2.85 Factors, Multiples and Primes Puzzle Set: 30-minute Pack

Total Marks

GL ASSESSMENT GL-11PLUS-MATHS · Calculators not allowed · about 30 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Which of the following is a prime number?

- ☐ A) 51
- ☐ B) 57
- ☐ C) 59
- ☐ D) 63
- ☐ E) 65

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2 Which of the following is NOT a factor of 360?

- ☐ A) 5
- ☐ B) 6
- ☐ C) 9
- ☐ D) 10
- ☐ E) 7

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3 Which of these numbers has exactly three positive factors?

- ☐ A) 48
- ☐ B) 49
- ☐ C) 50
- ☐ D) 51
- ☐ E) 52

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4 How many different factors does 125 have?

- [ ] A) 5
- [ ] B) 4
- [ ] C) 2
- [ ] D) 1
- [ ] E) 3

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5 What is the highest common factor of 8 and 18?

- [ ] A) 10
- [ ] B) 72
- [ ] C) 2
- [ ] D) 8
- [ ] E) 144

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6 Two lighthouses flash together at noon. One does so every 4 seconds and the other every 25 seconds. After how many seconds will they next do so together?

- [ ] A) 200
- [ ] B) 101
- [ ] C) 1
- [ ] D) 99
- [ ] E) 100

---

7 Write 540 as a product of its prime factors.

- [ ] A) $2 \times 3^3 \times 5$
- [ ] B) $2^2 \times 3^3$
- [ ] C) $2 \times 3^2 \times 5^3$
- [ ] D) $2^2 \times 3^3 \times 5$
- [ ] E) $4 \times 4 \times 5$

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8 How many different factors does 65 have?

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

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9 What is the highest common factor of 320 and 380?

- [ ] A) 121,600
- [ ] B) 6,080
- [ ] C) 20
- [ ] D) 10
- [ ] E) 320

---

10 Two bells ring together at noon. One rings every 21 minutes and the other every 20 minutes. After how many minutes will they next ring together?

- [ ] A) 840
- [ ] B) 420
- [ ] C) 1
- [ ] D) 42
- [ ] E) 41

---

11 Which of these numbers is a prime number?

- [ ] A) 21
- [ ] B) 87
- [ ] C) 119
- [ ] D) 85
- [ ] E) 29

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12 How many factors does 90 have? (Include 1 and 90.)

- [ ] A) 12
- [ ] B) 10
- [ ] C) 11
- [ ] D) 3
- [ ] E) 13

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13 What is the highest common factor of 30 and 65?

- [ ] A) 30
- [ ] B) 390
- [ ] C) 5
- [ ] D) 35
- [ ] E) 6

---

14 Write 140 as a product of its prime factors.

- [ ] A) $2^2 \times 7$
- [ ] B) $2^3 \times 5 \times 7$
- [ ] C) $2 \times 5 \times 7^2$
- [ ] D) $4 \times 4 \times 5$
- [ ] E) $2^2 \times 5 \times 7$

---

15 Which of these numbers is a prime number?

- [ ] A) 39
- [ ] B) 143
- [ ] C) 119
- [ ] D) 127
- [ ] E) 49

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16 How many different factors does 20 have?

- [ ] A) 3
- [ ] B) 5
- [ ] C) 6
- [ ] D) 4
- [ ] E) 2

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17 What is the highest common factor of 40 and 140?

- [ ] A) 20
- [ ] B) 40
- [ ] C) 10
- [ ] D) 280
- [ ] E) 100

---

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

- [ ] A) 3
- [ ] B) 120
- [ ] C) 240
- [ ] D) 48
- [ ] E) 360

---

19 Write 294 as a product of its prime factors.

- [ ] A) $2 \times 3 \times 7^2$
- [ ] B) $2^2 \times 3 \times 7^2$
- [ ] C) $2 \times 2 \times 49$
- [ ] D) $2 \times 3 \times 7$
- [ ] E) $2 \times 3^2 \times 7$

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20 Which of these numbers is a prime number?

