

Name _____

Credit given depends on clarity and correctness of presentation

Little credit for answer alone or answer which does not follow from the work shown.

On my honor, I have neither given nor received unauthorized aid on this examination and I have not used a calculator.

(Signature)

1. Use the sieve of Eratosthenes to determine all primes between 24 and 60.

List these primes:

2. State the fundamental theorem of Arithmetic and illustrate it for the number 980.

3. It can be shown that
 $6552 = 2^3 \cdot 3^2 \cdot 7 \cdot 13$ and $2340 = 2^2 \cdot 3^2 \cdot 5 \cdot 13$
Use this information to find the L.C.M. of these two numbers

answer L.C.M. = _____

4. Find the G.C.D. of these two numbers

answer G.C.D. = _____

(leave answer in terms of powers of primes)

5. State the division algorithm and illustrate it for the numbers $b = 628$ and $a = 291$

6. Use the Euclidean Algorithm to find the greatest common divisor of the numbers 299 and 253.

7. A track is roughly in the shape of an equilateral triangle with sides 60 miles each. A car travels around the track averaging 60 miles per hour on the first two sides and 20 miles per hour on the third side. Find the average speed for the trip.

8. Name a prominent male mathematician and a prominent female mathematician who lived in this or the last century.

9. List the proper divisors of 30.

answer_____

10. Determine whether 16 is a perfect, deficient or abundant number.

answer_____

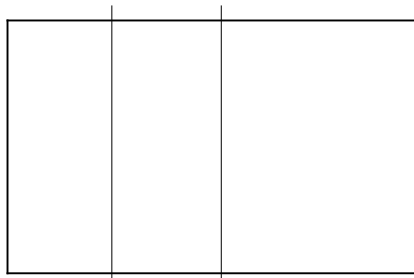
11. Archimedes died in 212 B.C. The 3000th year anniversary of his death would occur in what year?

answer _____

12. Workers in a certain industry had their wages reduced by 40%. Shortly after this pay cut went into effect all workers were given a 60% raise in salary. What percent of the old salary is their new salary. (Hint use an example where the original salary was \$100 per day.)

answer _____

13. Complete the diagram below to calculate the product of 963 and 785 by the Gelosia method used in 15th century Europe.



$963 \times 785 =$ _____