Rwanda Maths Olympiad Camp Selection Test (In Class)

Time allowed: 1 hour You may not use calculators.

Please explain your answers as best you can. Each question is worth 10 marks

Please label all questions clearly. Start each question on a new page.

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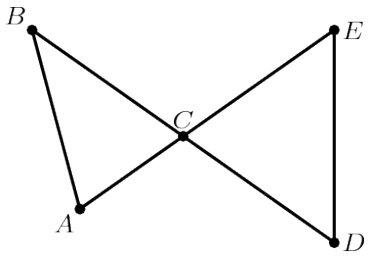
1. How many four-digit numbers, which are divisible by 5, can be formed using only odd digits?

   (5395 is an example of a four digit number, which is divisible by 5, and is formed only of odd digits.)

2. Angela bought 13 notebooks, 26 pens, and 19 markers for 25,000 RWF. Bernadette bought 27 notebooks, 18 pens, and 31 markers for 31,000 RWF. How much does it cost to buy 24 notebooks, 120 pens, and 52 markers altogether?

3. Find the smallest positive integer n such that for every prime number p, the value $p^2 + n$ is never prime. (A positive integer p is prime if it has exactly 2 factors - 1 and itself. 1 is not prime)

4. Segment BD and AE intersect at C, as shown, with $AB = BC = CD = CE$, and $\angle A = \frac{5}{2}\angle B$. What is the size of $\angle D$?



5. Find the sum of all the positive integers that are divisors of either 96 or 180.

Problems in Kinyarwanda

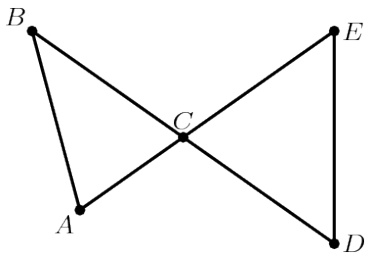
1. Ni imibare ingahe igizwe n'imibarwa ine ikaba igabanyika na gatanu, ushobora gukora wifashishije imibarwa y'ibiharwe (odd digits) gusa.

   (5395 ni urugero rw'umubare ugabanyika na 5, ugizwe n'imibarwa ine y'ibiharwe)

2. Angela yaguze amakayi 13, amakaramu 26, na marikeri 19 ku Rwf 25,000. Bernadette we yaguze amakayi 27, amakaramu 18, na marikeri 31 ku Rwf 31,000. Byatwara amafaranga angahe byose hamwe, uramutse uguze amakayi 24, amakaramu 120, na marikeri 52?

3. Shaka umubare muto ushyitse n kuburyo kuri buri prime number yose p, agaciro ka $p^2 + n$ katazigera kaba prime. (Umubare ishyitse p witwa prime iyo ufite factors ebyiri gusa- 1 na wo ubwawo. 1 ntabwo ari prime)

4. Umurongo uhuza utudomo BD n'umurongo uhuza utudomo AE bihurira mukadomo C, nkuko byagaragajwe,na $AB = BC = CD = CE$, and $\angle A = \frac{5}{2}\angle B$. Shaka ingano y'imfuruka $\angle D$?



5. Shaka igiteranyo cy'imibare ishyitse iri hejuru ya zeru igabanya 96 cyangwa 180