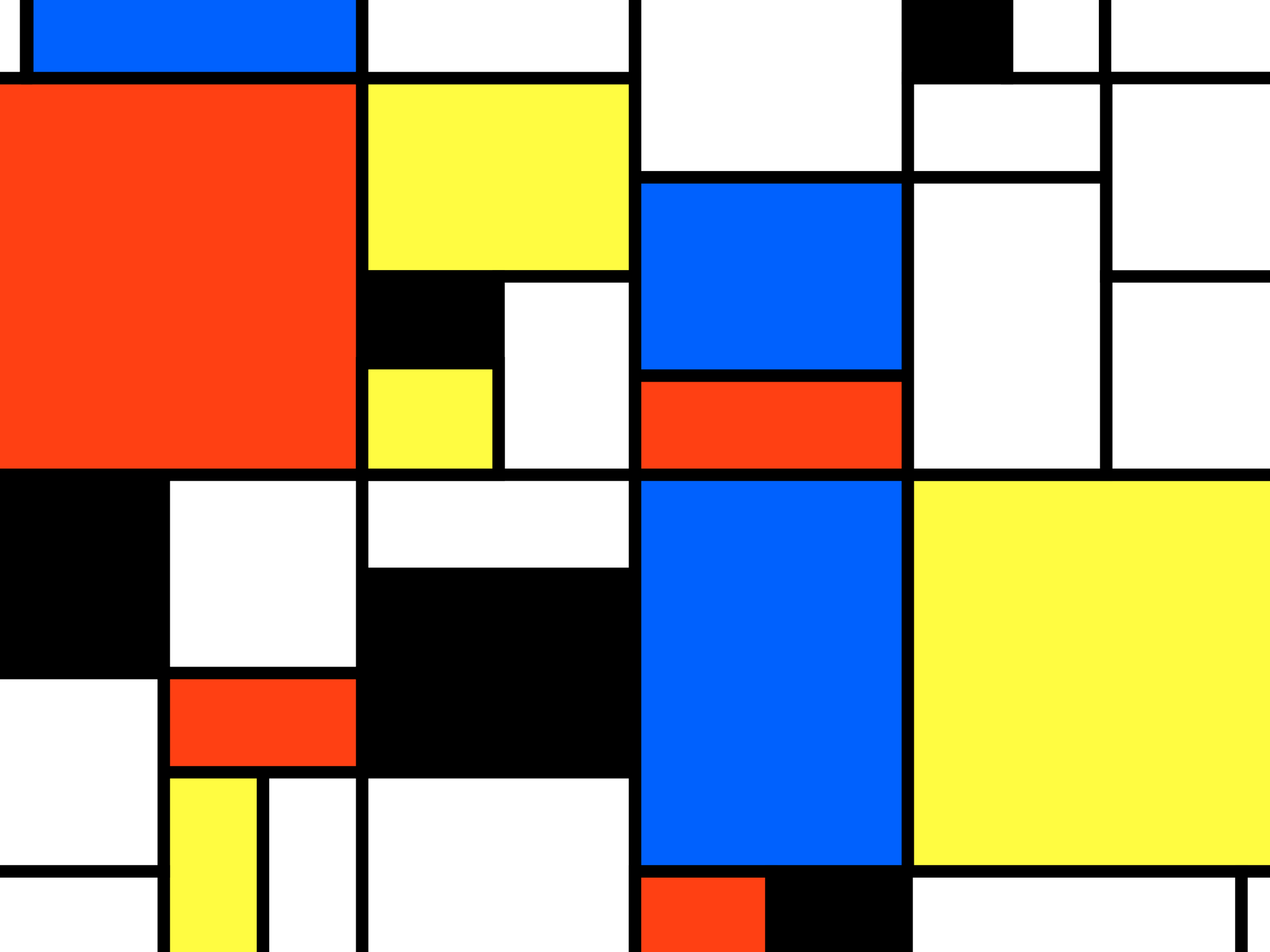
Mondrian

Art Puzzles



Mondrian
Art Puzzles

People who gaze upon a piece of Mondrian art should ask how he decided which colors to paint where. The disgruntled person may even ask what the piece of artwork might have looked like if Mondrian had taken the time to color it all in…

In these puzzles you'll be Mondrian's nasty mathematical boss. Instead of allowing Mondrian to randomly draw rectangles and colors - you lay out precise requirements:

1) Mondrian must cover the canvass with rectangles.

