

Section 9.3

9.3.1 Give the prime factorization for each number.

a. $32 = 2^5$

b. $42 = 2 \cdot 3 \cdot 7$

c. $84 = 2^2 \cdot 3 \cdot 7$

d. $36 = 2^2 \cdot 3^2$

e. $121 = 11^2$

f. $198 = 2 \cdot 3^2 \cdot 11$

9.3.2 Some numbers and their prime factorization are given below.

- $140 = 2^2 \cdot 5 \cdot 7$
- $175 = 5^2 \cdot 7$
- $532 = 2^2 \cdot 7 \cdot 19$
- $648 = 2^3 \cdot 3^4$
- $1078 = 2 \cdot 7^2 \cdot 11$
- $1083 = 3 \cdot 19^2$
- $15435 = 3^2 \cdot 5 \cdot 7^3$
- $25480 = 2^2 \cdot 5 \cdot 7^2 \cdot 13$

Use these prime factorizations to compute the following quantities.

a. $\gcd(532, 15435) = 7$

b. $\gcd(648, 1083) = 3$

c. $\text{lcm}(532, 1083) = 2^2 \cdot 3 \cdot 7 \cdot 19^2 = 30324$

d. $\text{lcm}(1083, 15435) = 3^3 \cdot 5 \cdot 7^3 \cdot 19^2 = 16716105$

e. $\text{lcm}(648, 15435) = 2^2 \cdot 3^4 \cdot 5 \cdot 7^3 = 555660$

f. $\gcd(1078, 140) = 2 \cdot 7 = 14$