

# Factors Worksheet

## Divisibility.

For each number, list all the whole numbers (2 through 12, except 7 and 11) by which the given number is divisible.

For example, for “30” answer: 2, 3, 5, 6, 10

1. 18
2. 32
3. 45
4. 19
5. 81
6. 60
7. 70
8. 1761
9. 1250
10. 7484
11. 18,261
12. 100,000
13. 32,985
14. 65,536
15. 74,453

## Prime Factorization.

For each number, provide the prime factorization in exponent form, smallest factor to largest, for the given number.

For example, for “200” answer:  $2^3 \times 5^2$

16. 30
17. 44
18. 48
19. 49
20. 31
21. 32
22. 108

23. 206
24. 275
25. 512
26. 210
27. 1089
28. 2184
29. 3000
30. 6561

**Greatest Common Factor.**

For each pair of numbers,  
provide the GCF.

31. 6, 9

32. 4, 12

33. 5, 13

34. 16, 40

35. 12, 46

36. 36, 84

37. 45, 240

38. 46, 144

39. 360, 1008

40. 220, 594

41. 11466, 15015

**Least Common Multiple.**

For each pair of numbers,  
provide the LCM.

42. 2, 8

43. 6, 9

44. 6, 8

45. 5, 9

46. 18, 27

47. 15, 18

48. 20, 56

49. 18, 30

50. 34, 51

51. 42, 55

52. 168, 180

**Challenge Problems**53. Give at least one number that has *exactly* 6 factors.54. Give at least one number that has *exactly* 10 factors.55. Give at least one number that has *exactly* 13 factors.56. The number 1,103,350,248,000 has 3360 factors.  
How many factors does 9,489,150,000 have?**Answers:**

- |                                 |                                    |
|---------------------------------|------------------------------------|
| 1) 2, 3, 6, 9                   | 27) $3^2 \cdot 11^2$               |
| 2) 2, 4, 8                      | 28) $2^3 \cdot 3 \cdot 7 \cdot 13$ |
| 3) 3, 5, 9                      | 29) $2^3 \cdot 3 \cdot 5^3$        |
| 4) none                         | 30) $3^8$                          |
| 5) 3, 9                         | 31) 3                              |
| 6) 2–6, 10, 12                  | 32) 4                              |
| 7) 2, 5, 10                     | 33) 1                              |
| 8) 3                            | 34) 8                              |
| 9) 2, 5, 10                     | 35) 2                              |
| 10) 2, 4                        | 36) 12                             |
| 11) 3, 9                        | 37) 15                             |
| 12) 2, 4, 5, 10                 | 38) 2                              |
| 13) 3, 5, 9                     | 39) 72                             |
| 14) 2, 4, 8                     | 40) 22                             |
| 15) none                        | 41) 273                            |
| 16) $2 \cdot 3 \cdot 5$         | 42) 8                              |
| 17) $2^2 \cdot 11$              | 43) 18                             |
| 18) $2^4 \cdot 3$               | 44) 24                             |
| 19) $7^2$                       | 45) 45                             |
| 20) 31                          | 46) 54                             |
| 21) $2^5$                       | 47) 90                             |
| 22) $2^2 \cdot 3^3$             | 48) 280                            |
| 23) $2 \cdot 103$               | 49) 90                             |
| 24) $5^2 \cdot 11$              | 50) 102                            |
| 25) $2^9$                       | 51) 2310                           |
| 26) $2 \cdot 3 \cdot 5 \cdot 7$ | 52) 2520                           |