2) Every rectangle on the canvass must be different… so Mondrian cannot paint both a 4x5 and a 5x4 rectangle.

3) Mondrian must try to minimize his score. The score of a painting is the area of the largest rectangle minus the area of the smallest rectangle.

4) When coloring, Mondrian must use as few colors as possible. Colors cannot touch along edges or corners.

Piet Mondrian in 1899

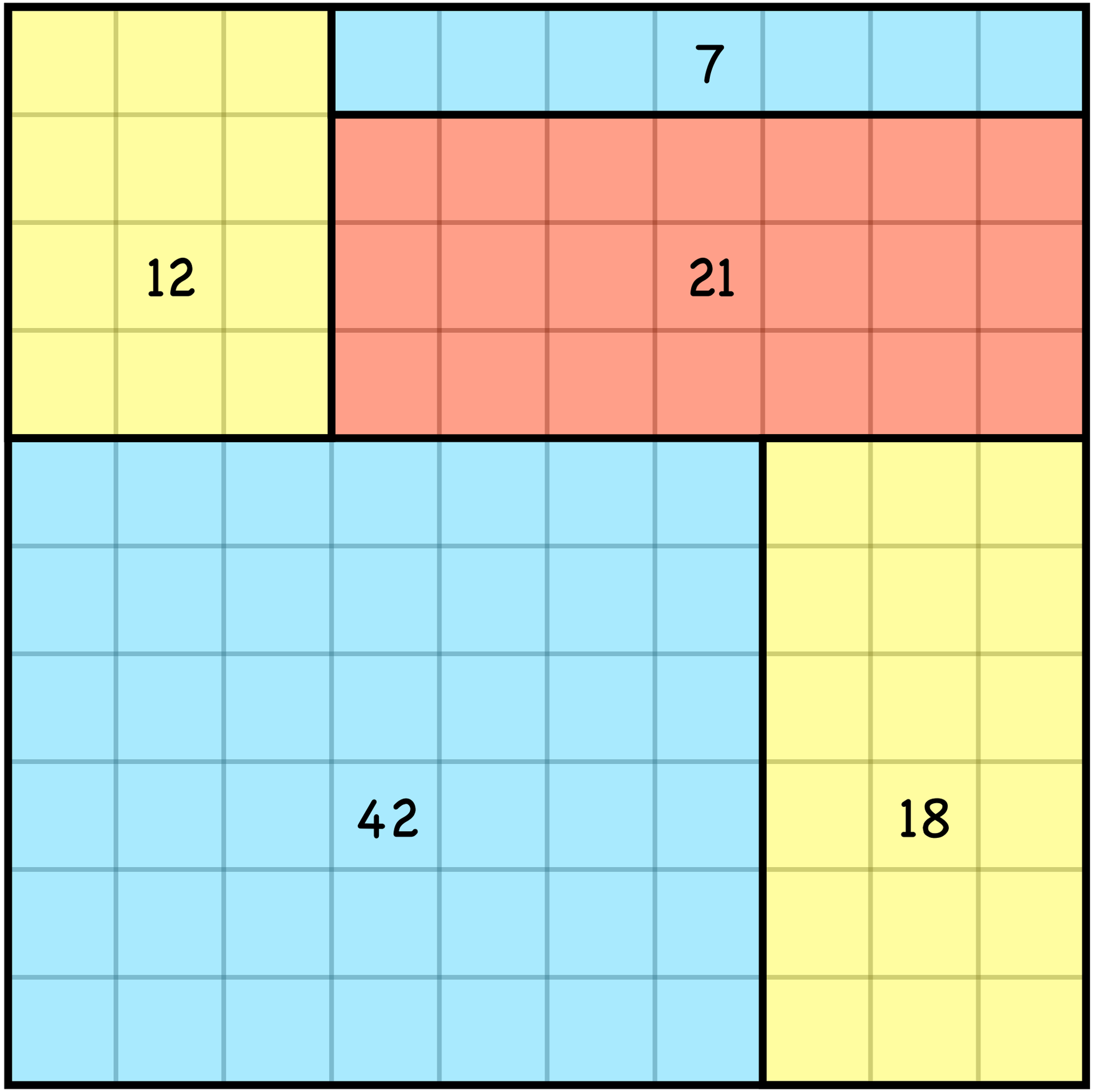
Mondrian

Art Puzzles

Mondrian's Score
(largest minus smallest):

