

EXERCISES (SOLUTIONS) : THE NATURAL NUMBER

1. 186 and 187
2. 13 and 14
3. For example, 155×10 , 150×11 , 15×101 . For example, 5×31 , 2×76 .
4. $aaa = ax111$ and $a+a+a = ax3$. Thus, $aaa/(a+a+a) = ax111/ax3$ and the value "a" can be simplified in both the numerator and the denominator, so that $111/3=37$ for all values of "a".
5. The dividend is between 1505 and 1547.
6. $25 \times 11 = 25 \times (10+1) = (25 \times 10) + (25 \times 1) = 250 + 25 = 275$
 $328 \times 1001 = 328 \times (1000+1) = (328 \times 1000) + (328 \times 1) = 328000 + 328 = 328328$
 $15 \times 92 = 92 \times (10+5) = (92 \times 10) + (92 \times 5) = 92 \times 10 + 92 \times 10 / 2 = 920 + 920 / 2 = 920 + 460 = 1380$
 $936 \times 75 = 936 \times (100-25) = (936 \times 100) - (936 \times 25) = 936 \times 100 - 936 \times 100 / 4 = 93600 - 93600 / 4 = 93600 - 23400 = 70200$
7. $86 \times 85 = 86 \text{ times } 85 = 84 \text{ times } 85 + 2 \text{ times } 85 = 7140 + 170 = 7310$
8. D-r (divisor-remainder)
9. In a sum of two terms the value taken is 0 or 1. In a sum of three terms, it is 0, 1 or 2. In a sum of four terms, it is 0, 1, 2 or 3. In a subtraction the value taken is 0 or 1. In a multiplication the value taken can be any value between 0 and 8.
10. The quotient is the same and the remainder is divided by 10.
11. $426:13$ yes because $13 \times 20 = 260$ and $13 \times 50 = 650$. Analogously, $43368:131$ not; $4368:13$ not; $436:131$ not.
12. $43 \times 100 = 43100$; $43 \times 50 = 4300 / 2 = 2150$. Until 2408 there are 258 units left, which is equivalent to 43×6 . Thus, $2408 = 43 \times 56$. Analogously, $12 \times 56 = 672$.
13. The smallest: 1023456789. The greatest: 9876543210.
17. a) 30000; b) 200; c) 7; d) 100
18. 5382 euros.
19. 71582 euros.
20. 172 pages.

21. 85 and 41 litres.
22. 38 students.
23. 432 litres.
24. 197 euros Ángel and 239 euros Sergio.
25. 400, 500 and 700 euros.
26. 7550 km.
27. 200, 400 and 600 euros.
28. 4700 m.
29. 26 horses.
30. $9 \times [(3 \times 5 \times 8 + 2 \times 8 + 7) + (7 \times 5 \times 8 + 4 \times 8 + 5)] = 4140$ euros.
31. $160 \times 2 - [160 \times (75/1000) \times 8 + (160 \times 2/8)/2 + 5 \times 3] = 189$ euros.
32. $5 \times 30 - (23 \times 3 + 18 + 7 \times 5) = 28$ litres.
33. 2 euros per bag.
34. 19522 euros of annual profit.
35. 3 euros per metre.