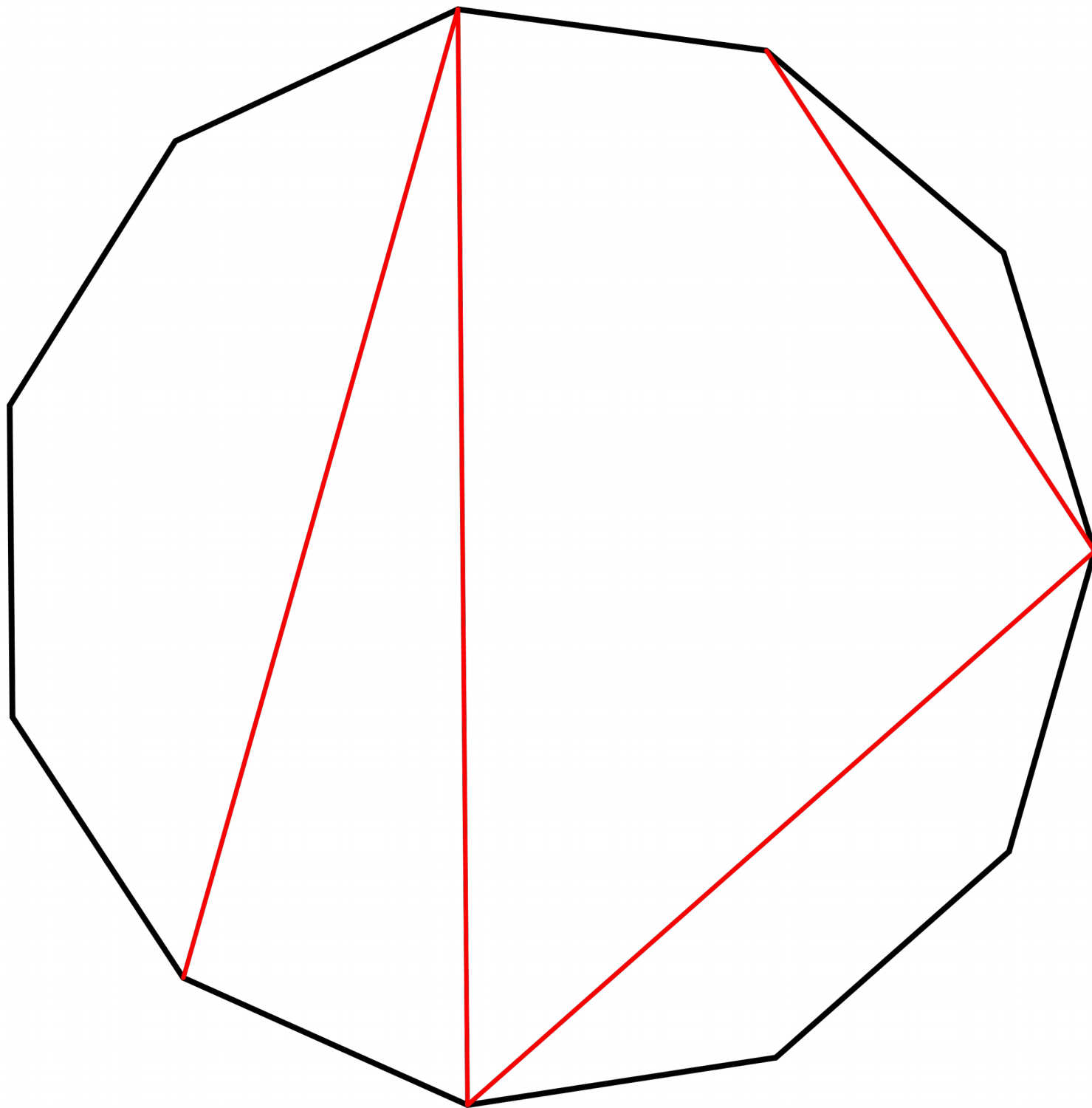


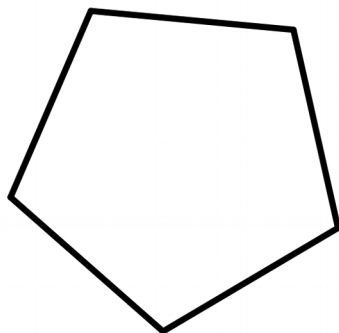
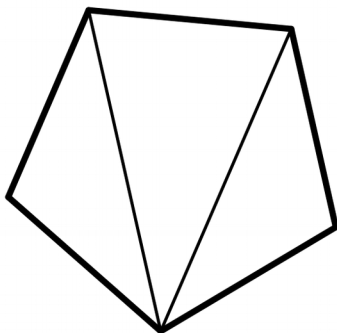
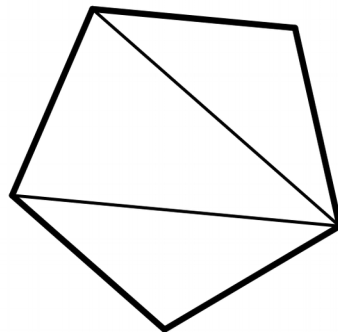
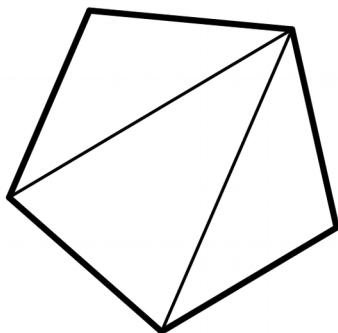
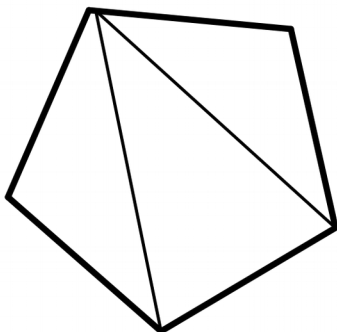
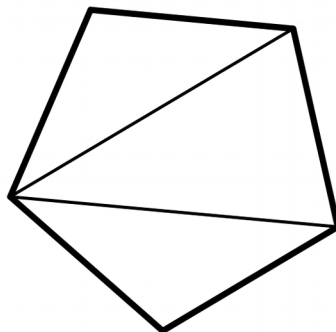
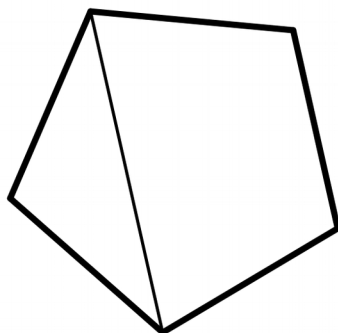
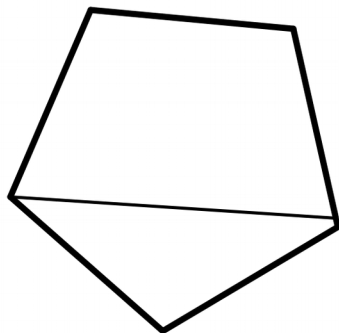
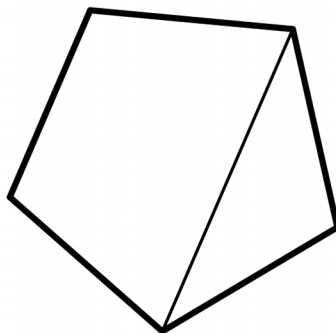
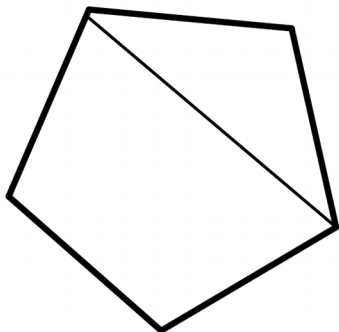
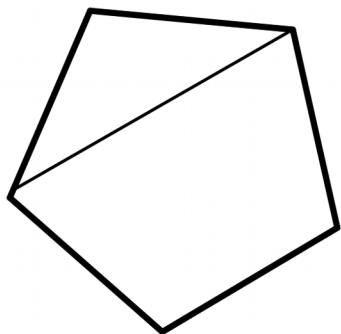
Η Συνδυαστική στην Αρχαία Ελλάδα

