# Mathematica Centrum

Together, let's shape the mathematicians of the future

BYRON-GERMAIN PREPARATORY TEST 2015
COMPLETE SOLUTIONS

1. The number of vertices (10) plus the number of edges (15) of a pentagonal prism is equal to 25.

2. 2 + 7 + 3 + 8 = 20.

3. The only product that is not even is 3 x 5 (the product of 2 odd numbers is always odd).

4. (1 + 2 + 3 + 4 + 5) - (4 + 3 + 2 + 1) = 5

5. The number is (48 ÷ 6) 8. The result of 8 x 3 is 24.

6. The sum of 3 + 5 + 7 + 9 is 24. The one's digit of 24 is 4.

7. The number of multiples of 5 between 10 and 30 is (30 - 10 = 20, 20 ÷ 5 = 4, and 4 - 1 = 3) 3.

8. A quarter of an hour (15min) + half an hour (30min) + 1 hour (60min) is equal to 105 minutes.

9. Twice a number minus the same number is equal to the number. The number is equal to 10.

10. The largest 3-digit even number that can be formed using the digits 7, 5, and 4 only once is 754.

11. The fraction of the square that is shaded is 2/4 or 1/2.

12. If April 3 is a Monday, then the first of April was a Saturday. The dates of all Saturdays in the month of April are 1, 8, 15, 22, 29.
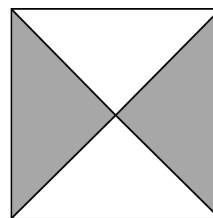
13. If you add 1 hundred + 2 tens + 26 ones to the number 121, the result will be 267.

14. The equation that is false is 5¢ = 0.50$ (5¢ = 0.05$).

15. A rope 50 cm long is cut into 5 equal pieces. The length of each piece is 10 cm.

16. The number of lines of symmetry in a square (4) plus the number of lines of symmetry in a regular pentagon (5) plus the number of lines of symmetry in a regular hexagon (6) is equal to 15.
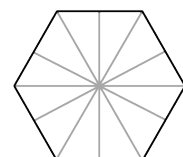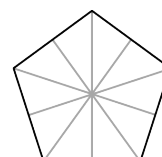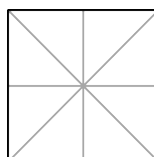
17. A right-angled triangle and a right-angled trapezium intersect at points A, B, C, and D as shown in the diagram. The number of right angles (already indicated) is 7. The number of acute angles (all indicated by dots) is 7. The number of acute angles plus the right angles shown in the diagram is 14.
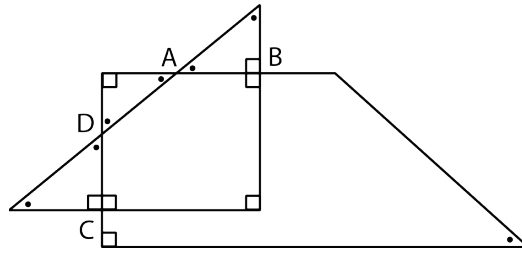
18. The next number in the sequence: 30, 25, 21, 18, 16, … is 15.

19. The sum of 1 + 2 + 3 + 4 + 5 + 6 is 21. This sum is divisible (division with no remainder) by 7.
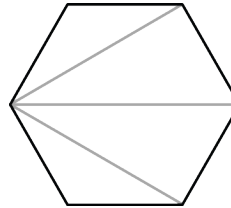
20. The minimum number of triangles needed to form the hexagon is 4.