- [ ] A) 133
- [ ] B) 87
- [ ] C) 55
- [ ] D) 19
- [ ] E) 27

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21 Hamza has two ribbons, 18 cm and 48 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) 30
- [ ] B) 864
- [ ] C) 18
- [ ] D) 144
- [ ] E) 6

---

22 Two buses leave the station together at noon. One does so every 4 minutes and the other every 14 minutes. After how many minutes will they next do so together?

- [ ] A) 28
- [ ] B) 2
- [ ] C) 29
- [ ] D) 18
- [ ] E) 56

---

23 Write 500 as a product of its prime factors.

- [ ] A) $2^3 \times 5^2$
- [ ] B) $2^3 \times 5^3$
- [ ] C) $2^2 \times 5^3$
- [ ] D) 4 x 4
- [ ] E) 5^3

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24 How many factors does 87 have? (Include 1 and 87.)

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

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25 What is the highest common factor of 238 and 266?

- [ ] A) 4,522
- [ ] B) 238
- [ ] C) 63,308
- [ ] D) 7
- [ ] E) 14

---

26 What is the lowest common multiple of 9 and 14?

- [ ] A) 252
- [ ] B) 28
- [ ] C) 126
- [ ] D) 23
- [ ] E) 1

---

27 Which of these numbers is a prime number?

- [ ] A) 71
- [ ] B) 51
- [ ] C) 115
- [ ] D) 49
- [ ] E) 95

---

28 How many different factors does 75 have?

- [ ] A) 2
- [ ] B) 5
- [ ] C) 7
- [ ] D) 6
- [ ] E) 4

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29 A number between 1 and 200 is divisible by both 4 and 9, but it is not divisible by 8. Give the smallest such number.

(2)

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30 Work out the highest common factor (HCF) of 48 and 180.

(2)

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Mark scheme · 2.85 Factors, Multiples and Primes Puzzle Set: 30-minute Pack

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

Question 1

correct option C (59) cao **B1**

Answer: C) 59

Question 2

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

Answer: E) 7

Question 3

correct option B (49) cao **B1**

Answer: B) 49

Question 4

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

Answer: B) 4

Question 5

correct option C (2) cao **B1**

Answer: C) 2

Question 6

correct option E (100) cao **B1**

Answer: E) 100

Question 7

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

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

Question 8

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

Answer: A) 4

Question 9

correct option C (20) cao **B1**

Answer: C) 20

Question 10

correct option B (420) cao **B1**

Answer: B) 420

Question 11

correct option E (29) cao **B1**

Answer: E) 29

Question 12

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

Answer: A) 12

Question 13

correct option C (5) cao **B1**

Answer: C) 5

Question 14

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

Answer: E) 2^2 x 5 x 7

Question 15

correct option D (127) cao **B1**

Answer: D) 127

Question 16

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

Answer: C) 6

Question 17

correct option A (20) cao **B1**

Answer: A) 20

Question 18

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

Answer: B) 120

Question 19

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

Answer: A) 2 x 3 x 7^2

Question 20

correct option D (19) cao **B1**

Answer: D) 19

Question 21

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

Answer: E) 6

Question 22

correct option A (28) cao **B1**

Answer: A) 28

Question 23

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

Answer: C) 2^2 x 5^3

Question 24

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

Answer: B) 4

Question 25

correct option E (14) cao **B1**

Answer: E) 14

Question 26

correct option C (126) cao **B1**

Answer: C) 126

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Question 27

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

Answer: A) 71

Question 28

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

Answer: D) 6

Question 29

method seen: number must be multiple of LCM(4,9)=36 and check multiples **M1**

36 cao **A1**

Answer: 36

Question 30

correct method: prime factors or common factor list seen (e.g. $48=2^4*3$, $180=2^2*3^2*5$) or equivalent **M1**

12 cao **A1**

Answer: 12

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