2.85 Factors, Multiples and Primes Puzzle Set: 1-hour Pack

Total Marks

GL ASSESSMENT GL-11PLUS-MATHS · Calculators not allowed · about 60 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 What is the highest common factor of 72 and 42?

- ☐ A) 504
- ☐ B) 30
- ☐ C) 3,024
- ☐ D) 42
- ☐ E) 6

---

2 What is the lowest common multiple of 12 and 9?

- ☐ A) 72
- ☐ B) 108
- ☐ C) 3
- ☐ D) 36
- ☐ E) 37

---

3 Write 588 as a product of its prime factors.

- ☐ A) $2^3 \times 3 \times 7^2$
- ☐ B) $2^2 \times 3 \times 7^2$
- ☐ C) $2^2 \times 3^2 \times 7$
- ☐ D) $2 \times 3 \times 7$
- ☐ E) $3 \times 4 \times 4$

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4 Which of these numbers is a prime number?

- [ ] A) 91
- [ ] B) 133
- [ ] C) 77
- [ ] D) 49
- [ ] E) 109

---

5 Sienna has two ribbons, 52 cm and 12 cm long, and cuts both into equal pieces with no ribbon left over. What is the greatest possible length of each piece, in cm?

- [ ] A) 4
- [ ] B) 12
- [ ] C) 156
- [ ] D) 2
- [ ] E) 624

---

6 Two bells ring together at noon. One rings every 12 minutes and the other every 15 minutes. After how many minutes will they next ring together?

- [ ] A) 180
- [ ] B) 59
- [ ] C) 30
- [ ] D) 3
- [ ] E) 60

---

7 Write 280 as a product of its prime factors.

- [ ] A) 2^4 x 5 x 7
- [ ] B) 5 x 7 x 8
- [ ] C) 2 x 5 x 7^3
- [ ] D) 2^3 x 5 x 7
- [ ] E) 2^2 x 5 x 7

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8 Which of these numbers is a prime number?

- [ ] A) 119
- [ ] B) 83
- [ ] C) 51
- [ ] D) 49
- [ ] E) 95

---

9 How many different factors does 22 have?

- [ ] A) 4
- [ ] B) 40
- [ ] C) 5
- [ ] D) 3
- [ ] E) 2

---

10 What is the highest common factor of 126 and 180?

- [ ] A) 126
- [ ] B) 1,260
- [ ] C) 18
- [ ] D) 9
- [ ] E) 22,680

---

11 Write 450 as a product of its prime factors.

- [ ] A) 2 x 9 x 25
- [ ] B) 2^2 x 3 x 5^2
- [ ] C) 2 x 5^2
- [ ] D) 2^2 x 3^2 x 5^2
- [ ] E) 2 x 3^2 x 5^2

---

12 Which of these numbers is a prime number?

- [ ] A) 63
- [ ] B) 85
- [ ] C) 57
- [ ] D) 139
- [ ] E) 121

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13 How many factors does 15 have? (Include 1 and 15.)

- [ ] A) 40
- [ ] B) 2
- [ ] C) 4
- [ ] D) 5
- [ ] E) 3

---

14 What is the highest common factor of 304 and 208?

- [ ] A) 16
- [ ] B) 208
- [ ] C) 3,952
- [ ] D) 96
- [ ] E) 8

---

15 What is the lowest common multiple of 30 and 24?

- [ ] A) 54
- [ ] B) 60
- [ ] C) 6
- [ ] D) 120
- [ ] E) 720

---

16 Write 54 as a product of its prime factors.

- [ ] A) 2×3^3
- [ ] B) $2^3 \times 3$
- [ ] C) 2×27
- [ ] D) 2
- [ ] E) $2^2 \times 3^3$

---

17 How many different factors does 135 have?

- [ ] A) 2
- [ ] B) 9
- [ ] C) 6
- [ ] D) 7
- [ ] E) 8

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18 What is the highest common factor of 80 and 50?

- [ ] A) 5
- [ ] B) 400
- [ ] C) 10
- [ ] D) 50
- [ ] E) 4,000

---

19 Two bells ring together at noon. One rings every 30 minutes and the other every 14 minutes. After how many minutes will they next ring together?

- [ ] A) 2
- [ ] B) 209
- [ ] C) 60
- [ ] D) 210
- [ ] E) 420

---

20 Which of these numbers is a prime number?

- [ ] A) 17
- [ ] B) 133
- [ ] C) 33
- [ ] D) 143
- [ ] E) 77

---

21 How many different factors does 77 have?

- [ ] A) 40
- [ ] B) 4
- [ ] C) 5
- [ ] D) 2
- [ ] E) 3

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22 What is the highest common factor of 176 and 128?