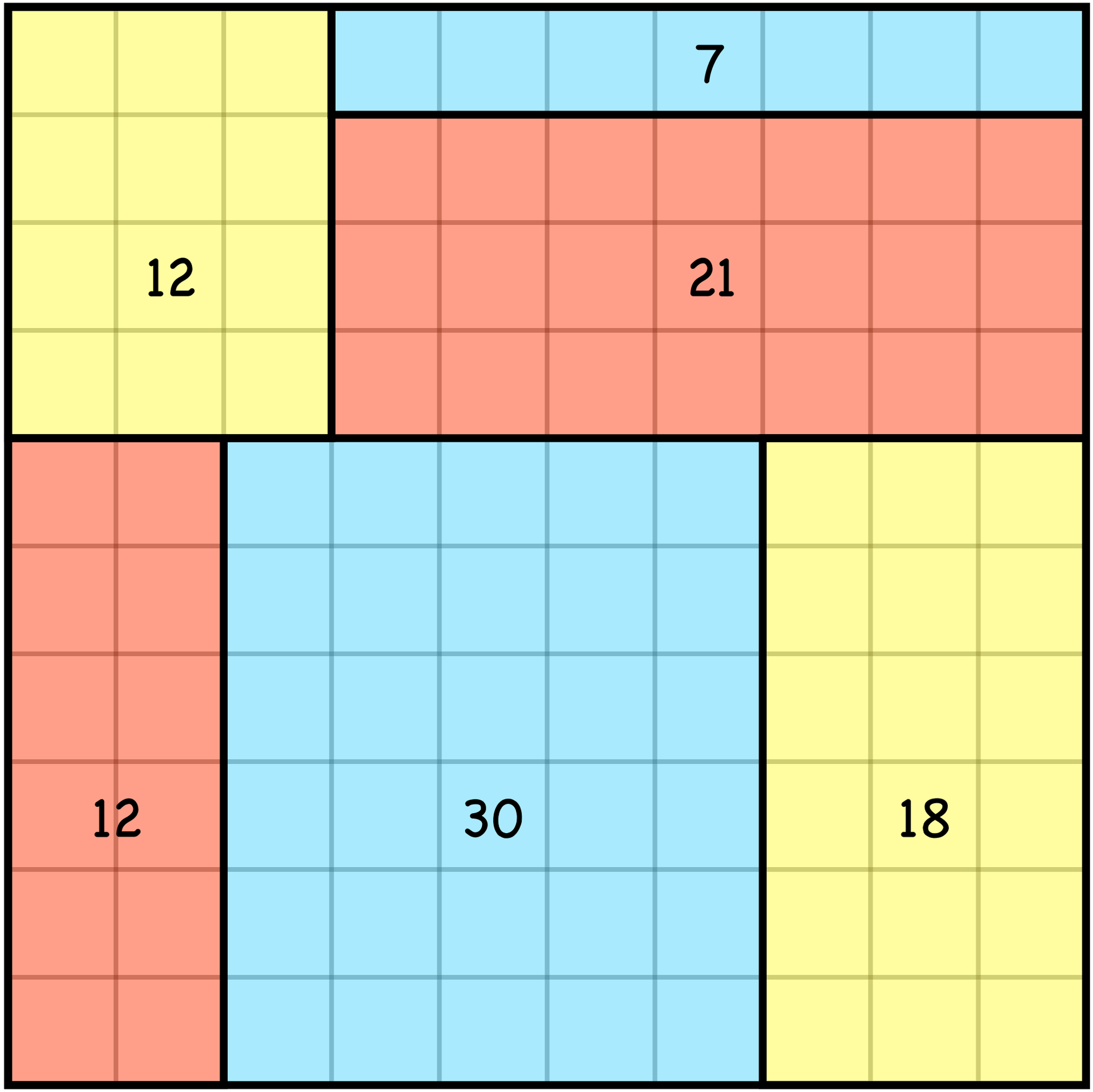
42 - 7 = 35

35 is too big!