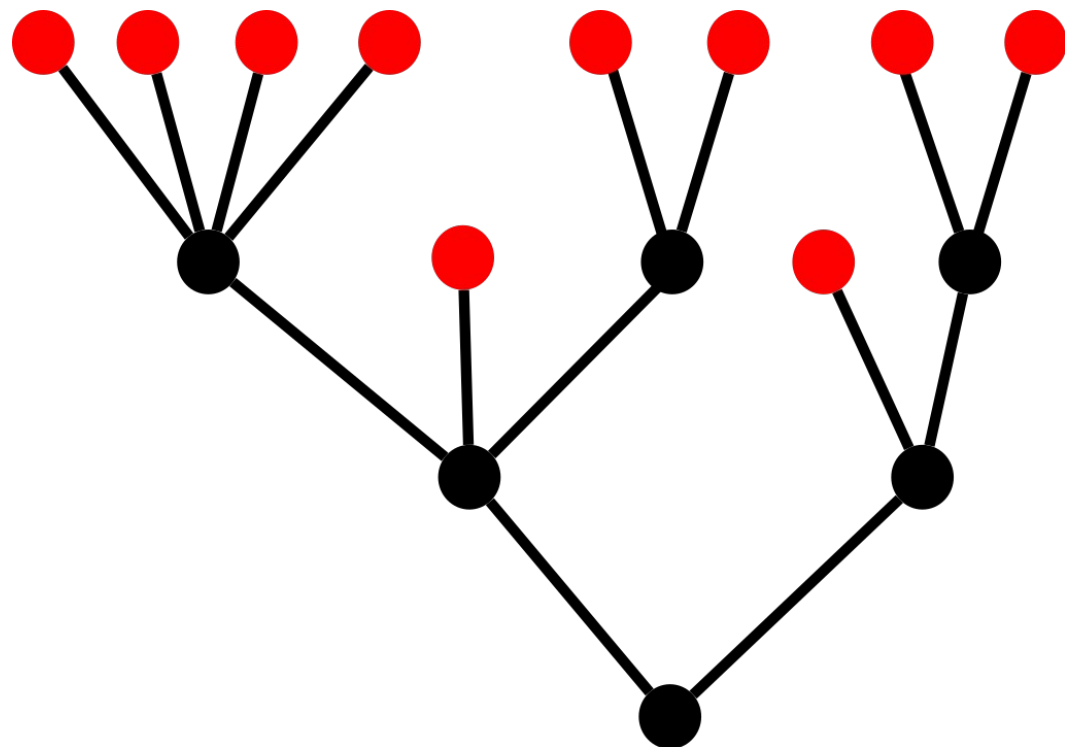
Αρχαία Ελλάδα

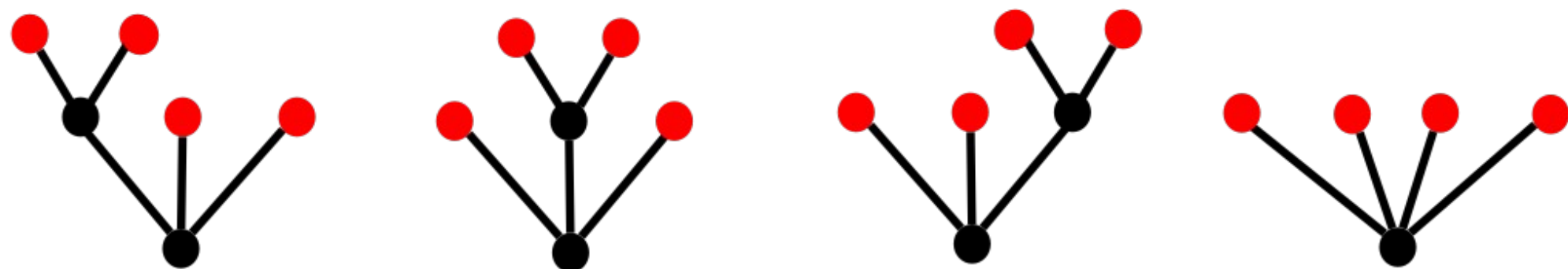
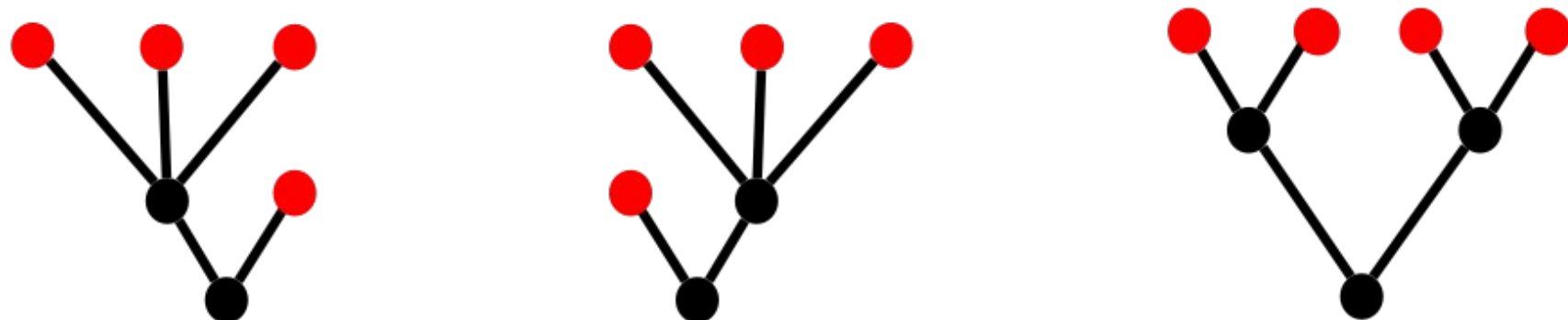
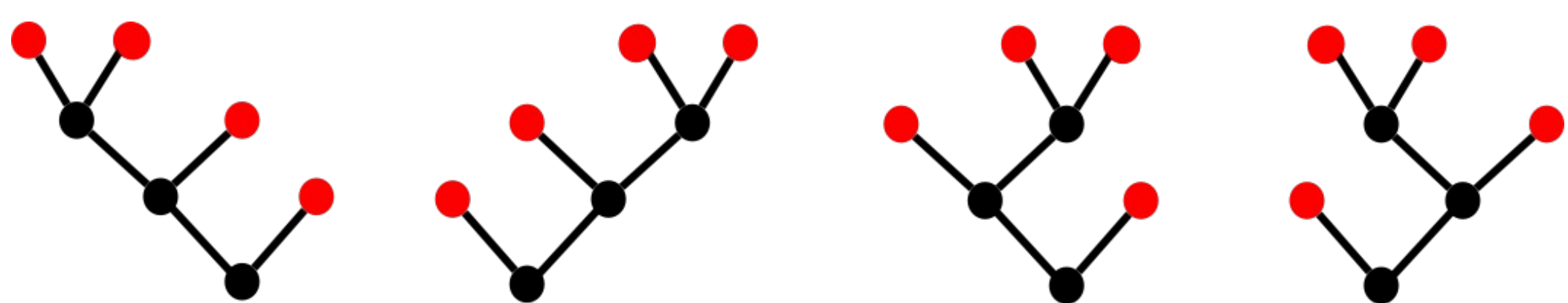
- Γεωμετρία (Ευκλείδης, Απολλώνιος, Θεαίτητος, ...)
- Θεωρία των Αριθμών (Πυθαγόρειοι, Διόφαντος, ...)
- Λογισμός (Εύδοξος, Αρχιμήδης)
- Άλγεβρα (Διόφαντος)
- Συνδυαστική

Η συνδυαστική είναι κλάδος των μαθηματικών
που ασχολείται με τη μελέτη μετρήσιμων
διακριτών δομών.









