 \times 20) + 3!$

27 $= 20 + 3! + 1$

28 $= 30 - (2 \times 1)$

29 $= 30 - 1^{2}$

30 $= 30 \times 1^{2}$

31 $= 31 + 2 \times 0$

32 $= 32 + 1 \times 0$

33 $= 31 + 2 + 0$

34 $= 32 + 1 + 0!$

35 $= (3 \times 12) - 0!$

36 $= (3 \times 12) + 0 = 30 + (1 + 2)!$

37 $= 3 \times 12 + 0!$

38 $= (3!)^{2} + 1 + 0!$

39 $= 13 \times (2 + 0!)$

40 $= 20 \times (3 - 1)$

41 $= \lceil \sqrt{3} \rceil (20) + 1$

42 $= 30 + 12$

43 $= \lfloor (\sqrt{210} \times 3) \rfloor$

44 $= 20 + (1 + 3)!$

45 $= \lceil \sqrt{201} \rceil \times 3$

46 $= 23 \times (0! + 1)$

47 $= 2 \times (1 + 3)! - 0!$

48 $= 2 \times (1 + 3)! - 0$

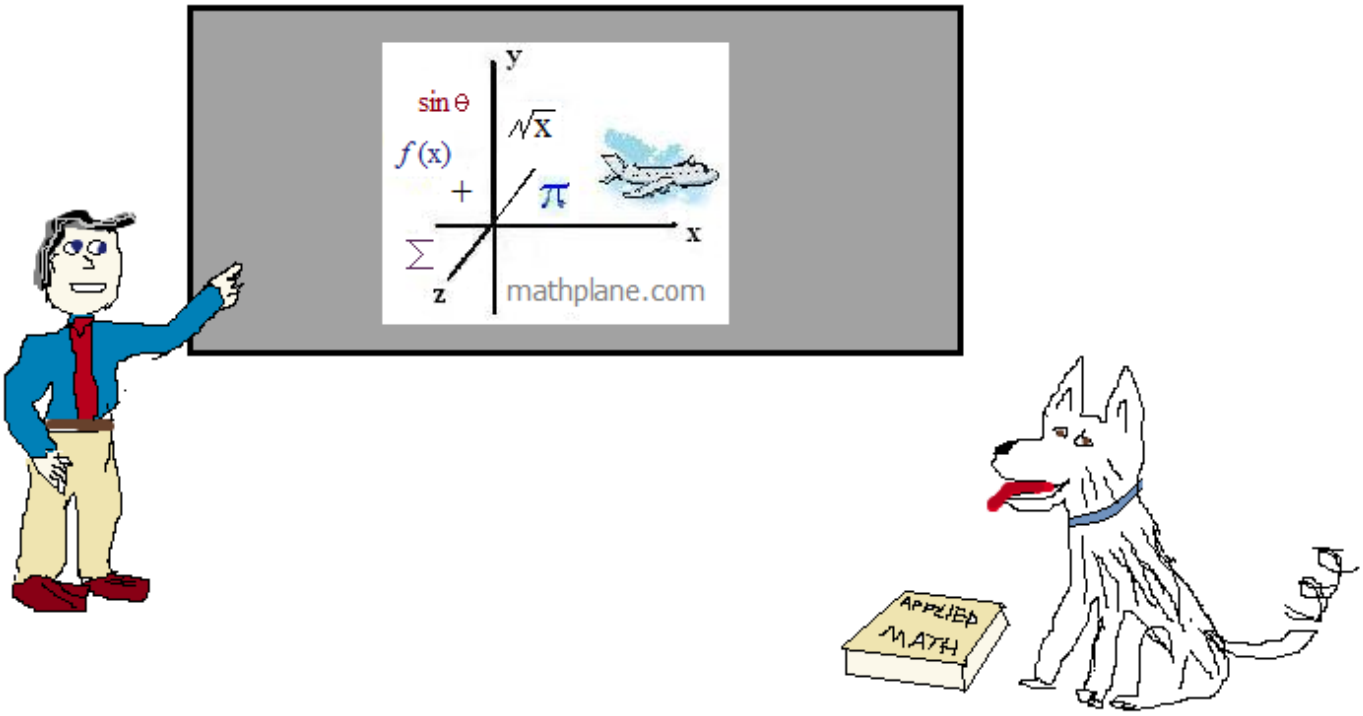
49 $= 2 \times (1 + 3)! + 0! = (3! + 1 + 0)^{2}$

50 $= 10 \times (2 + 3)$

Thanks for visiting.

If you have questions, suggestions, or requests, let us know.

Enjoy!



Also, at Facebook, Google+, and TeachersPayTeachers.com