Mondrian

Art Puzzles



Mondrian's Score
(largest minus smallest):

30 - 7 = 23

23 is better.

Are the two 12s legal?
Yes, because the rectangles
are different.

Mondrian

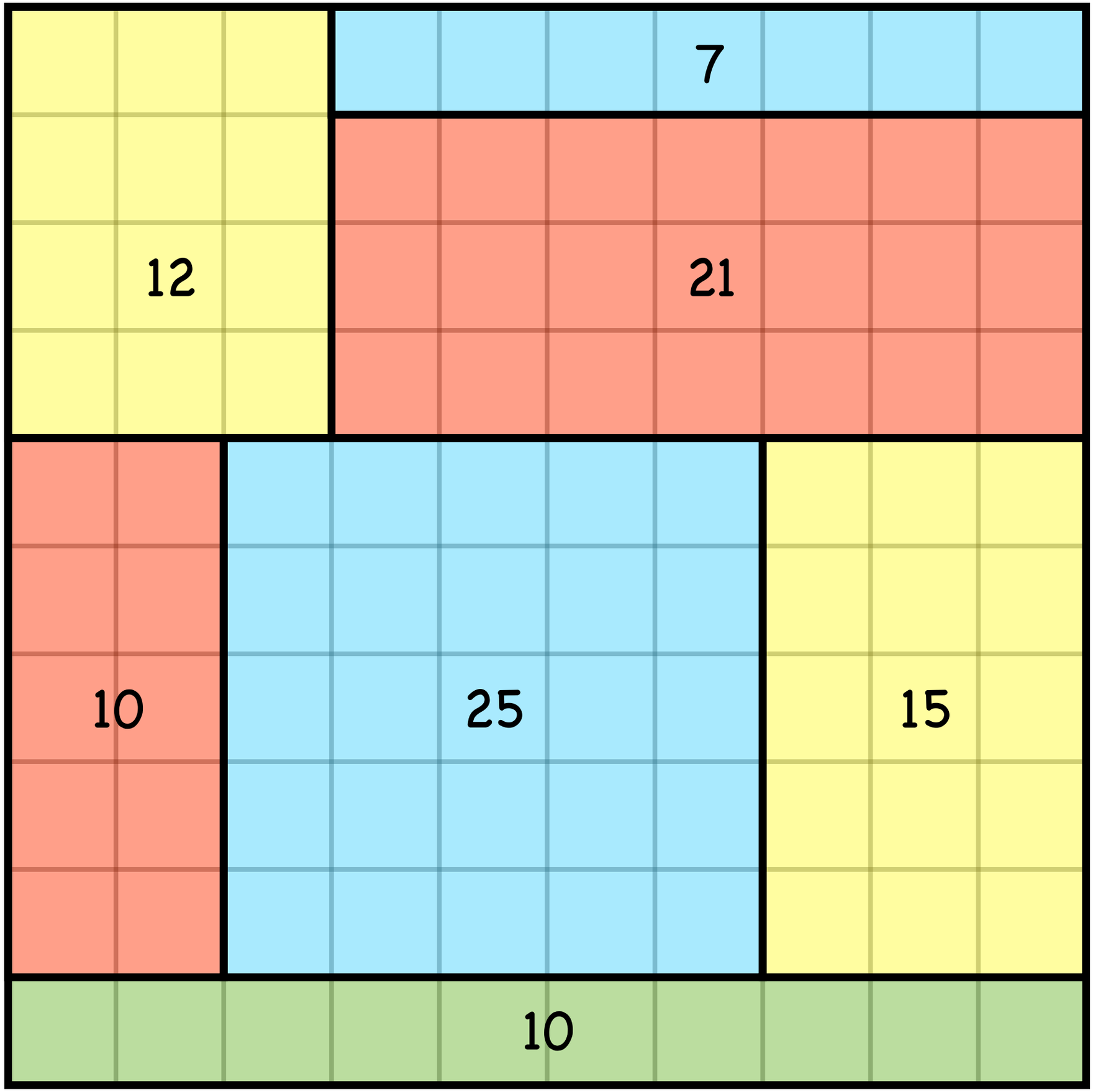
Art Puzzles

Mondrian's Score
(largest minus smallest):

25 - 7 = 18

18 is even better!