Schroeder (1841-1902, Mannheim)

x x x x x x x x x x

$x(xx(xxx)x)(x(xx))$

$x=(x) \text{ και } (x(xx(xxx)x)(x(xx)))=x(xx(xxx)x)(x(xx))$

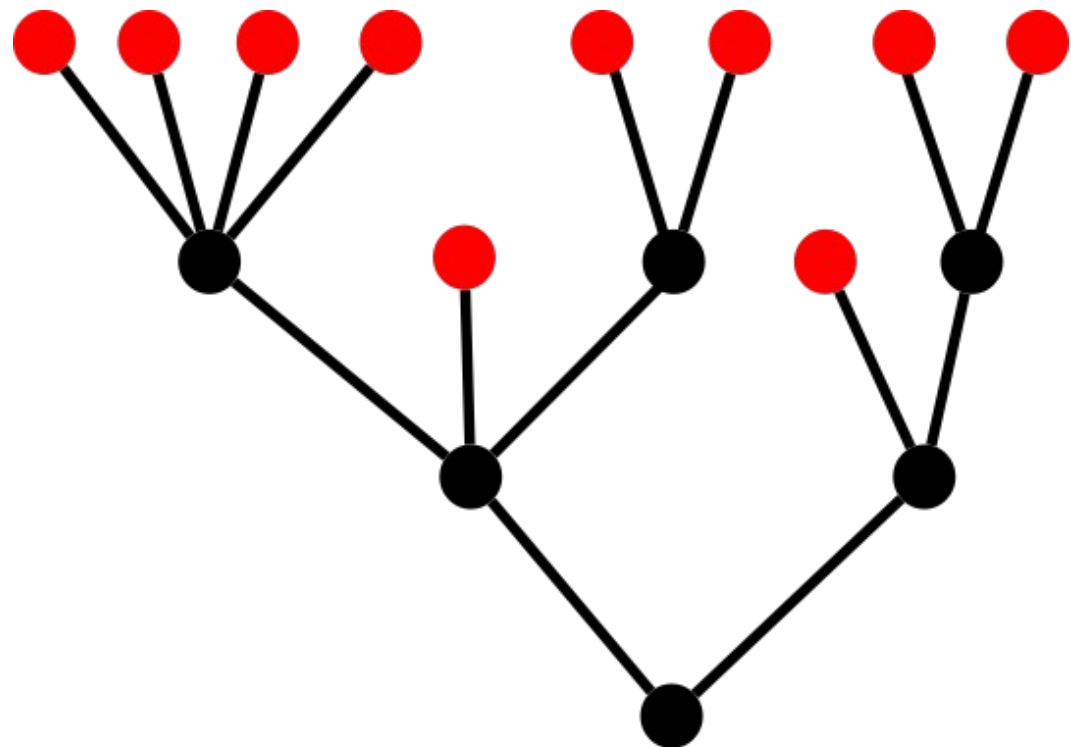
$((x\ x)x)x \quad x(x(x\ x)) \quad (x(x\ x))x \quad x((x\ x)x)$

$(x\ x\ x)x \quad x(x\ x\ x) \quad (x\ x)(x\ x)$

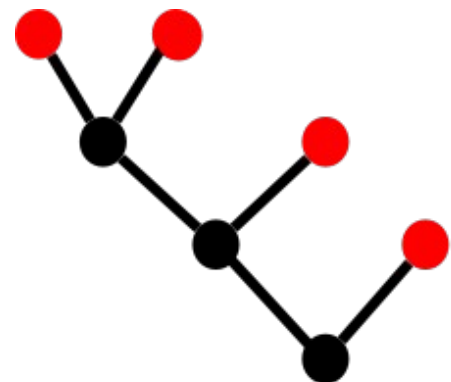
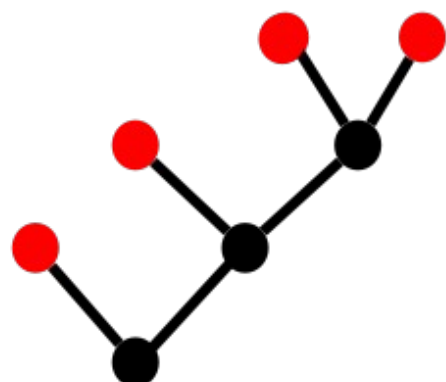
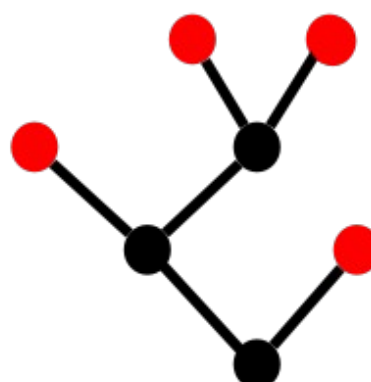
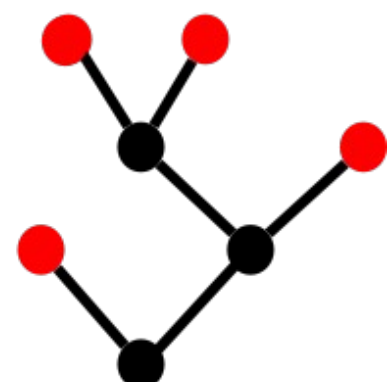
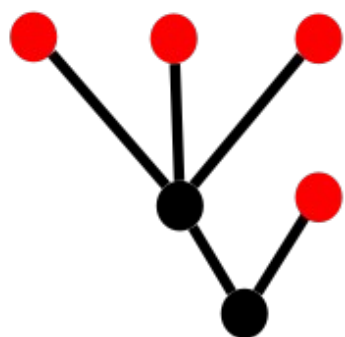
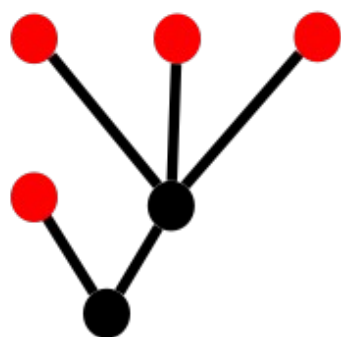
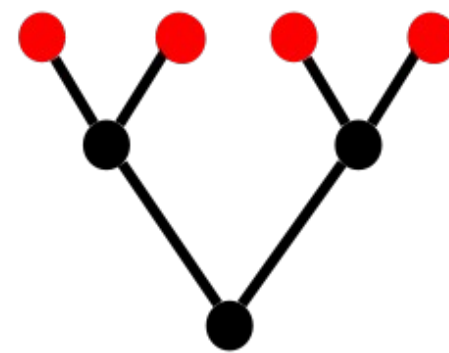
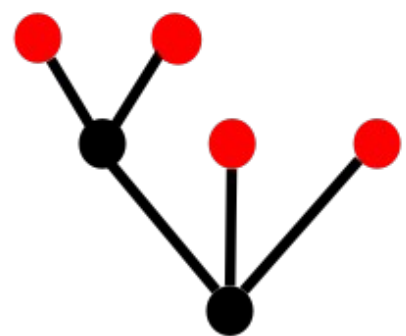
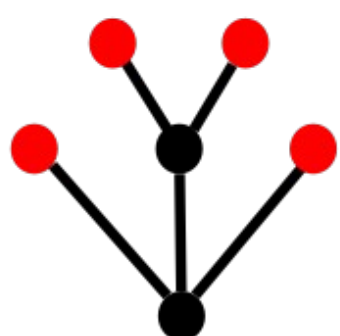
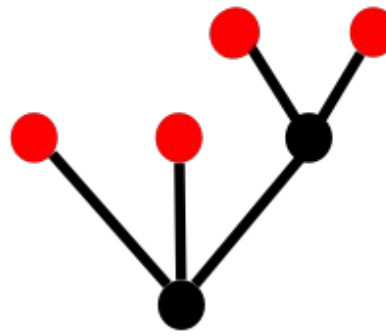
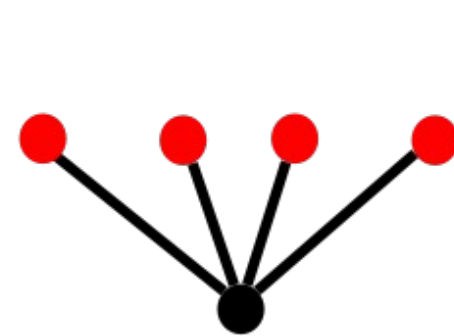
$(x\ x)x\ x \quad x(x\ x)x \quad x\ x(x\ x) \quad x\ x\ x\ x$

