1.11D Factors and Multiples: Fluency and Exam Drill

Total Marks

EDEXCEL Edexcel 1MA1 · Calculator allowed · about 45 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Write down all the factors of 24.

(Total for Question 1 is 1 mark)

2 Write down the first five multiples of 7 that are less than 40.

(Total for Question 2 is 1 mark)

3 Is 29 a prime number? State your answer.

(Total for Question 3 is 1 mark)

4 Work out the highest common factor (HCF) of 42 and 56.

(Total for Question 4 is 2 marks)

5 Work out the least common multiple (LCM) of 6 and 15.

(Total for Question 5 is 2 marks)

6 Write 180 as a product of prime factors.

(Total for Question 6 is 2 marks)

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7 Work out the smallest positive integer that is a multiple of 4, 6 and 9.

(Total for Question 7 is 2 marks)

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8 Sam and Aisha practise the same music piece in cycles. Sam repeats it every 8 days, Aisha every 12 days. If they both practise today, after how many days will they next practise together?

(Total for Question 8 is 2 marks)

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9 List all factors of 90 that are also multiples of 3.

(Total for Question 9 is 2 marks)

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10 Decide whether 51 is prime or composite. Give a short reason.

(Total for Question 10 is 1 mark)

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11 Priya has two ribbons of lengths 24 m and 40 m. She wants to cut both ribbons into identical shorter pieces with integer lengths and no waste. Work out the greatest possible length of each piece in metres.

(Total for Question 11 is 2 marks)

12 Work out the least common multiple of 14, 21 and 35.

(Total for Question 12 is 2 marks)

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13 How many prime numbers are there between 1 and 50 inclusive?

(Total for Question 13 is 1 mark)

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14 Show that 123456 is divisible by 3.

(Total for Question 14 is 2 marks)

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15 Two positive integers have HCF 6 and LCM 84. Work out the product of the two integers.

(Total for Question 15 is 2 marks)

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16 Work out the smallest 3-digit integer that is divisible by both 11 and 13.

(Total for Question 16 is 1 mark)

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17 The Year 7 class has football training every 5 days and the Year 8 class every 7 days. If both classes have training on Monday, after how many days will they next have training on the same day?

(Total for Question 17 is 2 marks)

18 How many positive integers less than 100 are divisible by at least one of 2, 3 or 5? Show your working.

(Total for Question 18 is 3 marks)

Mark scheme · 1.11D Factors and Multiples: Fluency and Exam Drill

Question 1

- **B1** All factors listed: 1, 2, 3, 4, 6, 8, 12, 24 cao
- **Answer: 1, 2, 3, 4, 6, 8, 12, 24 (any order accepted)**

Question 2

- **B1** Multiples: 7, 14, 21, 28, 35 cao
- **Answer: 7, 14, 21, 28, 35**

Question 3

- **B1** 29 is prime cao
- **Answer: 29 is prime.**

Question 4

- **M1** Correct method: list common factors or prime factorisation (e.g. 42 = 2*3*7, 56 = 2^3*7) or explicit common factors
- **A1** 14 cao
- **Answer: 14**

Question 5

- **M1** Correct method: prime factors or listing multiples (6 = 2*3, 15 = 3*5 so LCM = 2*3*5)
- **A1** 30 cao
- **Answer: 30**

Question 6

- **M1** Correct factor tree or prime factor method shown (e.g. 180 ÷ 2 = 90, etc.)
- **A1** 180 = 2^2 * 3^2 * 5 cao
- **Answer: 2^2 * 3^2 * 5**

Question 7

- **M1** Correct method: prime factors or pairwise LCMs (4 = 2^2, 6 = 2*3, 9 = 3^2 so LCM = 2^2 * 3^2)
- **A1** 36 cao
- **Answer: 36**

Question 8

- **M1** Find LCM of 8 and 12 (method shown)
- **A1** 24 days cao
- **Answer: 24 days**

Question 9

- **M1** Correct method: list factors of 90 or note factors that are divisible by 3
- **A1** 3, 6, 9, 15, 18, 30, 45, 90 cao
- **Answer: 3, 6, 9, 15, 18, 30, 45, 90 (any order)**

Question 10

- **B1** 51 is composite, e.g. 51 = 3 * 17 cao
- **Answer: Composite, because 51 = 3 * 17.**

Question 11

- **M1** Correct method to find HCF of 24 and 40 (e.g. prime factors or Euclid's algorithm)
- **A1** 8 metres cao
- **Answer: 8 m**

Question 12

- **M1** Correct method: prime factors (14 = 2*7, 21 = 3*7, 35 = 5*7) and combine
- **A1** 210 cao
- **Answer: 210**

Question 13

- **B1** 15 cao
- **Answer: 15**

Question 14

- **M1** Use digit sum method: 1+2+3+4+5+6 = 21
- **A1** Therefore 123456 is divisible by 3 cso
- **Answer: Digits sum to 21 and 21 is divisible by 3, so 123456 is divisible by 3.**

Question 15

- **M1** Use property: product = HCF * LCM for two integers
- **A1** 504 cao
- **Answer: 504**

Question 16

- **B1** 143 cao
- **Answer: 143**

Question 17

- **M1** Find LCM of 5 and 7 (method shown)
- **A1** 35 days cao
- **Answer: 35 days**

Question 18

- **M1** Count multiples: floor(99/2)=49, floor(99/3)=33, floor(99/5)=19
- **M1** Subtract pairwise intersections floor(99/6)=16, floor(99/10)=9, floor(99/15)=6
- **A1** Apply inclusion-exclusion: 49+33+19 -16-9-6 +3 = 73 cao
- **Answer: 73**