Are the two 10s legal?
Yes, because the rectangles
are different.



Mondrian

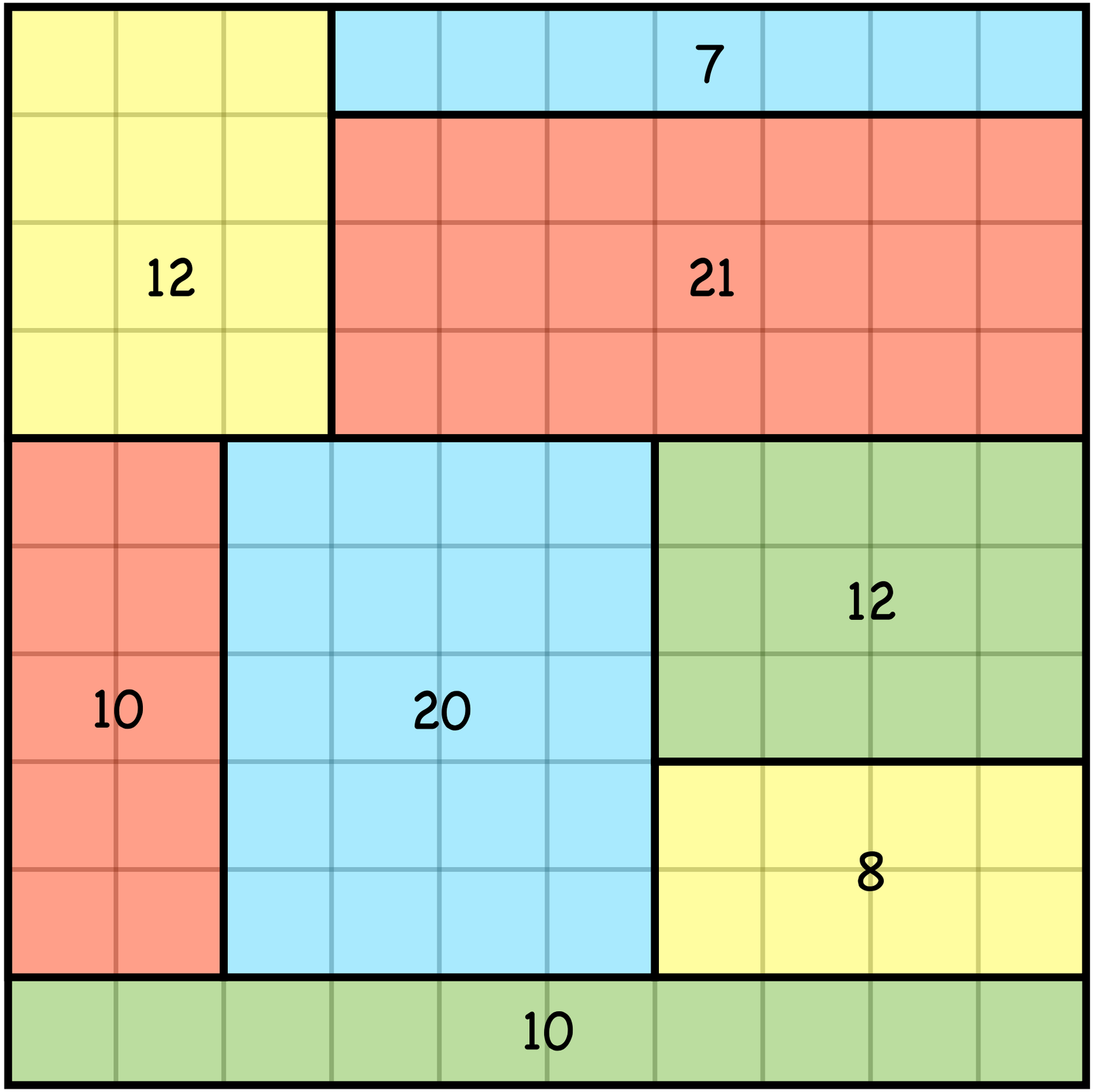
Art Puzzles

Mondrian's Score
(largest minus smallest):

21 - 7 = 14

14 is fantastic!