- [ ] A) 128
- [ ] B) 1,408
- [ ] C) 16
- [ ] D) 22,528
- [ ] E) 48

---

23 Write 56 as a product of its prime factors.

- [ ] A) 2×7^3
- [ ] B) $2^3 \times 7$
- [ ] C) $2^2 \times 7$
- [ ] D) 2×7
- [ ] E) 8×8

---

24 Which of these numbers is a prime number?

- [ ] A) 49
- [ ] B) 133
- [ ] C) 77
- [ ] D) 143
- [ ] E) 53

---

25 How many factors does 110 have? (Include 1 and 110.)

- [ ] A) 6
- [ ] B) 7
- [ ] C) 3
- [ ] D) 8
- [ ] E) 9

---

26 What is the highest common factor of 150 and 45?

- [ ] A) 15
- [ ] B) 45
- [ ] C) 105
- [ ] D) 450
- [ ] E) 6,750

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27 What is the lowest common multiple of 15 and 10?

- ☐ A) 30
- ☐ B) 31
- ☐ C) 150
- ☐ D) 5
- ☐ E) 29

---

28 Write 525 as a product of its prime factors.

- ☐ A) 3^2 x 5 x 7
- ☐ B) 5^2 x 7
- ☐ C) 3^2 x 5^2 x 7
- ☐ D) 3 x 5^2 x 7
- ☐ E) 3 x 5 x 7

---

29 Which of these numbers is a prime number?

- ☐ A) 143
- ☐ B) 49
- ☐ C) 11
- ☐ D) 39
- ☐ E) 77

---

30 What is the highest common factor of 240 and 64?

- ☐ A) 960
- ☐ B) 64
- ☐ C) 176
- ☐ D) 8
- ☐ E) 16

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31 Two buses leave the station together at noon. One does so every 15 minutes and the other every 25 minutes. After how many minutes will they next do so together?

- [ ] A) 74
- [ ] B) 50
- [ ] C) 375
- [ ] D) 5
- [ ] E) 75

---

32 Write 150 as a product of its prime factors.

- [ ] A) $2^2 \times 3 \times 5^2$
- [ ] B) $2 \times 3 \times 5^2$
- [ ] C) 3×5^2
- [ ] D) $2^2 \times 3 \times 5$
- [ ] E) $2 \times 3 \times 5$

---

33 Which of these numbers is a prime number?

- [ ] A) 65
- [ ] B) 85
- [ ] C) 71
- [ ] D) 21
- [ ] E) 115

---

34 How many factors does 111 have? (Include 1 and 111.)

- [ ] A) 4
- [ ] B) 2
- [ ] C) 3
- [ ] D) 5
- [ ] E) 40

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35 What is the highest common factor of 208 and 160?

- [ ] A) 8
- [ ] B) 160
- [ ] C) 33,280
- [ ] D) 16
- [ ] E) 2,080

---

36 Write 98 as a product of its prime factors.

- [ ] A) 2×7^2
- [ ] B) 2×7
- [ ] C) 7^2
- [ ] D) $2^2 \times 7^2$
- [ ] E) $2^2 \times 7$

---

37 Which of these numbers is a prime number?

- [ ] A) 57
- [ ] B) 41
- [ ] C) 51
- [ ] D) 27
- [ ] E) 63

---

38 How many factors does 66 have? (Include 1 and 66.)

- [ ] A) 3
- [ ] B) 7
- [ ] C) 9
- [ ] D) 8
- [ ] E) 6

---

39 What is the highest common factor of 63 and 36?

- [ ] A) 252
- [ ] B) 36
- [ ] C) 9
- [ ] D) 10
- [ ] E) 2,268

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40 Two lighthouses flash together at noon. One does so every 6 seconds and the other every 8 seconds. After how many seconds will they next do so together?

- [ ] A) 48
- [ ] B) 24
- [ ] C) 25
- [ ] D) 2
- [ ] E) 14

---

41 Write 686 as a product of its prime factors.

- [ ] A) 2 x 7
- [ ] B) 2^3 x 7
- [ ] C) 7^3
- [ ] D) 2^2 x 7^3
- [ ] E) 2 x 7^3

---

42 How many factors does 102 have? (Include 1 and 102.)

- [ ] A) 8
- [ ] B) 7
- [ ] C) 6
- [ ] D) 4
- [ ] E) 3

---

43 Priya has two ribbons, 32 cm and 40 cm long, and cuts both into equal pieces with no ribbon left over. What is the greatest possible length of each piece, in cm?