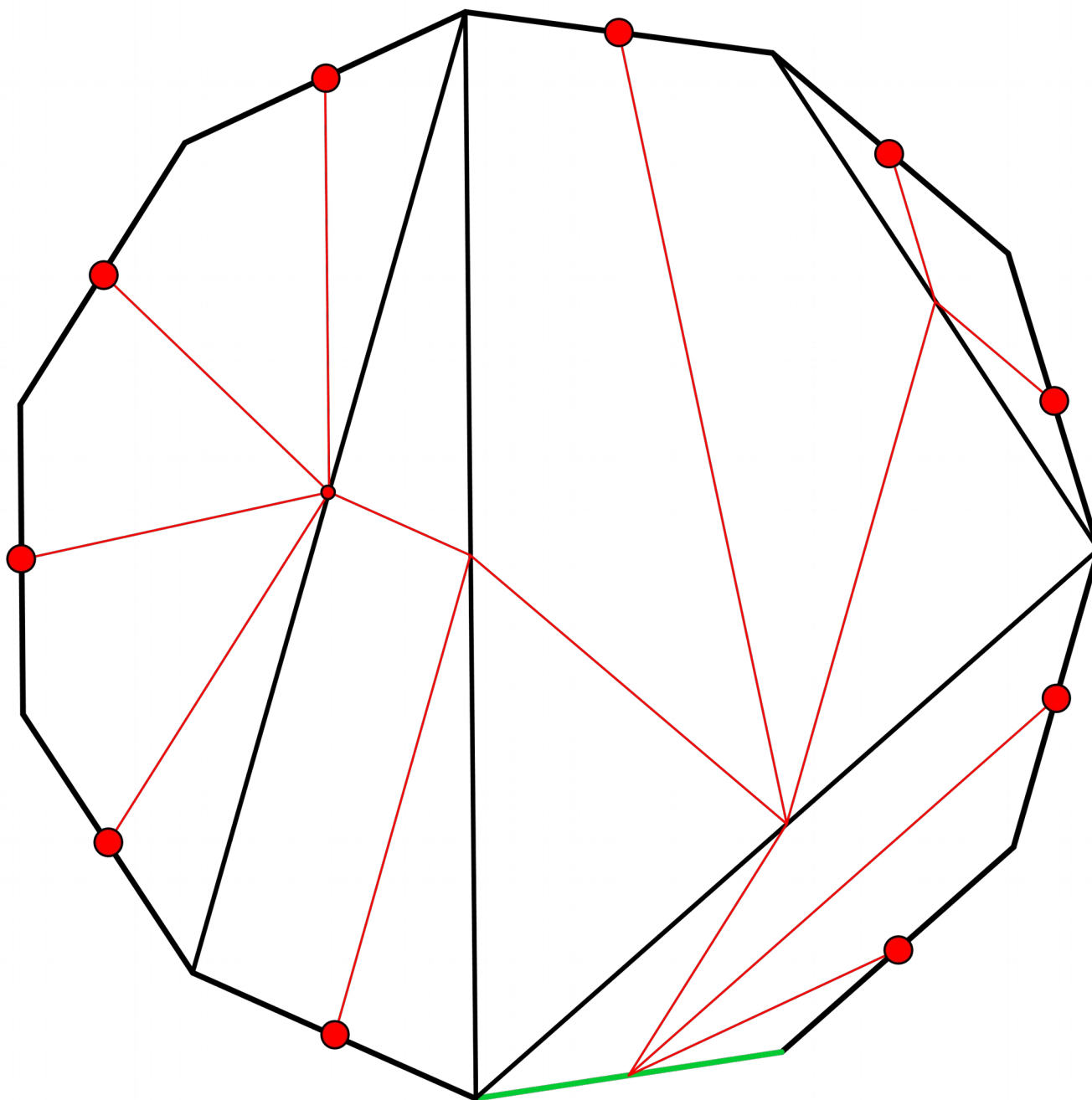
Αριθμοί Schroeder

$s(1)=1, s(2)=1, s(3)=3, s(4)=11, s(5)=45,$
 $s(6)=197, s(7)=903, s(8)=4.279, s(9)=20.793,$
 $s(10)=103.049, s(11)=518.859, \dots$



