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- 1 Denmark has played an international football match against Georgia. The match ended 5 – 5, and between the first and the last goal the game has just never stood still. No country has scored three goals in a row, and Denmark scored the sixth goal. Can you use this information to determine which country scored the fifth goal?
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- 2 If three integers p, q and r apply that

$$p + q^2 = r^2.$$

Show that 6 divides pqr .

- 4 In triangle ABC we have $AB = 2$, $AC = 6$ and $\angle A = 120^\circ$. The bisector of angle A intersects the side BC at the point D . Determine the length of AD . The answer must be given as a fraction with integer numerator and denominator.
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- 3 The numbers from 1 to 500 are written on the board. Two players A and B erase alternately one number at a time, and A deletes the first number. If the sum of the last two numbers on the board is divisible by 3, B wins, otherwise A wins. Which player can lay out a strategy that ensures this player's victory?
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- 5 For each positive integer n , a new number t_n is formed from the numbers 2^n and 5^n which consists of the digits from 2^n followed by the digits from 5^n . For example, t_4 is 16625. How many digits does the number t_{2008} have?
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