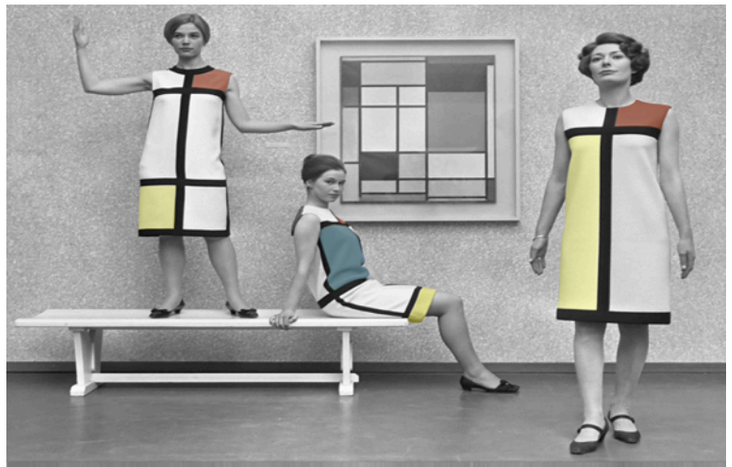
Unfortunately, something is wrong.
Two rectangles are the same:
The 12s. This is illegal.

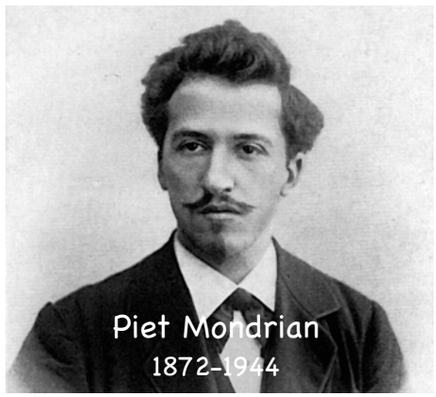


To make matters even more difficult, Mondrian works in ink. He can't erase anything. However, you allow him three chances for each canvas size. What is the lowest score he can get for each?

The next two pages are puzzle-sheets. Hand out the first one to pairs of students. Hand out the second after students have got great results or to help re-engage flagging students.

Stop periodically to review classroom results. Emphasize that they are all in this together.