$((x x x x) x (x x)) (x (x x))$


 $((xx)x)x$

 $x(x(xx))$

 $(x(xx))x$

 $x((xx)x)$

 $(xxx)x$

 $x(xxx)$

 $(xx)(xx)$

 $(xx)xx$

 $x(xx)x$

 $xx(xx)$

 $xxxx$



$((x(xxxx))x(xx))xx$

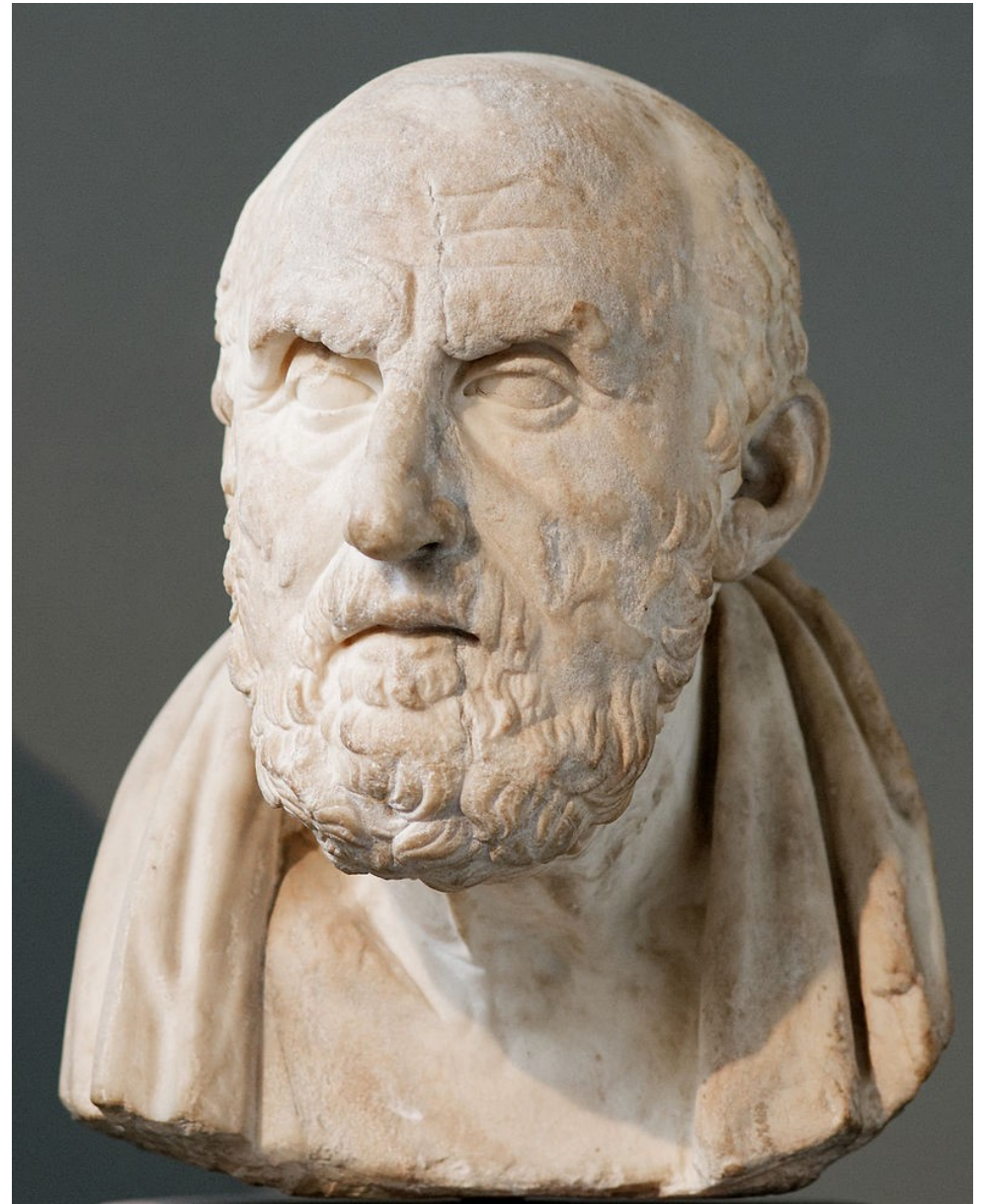
Πλούταρχος

- Ο Πλούταρχος (45-120 μ.Χ.) Χαιρώνεια
Ιστορικός, βιογράφος και δοκιμιογράφος.

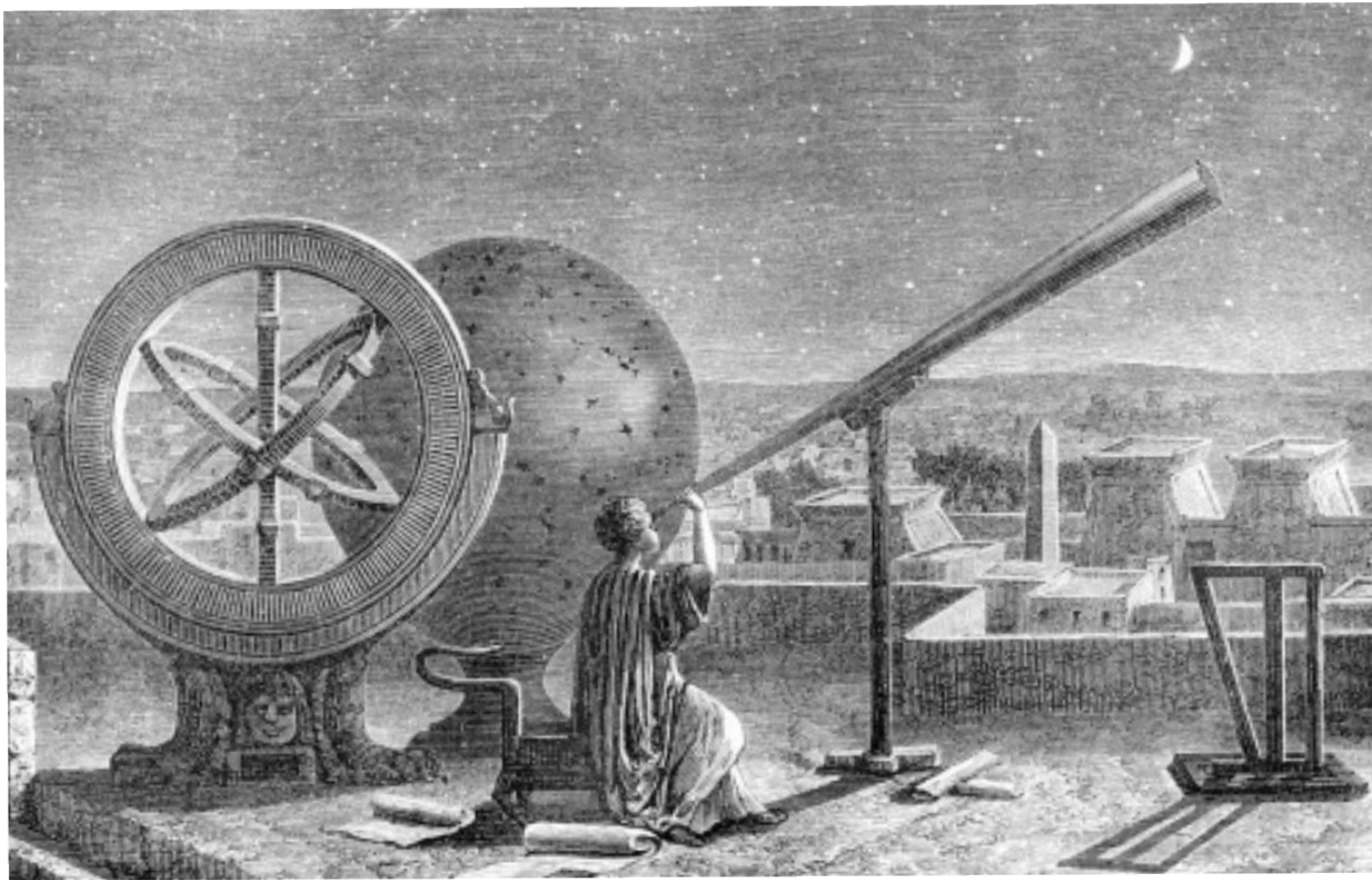
Πλούταρχος

- Ο Πλούταρχος (45-120 μ.Χ.) Χαιρώνεια Ιστορικός, βιογράφος και δοκιμιογράφος.
- Ο Χρύσιππος είπε πως ο αριθμός των συνθέσεων που είναι εφικτές από δέκα απλές προτάσεις ξεπερνάει το ένα εκαταμμύριο.
Ο Ίππαρχος τον αντέκρουσε δείχνοντας ότι δημιουργούνται 103.049 καταφατικές συνθέσεις και 310.952 αποφατικές συνθέσεις.

- Χρύσιππος (280-206 π.Χ. Ταρσός) Στωικός Φιλόσοφος, ένας από τους μεγαλύτερους στοχαστές του τρίτου π.Χ. αιώνα.



- 'Ιππαρχος (190-120 π.Χ. Νίκαια της Βιθυνίας)
ο μεγαλύτερος αστρονόμος της αρχαιότητας













Ο Χρύσιππος είπε πως ο αριθμός των συνθέσεων που είναι εφικτές από δέκα απλές προτάσεις ξεπερνάει το ένα εκαταμμύριο.

