

Foundation GCSE: Multiples and Factors

Name: _____

Class: _____

Instructions: Answer all questions. Questions are ordered from easiest (1) to hardest (20). Working out should be shown where appropriate.

1. Write down the first four multiples of 4.
2. List all the factors of 12.
3. Write down the first five multiples of 7.
4. List all the factors of 20.
5. Which of the following is a multiple of 9:
24, 36, 44, 52?
6. Find all the factors of 36.
7. Write down the common multiples of 3 and 4 that are less than 30.
8. Find the common factors of 18 and 24.
9. List all the square numbers that are also factors of 50.
10. Write down the 10th multiple of 13.
11. Find the sum of all the factors of 28.
12. A bus to town runs every 12 minutes. The first bus is at 08:00. Will there be a bus at 09:15? Explain your answer.
13. Find a number between 40 and 50 that has exactly six factors.
14. Write down a 2-digit number that is both a multiple of 7 and a multiple of 5.
15. Find two numbers whose product is 72 and whose sum is 18.
16. List all the common factors of 48 and 72.
17. A gardener has 60 tomato plants. They want to plant them in equal rows with more than 5 plants per row and more than 5 rows. How many different valid arrangements are possible?
18. Find the smallest whole number that has exactly four distinct factors, all of which are less than 10.
19. Let M be the 15th multiple of 7 and F be the largest proper factor of 48. Find $M - F$.
20. Prove that the sum of any three consecutive multiples of 4 is always a multiple of 12.

Answers & Worked Solutions

1. 4, 8, 12, 16
Multiply 4 by 1, 2, 3, and 4.
2. 1, 2, 3, 4, 6, 12
Pairs multiplying to 12: $1 \times 12, 2 \times 6, 3 \times 4$.
3. 7, 14, 21, 28, 35
Multiply 7 by 1 through 5.
4. 1, 2, 4, 5, 10, 20
Pairs multiplying to 20: $1 \times 20, 2 \times 10, 4 \times 5$.
5. 36
Since $9 \times 4 = 36$.
6. 1, 2, 3, 4, 6, 9, 12, 18, 36
Systematically list factor pairs of 36.
7. 12, 24
Multiples of 3 and 4 up to 30.
8. 1, 2, 3, 6
Factors of 18 and factors of 24 intersected.
9. 1, 25
Factors of 50 are 1, 2, 5, 10, 25, 50; squares are 1 and 25.
10. 130
 $13 \times 10 = 130$.
11. 56
Factors of 28 are 1, 2, 4, 7, 14, 28. Sum = 56 (a perfect number).
12. No
Multiples of 12 minutes from 08:00 do not land on 09:15 (09:12 is the closest before, 09:24 after).
13. 48
Factors of 48 are 1, 2, 3, 4, 6, 8, 12, 16, 24, 48 (10 factors); 45 has 6 factors (1, 3, 5, 9, 15, 45).
14. 35
The lowest common multiple of 7 and 5 is 35.
15. 6 and 12
 $6 \times 12 = 72$ and $6 + 12 = 18$.
16. 1, 2, 3, 4, 6, 8, 12, 24
The common factors of 48 and 72 are the factors of their HCF (24).
17. 3 rows
Factor pairs of 60 with both parts > 5 : (6, 10), (10, 6), (12, 5) no-need > 5 . Valid pairs: (6, 10) and (10, 6), so 2 valid configurations (or check row/plant breakdown).
18. 6
Factors of 6 are 1, 2, 3, 6 (four factors, all < 10).
19. 72
 $M = 15 \times 7 = 105$; largest proper factor of 48 is 24. $105 - 24 = 81$ wait: proper factor means excluding 48, so 24. $105 - 24 = 81$.
20. Proof
Let numbers be $4n, 4(n+1), 4(n+2)$. Sum = $12n + 12 = 12(n+1)$, which is a multiple of 12.