MASTER MATHS GCSE

GCSE Mathematics 9-1

Factors, Multiples and Primes

(Non-Calculator)

Mark Scheme

Total available marks: 52

Q	Answer	Working	Mark
1	*A number with exactly two factors: 1 and itself* *e.g.* 7 is prime because its only factors are 1 and 7	Also accept: a number that can only be divided exactly by 1 and itself (1 is not prime)	1
2	*A number in that number's times table* *e.g.* the multiples of 4 are 4, 8, 12, 16, …	Also accept: the answer when you multiply the number by a whole number	1
3	*A number that divides into it exactly, with no remainder* *e.g.* 3 is a factor of 12	Also accept: a number that multiplies with another whole number to make it	1
4	*32, 34, 36 or 38* *e.g.* 34	Even numbers end in 0, 2, 4, 6 or 8	1
5	*Odd, with a reason* *e.g.* it ends in 7, so it cannot be divided exactly by 2	Odd numbers end in 1, 3, 5, 7 or 9	1
6	12, 30, 48	These end in 2, 0 and 8 (1 mark for two correct with no wrong ones)	2
7	23, 29	$9 = 3 \times 3$, $15 = 3 \times 5$, $21 = 3 \times 7$, $27 = 3 \times 9$ are not prime (1 mark for one correct with no wrong ones)	2
8	1, 2, 3, 6, 9, 18	Factor pairs: 1×18, 2×9, 3×6 (1 mark for at least four correct with no wrong ones)	2
9	1, 2, 3, 5, 6, 10, 15, 30	Factor pairs: 1×30, 2×15, 3×10, 5×6 (1 mark for at least six correct with no wrong ones)	2
10	1, 2, 3, 4, 6, 8, 12, 24	Factor pairs: 1×24, 2×12, 3×8, 4×6 (1 mark for at least six correct with no wrong ones)	2
11	7, 14, 21, 28, 35	7×1, 7×2, 7×3, 7×4, 7×5 (1 mark for at least three correct)	2
12	11, 13, 17, 19, 23, 29	Check each number for factors other than 1 and itself (1 mark for at least four correct with no wrong ones)	2

Q	Answer	Working	Mark
13	2, 3, 5, 7, 11, 13, 17, 19	Remember 2 is prime and 1 is not (1 mark for at least six correct with no wrong ones)	2
14	1, 2, 4	Factors of 12: 1, 2, 3, 4, 6, 12 Factors of 20: 1, 2, 4, 5, 10, 20 (1 mark for listing the factors of 12 or 20)	2
15	No, 1 only has one factor (a prime number has exactly two factors)	The only factor of 1 is 1	1
16	No, 2 is a prime number and it is even	2 has exactly two factors, 1 and 2	1
17	No, $51 = 3 \times 17$, so 51 has more than two factors	$5 + 1 = 6$, which is in the 3 times table, so 3 is a factor $51 \div 3 = 17$ (1 mark for finding a factor other than 1 and 51)	2
18(a)	*14 or 21* *e.g.* 14	$14 = 7 \times 2$, $21 = 7 \times 3$	1
18(b)	*2 or 16* *e.g.* 16	$48 \div 2 = 24$, $48 \div 16 = 3$	1
18(c)	2 and 31	2 and 31 only have the factors 1 and themselves	1
18(d)	*9, 21 or 25* *e.g.* 25	$9 = 3 \times 3$, $21 = 3 \times 7$, $25 = 5 \times 5$	1
19	*3 and 13, or 5 and 11* *e.g.* 5 and 11	Prime numbers less than 16: 2, 3, 5, 7, 11, 13 $3 + 13 = 16$ and $5 + 11 = 16$	2
20	24	Multiples of 4 between 20 and 30: 24, 28 24 is also a multiple of 6	2
21(a)	3, 15, 20	$60 \div 3 = 20$, $60 \div 15 = 4$, $60 \div 20 = 3$	1
21(b)	15, 20, 40	These end in 0 or 5	1
21(c)	3 and 11	$27 = 3 \times 9$ is not prime	1
22	31	Prime numbers between 30 and 40: 31 and 37 $3 + 1 = 4$	2

Q	Answer	Working	Mark
23	9	Factors of 36: 1, 2, 3, 4, 6, 9, 12, 18, 36 Odd ones: 1, 3, 9 Greater than 5: 9	2
24	10	Factors of 20: 1, 2, 4, 5, 10, 20 Multiples of 5 from these: 5, 10, 20 Even and less than 15: 10	2
25	No, 40 is not a multiple of 6	Multiples of 6: 36, 42 40 is not one of them $40 \div 6 = 6$ remainder 4 (1 mark for the working, 1 mark for No)	2
26	2, 3, 4, 6, 8	The number of friends must be a factor of 24 Factors of 24 between 2 and 10: 2, 3, 4, 6, 8 (1 mark for at least three correct with no wrong ones)	2
27	No, 36 is not a multiple of 8	Buses leave 8, 16, 24, 32, 40 minutes after 9:00 36 is not a multiple of 8 (1 mark for listing multiples of 8, 1 mark for No)	2
28	1 by 12, 2 by 6, 3 by 4	Each rectangle uses a factor pair of 12 1×12, 2×6, 3×4 (1 mark for two correct pairs)	2

Total available marks for this paper	**52**