Ο Ίππαρχος τον αντέκρουσε δείχνοντας ότι δημιουργούνται 103.049 καταφατικές συνθέσεις και 310.952 αποφατικές συνθέσεις.

- Χρύσιππος (280-206 π.Χ.)
- Ίππαρχος (190-120 π.Χ.)
- Πλούταρχος (45-120 μ.Χ.)

Richard Stanley (MIT) (Enumerative
Combinatorics vol. 1 ex. 1.45, 1986)

David Hough 1994

$$s(10)=103.049$$

Ο δέκατος αριθμός του Schroeder

$$x (x x (x x x x))(x x x)$$

310.952

$$310.954 = s(10) + s(11)/2$$

$$(o(xxx))xx(xx) = o(xxx)xx(xx)$$

$$(ox)xx = oxxx$$

$$(ox)(xx) = ox(xx)$$

$$((ox)x)x = (oxx)x$$

$$(o(xx))x = o(xx)x$$

$$o(xxx)$$

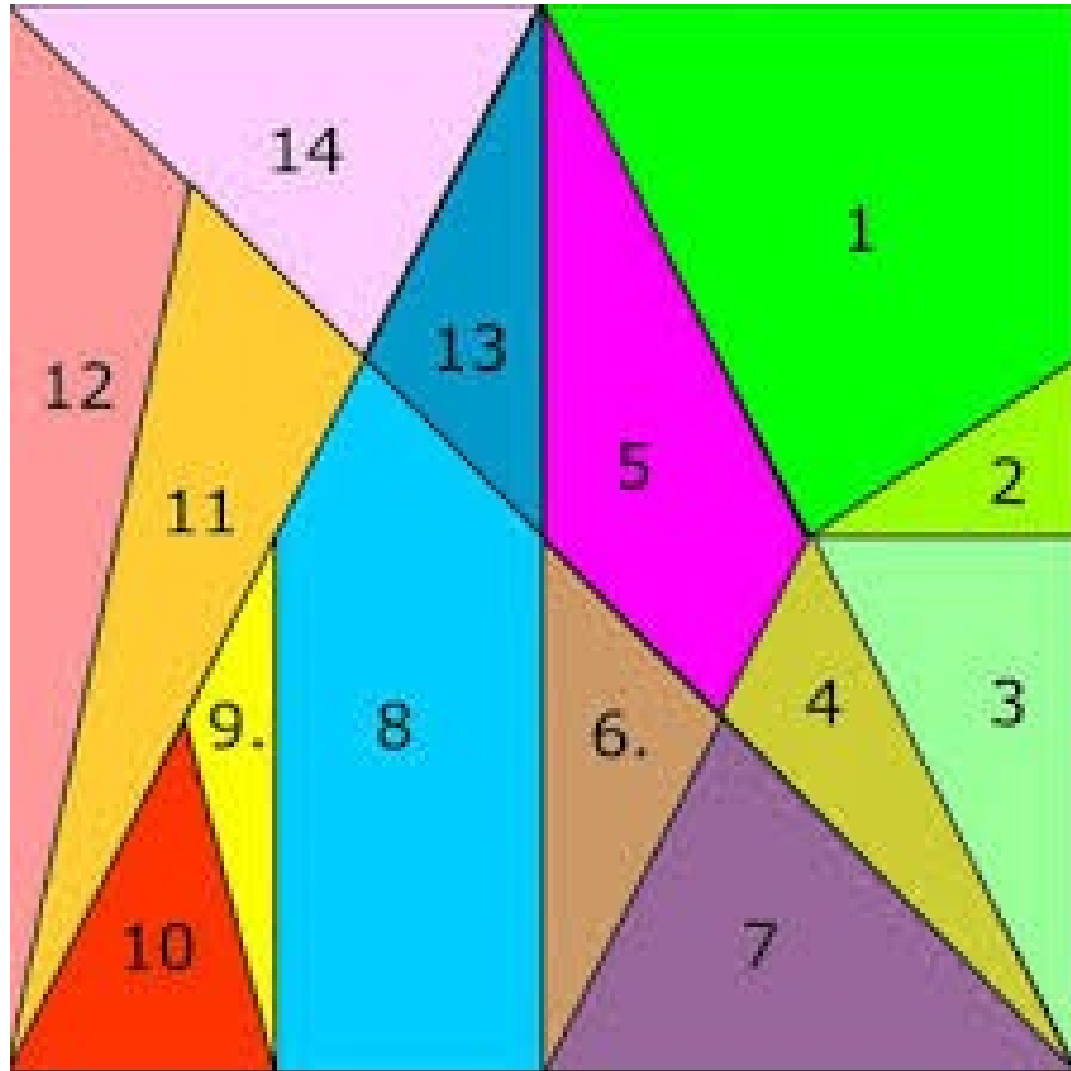
$$o(x(xx))$$

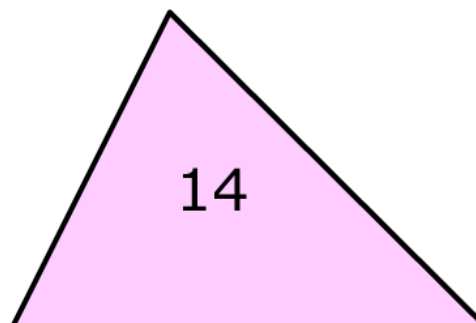
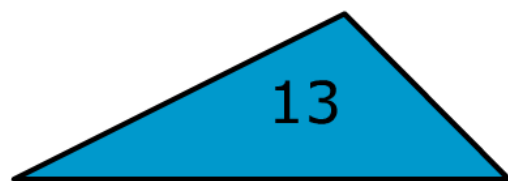
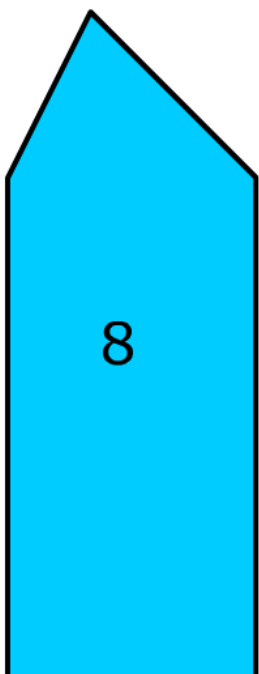
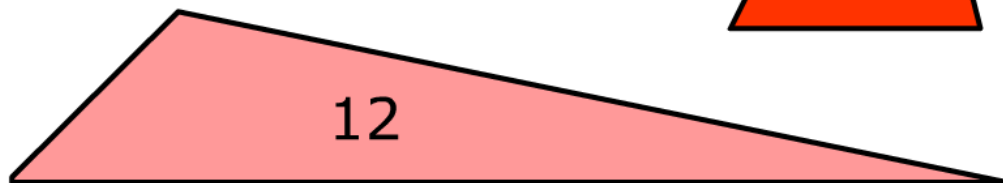
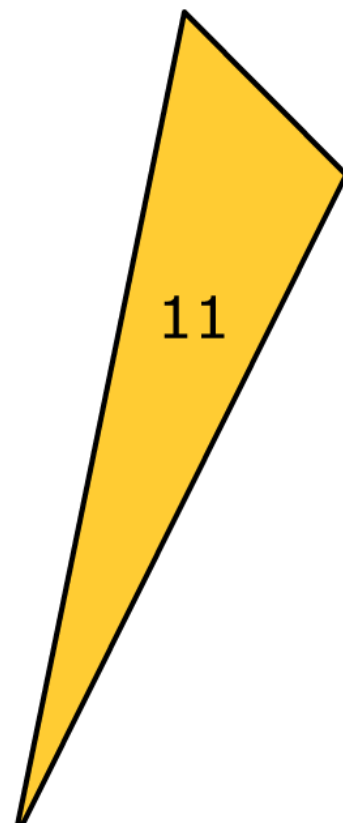