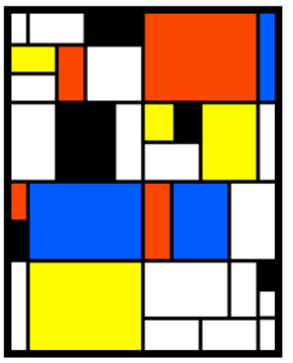
4x4

5x5

6x6

7x7

8x8



Piet Mondrian
1872-1944

8x8

12x12

9x9

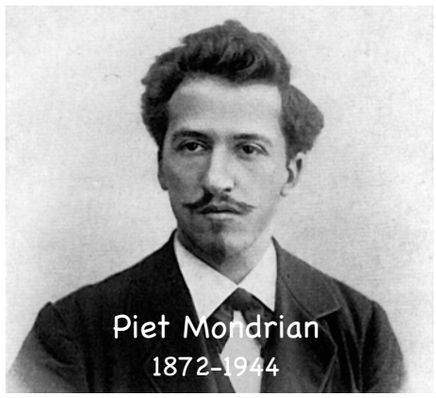
11x11

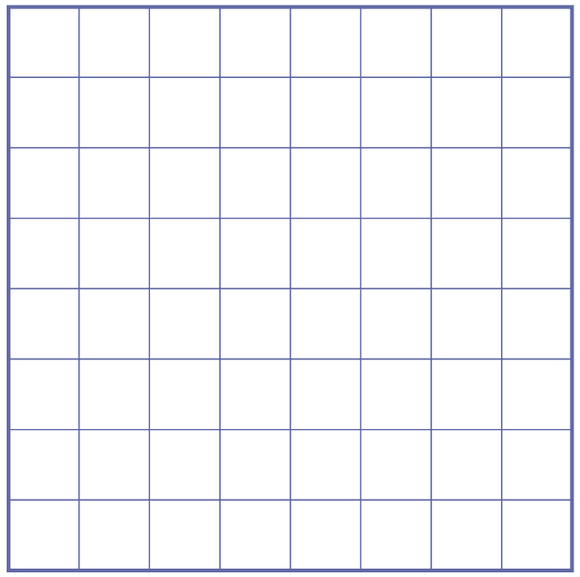
10x10

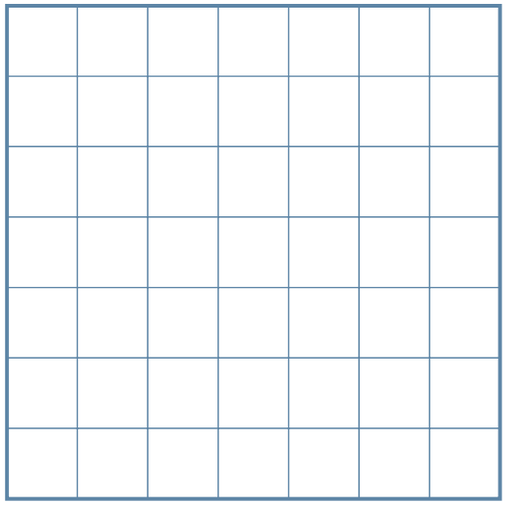
I do not know the best answers to the Mondrian Art Puzzles so treat them as a mini-competition within your class.

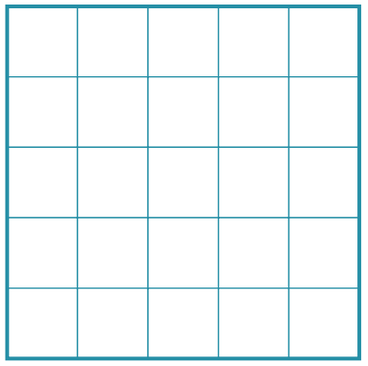
I found a score of 8 for an 11x11 canvas. That made me happy!

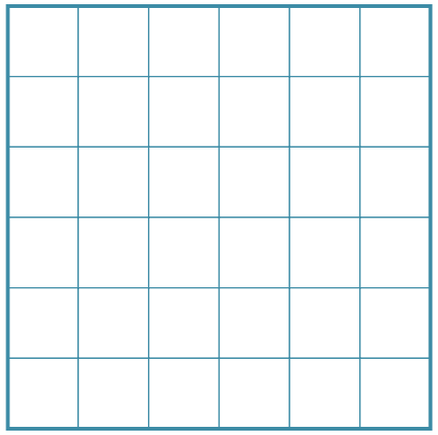
After much effort, the following are the best results obtained from the grade 3 students at Mount View School, Calgary. Do not look at these until your students have made a good stab at it!

