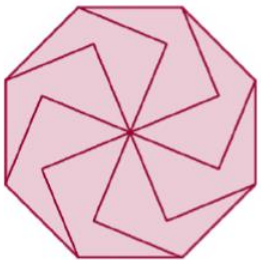

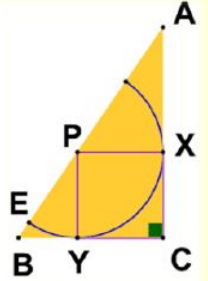




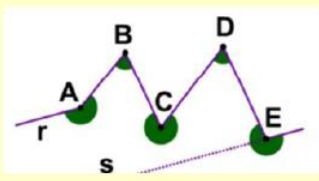









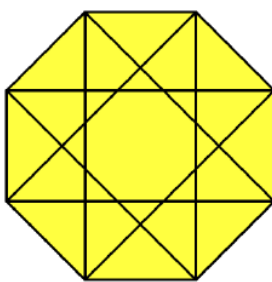
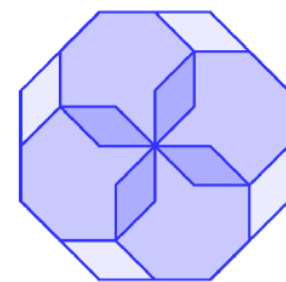
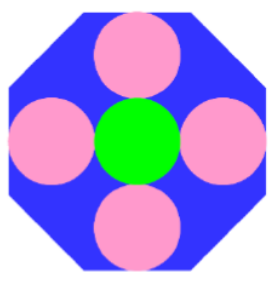


NOVEMBER

| MONDAY | TUESDAY | WEDNESDAY | | | | | | | | | | | | | | | | |
|--|---|--|----|----|--|--|--|----|--|--|--|----|----|----|----|--|---|--|
|  | <p>1</p>  <p>2</p> <p>Dani has sixty marbles and her sisters Laia and Aitana none. Dani decides to take six marbles and give each one three. He believes that by repeating this operation several times, there will come a time when each of the three will have the same number of marbles. Is he right or do I have to do some small adjustment?</p> | | | | | | | | | | | | | | | | | |
| <p>7</p>  | <p>8</p> <p>Let $\triangle ABC$ be a right triangle at C. Let P be a point on AB such that PXCY is a square of side 8 cm. With center in P a circle of radius 8 is drawn that cuts to the segment PB in E. If BE = 2 cm, find the area and the perimeter of $\triangle ABC$</p> | <p>9</p> <p>Let $R = \frac{8888 \dots 88}{200} - \frac{4343 \dots 43}{140}$ Is R a perfect square?</p>  | | | | | | | | | | | | | | | | |
| <p>14</p> <p>Given a natural n, S_n (P_n) is defined as the sum (product) of the digits of n. Find the natural numbers n such that: $P_n \cdot S_n = 3 + P_n$</p>  | <p>15</p>  <p>16</p> <p>Dani, Laia and Aitana participate in one of the activities of the patron saint festivities of their town: the walk around Benirredrà. A 5.3 km cross country race. Aitana leaves at 10:00 a.m. at a speed of 3 km/h. Ten minutes later Laia leaves, running at a speed of 5 km/h. Twenty minutes later Dani leaves at a speed of 6 km/h. If none of them stop or change their speed, find the order of arrival of the three brothers and the time between their arrival.</p> | | | | | | | | | | | | | | | | | |
| <p>21</p> <table border="1" data-bbox="371 1312 638 1564"> <tr><td></td><td></td><td></td><td>37</td></tr> <tr><td></td><td></td><td></td><td>38</td></tr> <tr><td></td><td></td><td></td><td>25</td></tr> <tr><td>33</td><td>55</td><td>12</td><td></td></tr> </table> | | | | 37 | | | | 38 | | | | 25 | 33 | 55 | 12 | | <p>22</p> <p>Place the first nine prime numbers on the adjoining grid without repeating any so that the total of each line (row or column) is the one indicated on the margin of the grid. Is the solution unique?</p> | <p>23</p> <p>Dani was born when, Rafael, her father was 32 years old. Now, Dani's age plus his father's exceeds Gregori's by 20 years, which is 52 years. How old is Laia now who was born when the sum of the ages of Dani, Rafael and Gregori was 79 years?</p>  |
| | | | 37 | | | | | | | | | | | | | | | |
| | | | 38 | | | | | | | | | | | | | | | |
| | | | 25 | | | | | | | | | | | | | | | |
| 33 | 55 | 12 | | | | | | | | | | | | | | | | |
| <p>28 (dedicated to Professor Smudge)</p>  <p>If r/s, find the value of the sum of the angles in A, B, C, D and E</p> | <p>29</p>  <p>30</p> <p>Of three digits, not necessarily different, a, b and c are known: $\overline{abc} + \overline{acb} + \overline{bac} + \overline{bca} = 633$ where \overline{xyz} represents the number with the digit x in the hundreds, the digit y in the tens and the digit z in the units. Find a, b and c</p> | | | | | | | | | | | | | | | | | |

| THURSDAY | FRIDAY | SATURDAY | U |
|--|--|---|---|
| <p>3</p> <p>The average of eight consecutive odd numbers is 42. Calculate the average of all natural odds between the smallest pair and the largest pair.</p>  | <p>4</p>  <p>5</p> <p>Laia's grade in a given subject is the arithmetic mean of twelve tests she takes throughout the course. After the first eight checks you have an average grade of 4. What average should you get in the last four checks for the average of all twelve checks to be greater than or equal to five? If in the ninth and tenth checks he draws a six and a five, what average must he draw in the last two checks to draw an average in all the checks greater than or equal to five?</p> | <p>6</p> | |
| <p>10</p>  <p>11</p> <p>In a whole division the divisor is 49 units greater than the residue and the quotient is 182. If we increase the dividend by 2372 units and keep the divisor unchanged the quotient increases by 28 units and the residue is the maximum allowed. Find the entire first division</p> | <p>12</p> <p>Calculate how many five-digit or less-numbered captions exist. If they were ordered from lowest to highest, which head would occupy position 195?</p>  | <p>13</p> | |
| <p>17</p> <p>Given a natural n, S_n (P_n) is defined as the sum (product) of the digits of n. Find the natural n such that: $P_n \cdot S_n = 30$</p>  | <p>18</p>  <p>19</p> <p>Consider the natural number R: $R = \frac{999 \dots 999}{200} - \frac{1333 \dots 333}{x}$ Find the values of x that make R a multiple of three.</p> | <p>20</p> | |
| <p>24</p>  <p>25</p> <p>Leo is a fan of cross country cycling. Three times a week he goes up from the cemetery to the hermitage carrying his bicycle and goes down the same path, but pedaling with his bicycle. If Leo goes up to 12 Km / h: 1.- at what speed you have to go down to have an average speed along the whole journey of 15 km / h. 2.- What is the maximum speed on the whole journey that you can reach?</p> | <p>26</p> <p>Be given the number: $N = \left(\frac{66 \dots 66}{n}\right)^2 + \left(\frac{33 \dots 33}{n}\right)^2$ Is N a multiple of 3? Is it a perfect square?</p>  | <p>27</p> | |
|  |  |  | |