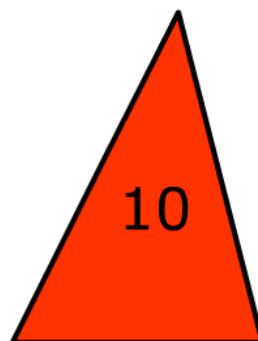
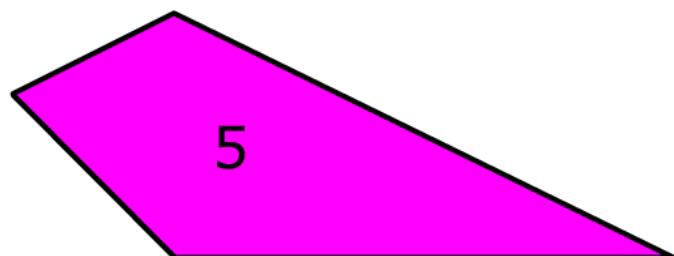
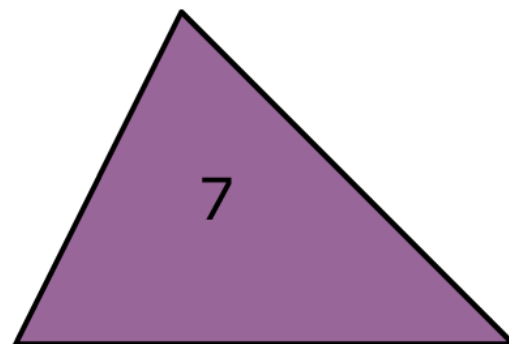
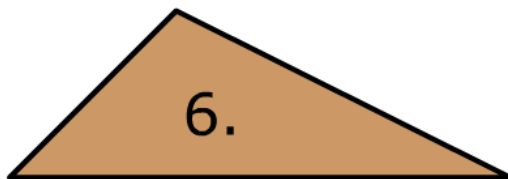
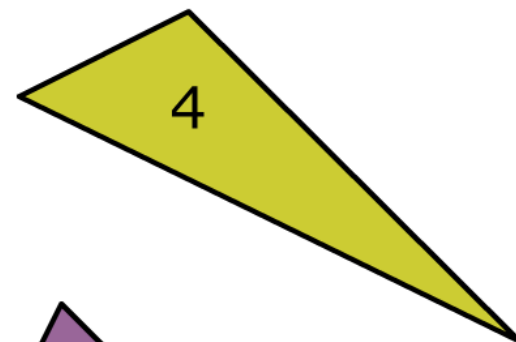
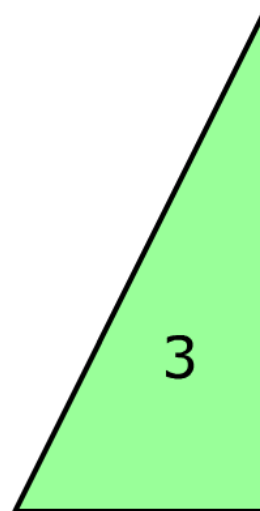
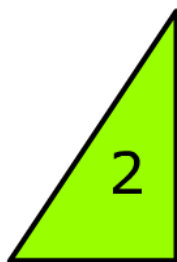
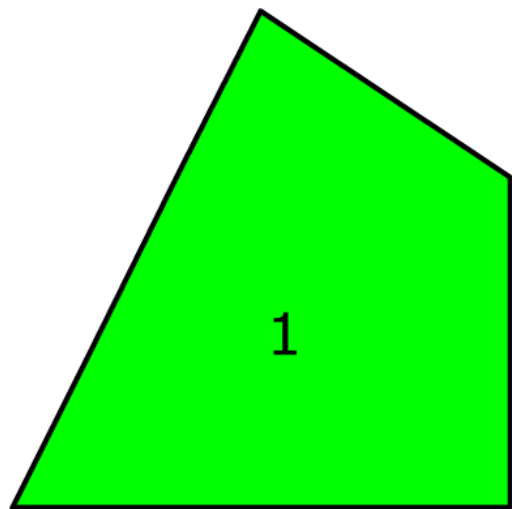
$$o((xx)x)$$

Αρχιμήδης (287-212 π.Χ. Συρακούσες)
Μαθηματικός, Φυσικός, Μηχανικός και
Αστρονόμος.

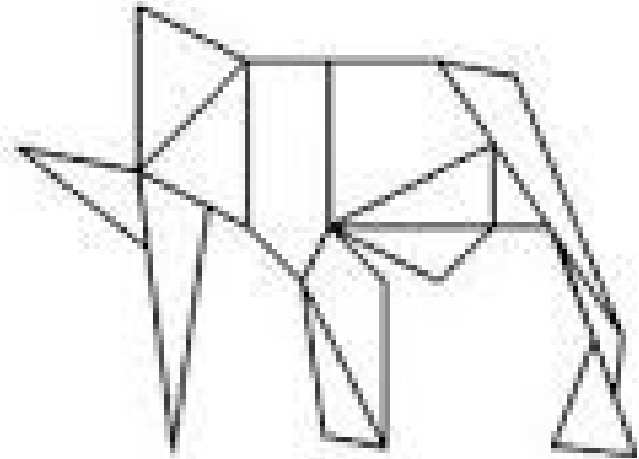
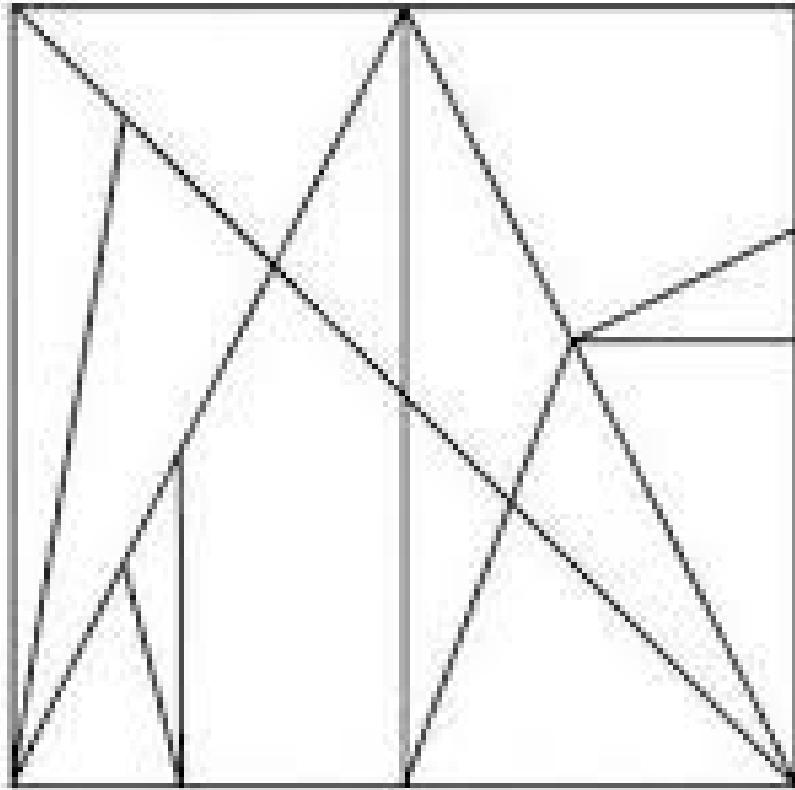


Στομάχιον





Tangram



Σκήτη του Αγίου Σάββα (1229)



14 Απριλίου 1229
π. Ιωάννης Μύρωνας



Handwritten text in a medieval script, likely Latin, covering the top half of the right page. The text is written in a single column and appears to be a continuation from the previous page.