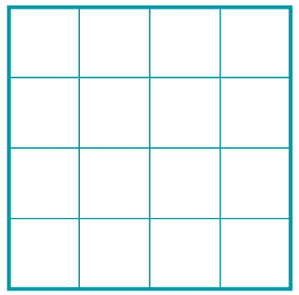


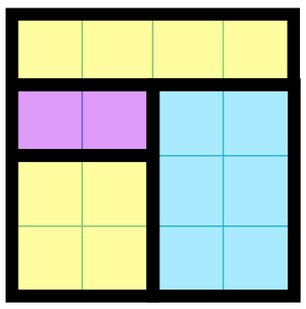

8x8

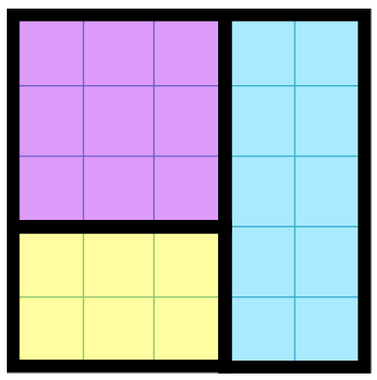

7x7

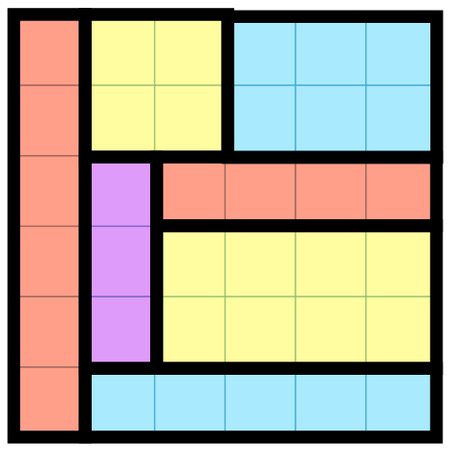

5x5

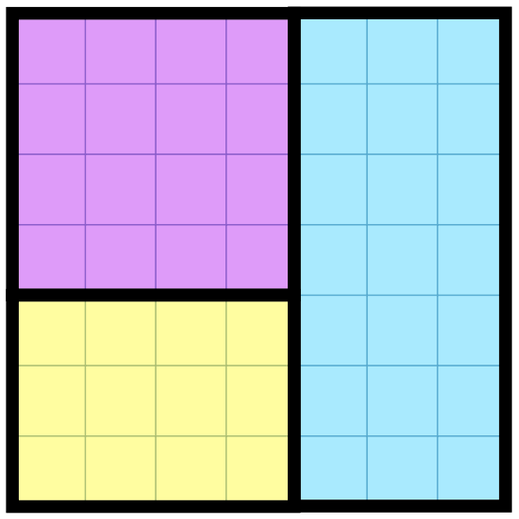

6x6

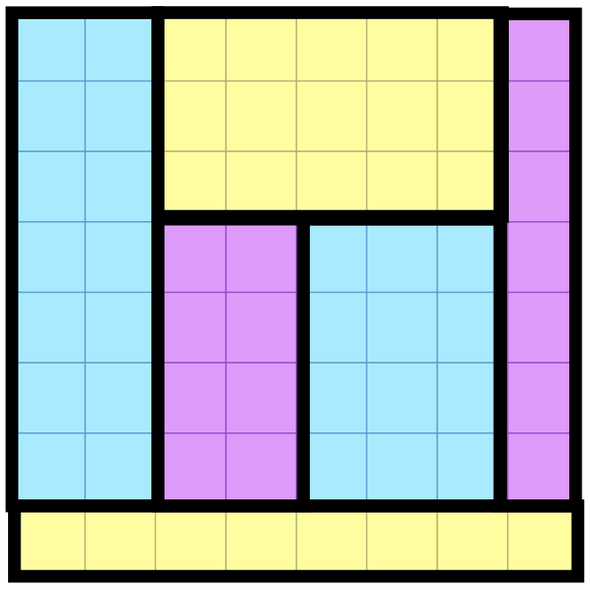

4x4











Mondrian

Art Puzzles

24x24

Put Your Students in a Pickle!

I'm a father of two elementary school children, a mathematician, and designer of puzzles and board games. Students call me Dr. Pickle. There is nothing I enjoy more than stumping students and having them stump me.

I founded MathPickle.com in 2010 to inject new ideas into the classroom. MathPickle's primary objective is to get thirteen curricular unsolved problems into classrooms worldwide - one for each grade K-12. A conference in November 2013 established the thirteen unsolved problems. To aid with the dissemination of these awesome problems, MathPickle is looking at setting up a $1,000,000 reward for each - the prize money to be split between the person who solves the problem and their most inspirational K-12 educator.

MathPickle is also developing a range of curricular puzzles like the ones you'll find at TpT. These help teachers with their number one challenge:

"How to engage the spectrum of student ability?"

Whenever an elementary school teacher wants to teach addition, she will invariably face 20% of students who already know how to add and another 20% who are struggling with last year's curriculum. How can she engage the top students without losing the bottom students? How can she engage the bottom students without boring the top students?

One solution: Parents of top students often ask that their child be allowed to accelerate through the curriculum. This exacerbates the problem for future teachers, and sets up a failure-impoverished education experience for the bright student.

A wiser approach is to use curricular puzzles, games and mini-competitions to simultaneously teach curriculum to the students who need it, and to deflect top students into tough problem solving activities. This is never time wasted, because problem solving is the primary reason we teach mathematics.

The experience of mathematics should be profound and beautiful. Too much of the regular K-12 mathematics experience is trite and true. Children deserve tough, beautiful puzzles.

Gordon Hamilton
MMath, PhD