Math 10 Prime Factorization Solutions (DO NOT WRITE ON THIS PAPER)

1. Enrichment: List the first four prime numbers
   2, 3, 5, 7

2. Can prime numbers be negative?
   No

3. Find the prime factorization of 27000
   $2^3 \times 3^3 \times 5^3$

4. What are the factors of 12?
   $1, 2, 3, 4, 6, 12$

5. What are the prime factors of 24?
   2, 3

6. What are the prime factors of 126?
   2, 3, 7

7. Find the GCF and LCM of:
   a. 10 and 15

5	10	15
	2	3

   GCF 5, LCM 30

   b. 8, 12, and 20

4	8	12	20
	2	3	5

   GCF 4, LCM 120

   c. 6, 20, and 30

2	6	20	30
5	3	10	15
3	3	2	3
	1	2	1

   GCF 2, LCM 60

8. Find the GCF and LCM of $8x, 20x^3, 60x^2, 100x$
   GCF $4x$, LCM $600x^3$

9. Find the square root of 900 by finding its prime factorization.
   $900 = 9 \times 100 = 3 \times 3 \times 10 \times 10 = 2 \times 2 \times 3 \times 3 \times 5 \times 5$
   $\sqrt{2 \times 2 \times 3 \times 3 \times 5 \times 5} = \sqrt{2 \times 2} \cdot \sqrt{3 \times 3} \cdot \sqrt{5 \times 5} = 2 \times 3 \times 5 = 30$
   Or $\sqrt{900} = \sqrt{30} \times \sqrt{30} = 30$

10. Find the cube root of 216 by finding its prime factorization.
    $\sqrt[3]{216} = \sqrt[3]{2 \times 2 \times 2 \times 3 \times 3 \times 3} = \sqrt[3]{2^3} \times \sqrt[3]{3^3} = 2 \times 3 = 6$