- [ ] A) 160
- [ ] B) 1,280
- [ ] C) 32
- [ ] D) 8
- [ ] E) 4

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44 What is the lowest common multiple of 20 and 3?

- ☐ A) 23
- ☐ B) 40
- ☐ C) 60
- ☐ D) 120
- ☐ E) 1

---

45 Which of these numbers is a prime number?

- ☐ A) 95
- ☐ B) 21
- ☐ C) 39
- ☐ D) 119
- ☐ E) 131

---

46 How many factors does 35 have? (Include 1 and 35.)

- ☐ A) 2
- ☐ B) 5
- ☐ C) 3
- ☐ D) 4
- ☐ E) 40

---

47 Niamh has two ribbons, 132 cm and 252 cm long, and cuts both into equal pieces with no ribbon left over. What is the greatest possible length of each piece, in cm?

- ☐ A) 12
- ☐ B) 120
- ☐ C) 2,772
- ☐ D) 132
- ☐ E) 33,264

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48 Write 108 as a product of its prime factors.

- ☐ A) 2×3^3
- ☐ B) $2^2 \times 3^3$
- ☐ C) 4×27
- ☐ D) $2^3 \times 3^3$
- ☐ E) $2^3 \times 3^2$

---

49 Which of these numbers is a prime number?

- ☐ A) 71
- ☐ B) 65
- ☐ C) 119
- ☐ D) 77
- ☐ E) 121

---

50 How many different factors does 392 have?

- ☐ A) 13
- ☐ B) 11
- ☐ C) 2
- ☐ D) 12
- ☐ E) 10

---

51 Jack has two ribbons, 77 cm and 42 cm long, and cuts both into equal pieces with no ribbon left over. What is the greatest possible length of each piece, in cm?

- ☐ A) 35
- ☐ B) 42
- ☐ C) 3,234
- ☐ D) 462
- ☐ E) 7

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52 Two bells ring together at noon. One rings every 9 minutes and the other every 12 minutes. After how many minutes will they next ring together?

- [ ] A) 36
- [ ] B) 108
- [ ] C) 21
- [ ] D) 72
- [ ] E) 3

---

53 Write 375 as a product of its prime factors.

- [ ] A) $3^3 \times 5$
- [ ] B) 3×5
- [ ] C) 5^3
- [ ] D) $3^2 \times 5^3$
- [ ] E) 3×5^3

---

54 Which of these numbers is a prime number?

- [ ] A) 85
- [ ] B) 121
- [ ] C) 55
- [ ] D) 41
- [ ] E) 51

---

55 What is the highest common factor of 36 and 48?

- [ ] A) 6
- [ ] B) 144
- [ ] C) 12
- [ ] D) 1,728
- [ ] E) 36

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56 Two buses leave the station together at noon. One does so every 9 minutes and the other every 25 minutes. After how many minutes will they next do so together?

- [ ] A) 225
- [ ] B) 34
- [ ] C) 450
- [ ] D) 1
- [ ] E) 226

---

57 Write 45 as a product of its prime factors.

- [ ] A) 3^2
- [ ] B) 3^2 x 5
- [ ] C) 5 x 9
- [ ] D) 3 x 5^2
- [ ] E) 3 x 5

---

58 How many factors does 121 have? (Include 1 and 121.)

- [ ] A) 30
- [ ] B) 4
- [ ] C) 3
- [ ] D) 1
- [ ] E) 2

---

59 What is the highest common factor of 176 and 80?

- [ ] A) 80
- [ ] B) 880
- [ ] C) 8
- [ ] D) 14,080
- [ ] E) 16

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60 Two lighthouses flash together at noon. One does so every 3 seconds and the other every 10 seconds. After how many seconds will they next do so together?

- ☐ A) 29
- ☐ B) 60
- ☐ C) 1
- ☐ D) 13
- ☐ E) 30

---

61 Find the lowest common multiple (LCM) of 8 and 12.

(2)

---

62 Find the two-digit number between 1 and 100 that is a multiple of 7, is not a multiple of 3, and whose digits add to 7.

(2)

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Mark scheme · 2.85 Factors, Multiples and Primes Puzzle Set: 1-hour Pack

A correct answer earns full marks unless the question asks for working, a method, proof or explanation.