Handwritten text in a medieval script, likely Latin, covering the bottom half of the right page. The text is written in a single column and appears to be a continuation from the previous page.



Handwritten text in a medieval script, likely Latin, covering the top half of the left page. The text is written in a single column and appears to be a continuation from the previous page.

Handwritten text in a medieval script, likely Latin, covering the bottom half of the left page. The text is written in a single column and appears to be a continuation from the previous page.



[illegible]

Παλίψηστο

- π.Ιωάννης Μύρωνας 1229
- 1800 Κωνσταντινούπολη
- 1846 Constantin von Tischendorf
- Αθανάσιος Παπαδόπουλος Κεραμεύς 1899
- Johan Heiberg 1906
- 1920 εξαφανίζεται
- 1998 Δημοπρασία στο Christies της Νέας Υόρκης (2.200.000\$)
- Walters Art Museum, Baltimore

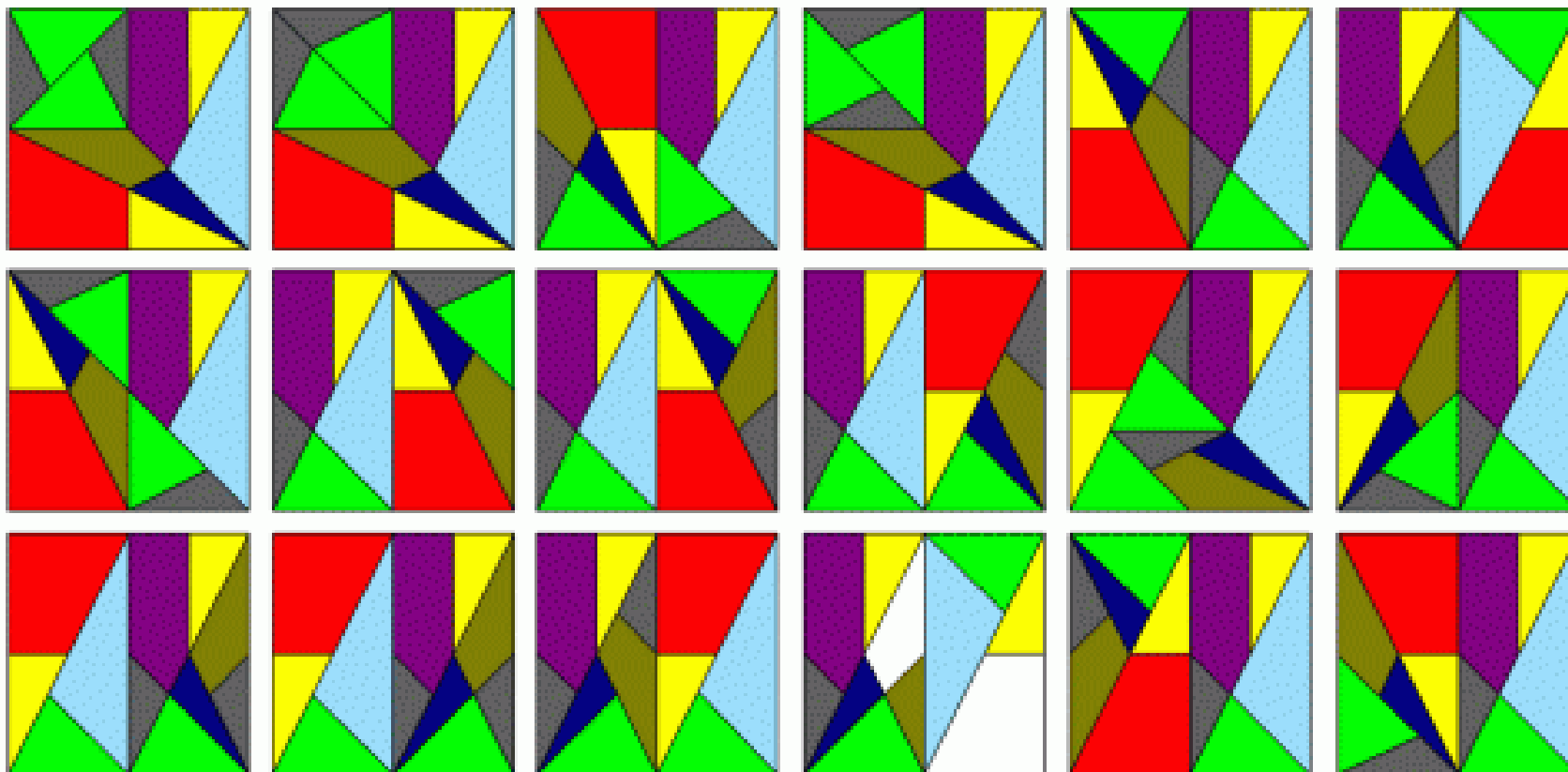
[The page contains dense handwritten text in a cursive script, likely from a 17th-century manuscript. The ink is dark brown or black, and the paper shows signs of age and wear, including some staining and discoloration. The handwriting is somewhat slanted and compact, typical of early modern cursive.]

1. *Deus* 2. *Deus* 3. *Deus* 4. *Deus* 5. *Deus* 6. *Deus* 7. *Deus* 8. *Deus* 9. *Deus* 10. *Deus* 11. *Deus* 12. *Deus* 13. *Deus* 14. *Deus* 15. *Deus* 16. *Deus* 17. *Deus* 18. *Deus* 19. *Deus* 20. *Deus* 21. *Deus* 22. *Deus* 23. *Deus* 24. *Deus* 25. *Deus* 26. *Deus* 27. *Deus* 28. *Deus* 29. *Deus* 30. *Deus* 31. *Deus* 32. *Deus* 33. *Deus* 34. *Deus* 35. *Deus* 36. *Deus* 37. *Deus* 38. *Deus* 39. *Deus* 40. *Deus* 41. *Deus* 42. *Deus* 43. *Deus* 44. *Deus* 45. *Deus* 46. *Deus* 47. *Deus* 48. *Deus* 49. *Deus* 50. *Deus* 51. *Deus* 52. *Deus* 53. *Deus* 54. *Deus* 55. *Deus* 56. *Deus* 57. *Deus* 58. *Deus* 59. *Deus* 60. *Deus* 61. *Deus* 62. *Deus* 63. *Deus* 64. *Deus* 65. *Deus* 66. *Deus* 67. *Deus* 68. *Deus* 69. *Deus* 70. *Deus* 71. *Deus* 72. *Deus* 73. *Deus* 74. *Deus* 75. *Deus* 76. *Deus* 77. *Deus* 78. *Deus* 79. *Deus* 80. *Deus* 81. *Deus* 82. *Deus* 83. *Deus* 84. *Deus* 85. *Deus* 86. *Deus* 87. *Deus* 88. *Deus* 89. *Deus* 90. *Deus* 91. *Deus* 92. *Deus* 93. *Deus* 94. *Deus* 95. *Deus* 96. *Deus* 97. *Deus* 98. *Deus* 99. *Deus* 100. *Deus*

Στομάχιον

ΠΛΗΘΟΣ

Στομάχιον



Στομάχιον

- Persi Diaconis
- Bill Cutler

$$17.152 = (32) \times (536)$$