Question 1

correct option E (6) cao **B1**

Answer: E) 6

Question 2

correct option D (36) cao **B1**

Answer: D) 36

Question 3

correct option B (2^2 x 3 x 7^2) cao **B1**

Answer: B) 2^2 x 3 x 7^2

Question 4

correct option E (109) cao **B1**

Answer: E) 109

Question 5

correct option A (4) cao **B1**

Answer: A) 4

Question 6

correct option E (60) cao **B1**

Answer: E) 60

Question 7

correct option D (2^3 x 5 x 7) cao **B1**

Answer: D) 2^3 x 5 x 7

Question 8

correct option B (83) cao **B1**

Answer: B) 83

Question 9

correct option A (4) cao **B1**

Answer: A) 4

Question 10

correct option C (18) cao **B1**

Answer: C) 18

Question 11

correct option E (2 x 3^2 x 5^2) cao **B1**

Answer: E) 2 x 3^2 x 5^2

Question 12

correct option D (139) cao **B1**

Answer: D) 139

Question 13

correct option C (4) cao **B1**

Answer: C) 4

Question 14

correct option A (16) cao **B1**

Answer: A) 16

Question 15

correct option D (120) cao **B1**

Answer: D) 120

Question 16

correct option A (2 x 3^3) cao **B1**

Answer: A) 2 x 3^3

Question 17

correct option E (8) cao **B1**

Answer: E) 8

Question 18

correct option C (10) cao **B1**

Answer: C) 10

Question 19

correct option D (210) cao **B1**

Answer: D) 210

Question 20

correct option A (17) cao **B1**

Answer: A) 17

Question 21

correct option B (4) cao **B1**

Answer: B) 4

Question 22

correct option C (16) cao **B1**

Answer: C) 16

Question 23

correct option B (2^3 x 7) cao **B1**

Answer: B) 2^3 x 7

Question 24

correct option E (53) cao **B1**

Answer: E) 53

Question 25

correct option D (8) cao **B1**

Answer: D) 8

Question 26

correct option A (15) cao **B1**

Answer: A) 15

Question 27

correct option A (30) cao **B1**

Answer: A) 30

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Question 28

correct option D ($3 \times 5^2 \times 7$) cao **B1**

Answer: D) $3 \times 5^2 \times 7$

Question 29

correct option C (11) cao **B1**

Answer: C) 11

Question 30

correct option E (16) cao **B1**

Answer: E) 16

Question 31

correct option E (75) cao **B1**

Answer: E) 75

Question 32

correct option B ($2 \times 3 \times 5^2$) cao **B1**

Answer: B) $2 \times 3 \times 5^2$

Question 33

correct option C (71) cao **B1**

Answer: C) 71

Question 34

correct option A (4) cao **B1**

Answer: A) 4

Question 35

correct option D (16) cao **B1**

Answer: D) 16

Question 36

correct option A (2×7^2) cao **B1**

Answer: A) 2×7^2

Question 37

correct option B (41) cao **B1**

Answer: B) 41

Question 38

correct option D (8) cao **B1**

Answer: D) 8

Question 39

correct option C (9) cao **B1**

Answer: C) 9

Question 40

correct option B (24) cao **B1**

Answer: B) 24

Question 41

correct option E (2×7^3) cao **B1**

Answer: E) 2×7^3

Question 42

correct option A (8) cao **B1**

Answer: A) 8

Question 43

correct option D (8) cao **B1**

Answer: D) 8

Question 44

correct option C (60) cao **B1**

Answer: C) 60

Question 45

correct option E (131) cao **B1**

Answer: E) 131

Question 46

correct option D (4) cao **B1**

Answer: D) 4

Question 47

correct option A (12) cao **B1**

Answer: A) 12

Question 48

correct option B ($2^2 \times 3^3$) cao **B1**

Answer: B) $2^2 \times 3^3$

Question 49

correct option A (71) cao **B1**

Answer: A) 71

Question 50

correct option D (12) cao **B1**

Answer: D) 12

Question 51

correct option E (7) cao **B1**

Answer: E) 7

Question 52

correct option A (36) cao **B1**

Answer: A) 36

Question 53

correct option E (3×5^3) cao **B1**

Answer: E) 3×5^3

Question 54

correct option D (41) cao **B1**

Answer: D) 41

Question 55

correct option C (12) cao **B1**

Answer: C) 12

Question 56

correct option A (225) cao **B1**

Answer: A) 225

Question 57

correct option B ($3^2 \times 5$) cao **B1**

Answer: B) $3^2 \times 5$

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Question 58

correct option C (3) cao **B1**

Answer: C) 3

Question 59

correct option E (16) cao **B1**

Answer: E) 16

Question 60

correct option E (30) cao **B1**

Answer: E) 30

Question 61

method seen: $8=2^3$, $12=2^2*3$ so LCM = 2^3*3 or equivalent **M1**

24 cao **A1**

Answer: 24

Question 62

method to list two-digit multiples of 7 and check digit sum and divisibility by 3 seen (e.g. multiples: 14,21,28,...,98) **M1**

70 cao **A1**

Answer: 70

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