FOUNDATION

1.11 Factors and Multiples: 1-hour Pack

EDEXCEL 1MA1 · Calculator allowed · about 60 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Write down all the factors of 20.

(Total for Question 1 is 2 marks)

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2 Write down all the prime numbers between 29 and 49 inclusive. If there is none, write none.

(Total for Question 2 is 2 marks)

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3 Write down all the factors of 64.

(Total for Question 3 is 2 marks)

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4 Here is a list of numbers: 12, 15, 31, 40, 14, 26. From the list, write down (a) the multiples of 9, (b) the multiples of 3. If there are none, write none.

(Total for Question 4 is 2 marks)

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5 Write down all the prime numbers between 28 and 41 inclusive. If there is none, write none.

(Total for Question 5 is 2 marks)

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6 Write down all the factors of 56.

(Total for Question 6 is 2 marks)

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7 Bus A leaves the station every 3 minutes. Bus B leaves the station every 5 minutes. They both leave at 9:00 am. After how many minutes do they next leave together?

(Total for Question 7 is 3 marks)

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8 Here is a list of numbers: 45, 59, 18, 16, 44, 21. From the list, write down (a) the multiples of 4, (b) the multiples of 8. If there are none, write none.

(Total for Question 8 is 2 marks)

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9 Write down all the factors of 40.

(Total for Question 9 is 2 marks)

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10 Here is a list of numbers.
2, 3, 4, 5, 6, 7, 8, 9, 10, 11

(a) From the list, write down all the prime numbers. **(2)**

.....

(b) From the list, write down all the square numbers. **(1)**

.....

(Total for Question 10 is 3 marks)

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11 Bus A leaves the station every 10 minutes. Bus B leaves the station every 6 minutes. They both leave at 9:00 am. After how many minutes do they next leave together?

(Total for Question 11 is 3 marks)

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12 Which of these numbers is a factor of 45?

- ☐ A) 6
- ☐ B) 9
- ☐ C) 14
- ☐ D) 20

(Total for Question 12 is 1 mark)

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13 9 and 12 are two numbers. Find their Lowest Common Multiple (LCM).

(Total for Question 13 is 2 marks)

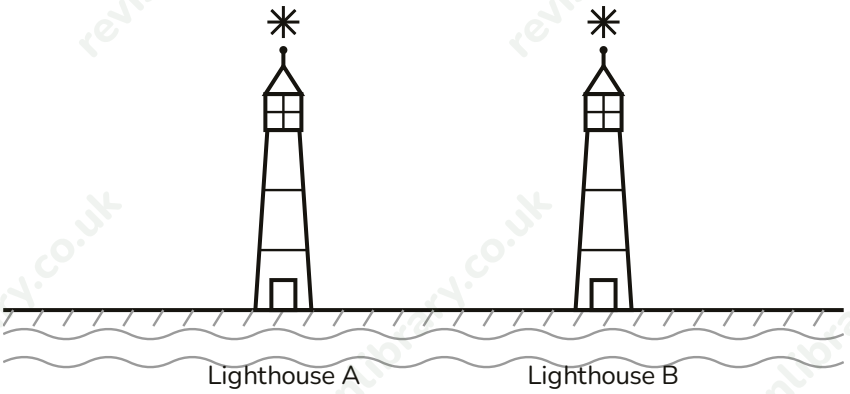
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14 Is 29 a prime number? State your answer.

(Total for Question 14 is 1 mark)

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15 Two lighthouses flash together at 8:00 pm. Lighthouse A then flashes every 15 seconds. Lighthouse B then flashes every 20 seconds. Work out how many seconds after 8:00 pm the two lighthouses will next flash together.



(Total for Question 15 is 3 marks)

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16 Explain why 2 is the only even prime number.

(Total for Question 16 is 2 marks)

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17 Show that 8 is a common factor of 56 and 72.

(Total for Question 17 is 2 marks)

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18 Zara says, 'If a number is a factor of 20, it must also be a factor of 30.' Is Zara correct? Give a reason for your answer.

(Total for Question 18 is 2 marks)

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19 List all the common factors of 48 and 72.

(Total for Question 19 is 2 marks)

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20 A whole number has these three properties:
- it is a multiple of 6
- it is a factor of 90
- it is greater than 20 and less than 50

Find the number.

(Total for Question 20 is 3 marks)

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

(Total for Question 21 is 3 marks)

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Mark scheme · 1.11 Factors and Multiples: 1-hour Pack

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

Question 1

at least 4 correct factors identified	**B1**
fully correct set 1, 2, 4, 5, 10, 20 with no extra numbers, oe order	**B1**

Answer: 1, 2, 4, 5, 10, 20

Question 2

tests numbers for factors other than 1 and itself	**M1**
all primes and no others	**A1**

Answer: 29, 31, 37, 41, 43, 47

Question 3

at least half of the factors listed, or factor pairs seen	**M1**
all factors, no extras	**A1**

Answer: 1, 2, 4, 8, 16, 32, 64

Question 4

multiples of 9 correct	**B1**
multiples of 3 correct	**B1**

Answer: multiples of 9: none; multiples of 3: 12, 15

Question 5

tests numbers for factors other than 1 and itself	**M1**
all primes and no others	**A1**

Answer: 29, 31, 37, 41

Question 6

at least half of the factors listed, or factor pairs seen	**M1**
all factors, no extras	**A1**

Answer: 1, 2, 4, 7, 8, 14, 28, 56

Question 7

lists multiples of 3 and 5	**M1**
identifies a common multiple	**M1**
15 minutes cao	**A1**

Answer: 15 minutes

Question 8

multiples of 4 correct	**B1**
multiples of 8 correct	**B1**

Answer: multiples of 4: 16, 44; multiples of 8: 16

Question 9

at least half of the factors listed, or factor pairs seen	**M1**
all factors, no extras	**A1**

Answer: 1, 2, 4, 5, 8, 10, 20, 40

Question 10

(a) at least 3 correct primes with no more than 1 non-prime included	**B1**
(a) fully correct set 2, 3, 5, 7, 11 cao	**B1**

(a) Answer: 2, 3, 5, 7, 11

(b) 4 and 9 cao, both values with no extras	**B1**

(b) Answer: 4, 9

Question 11

lists multiples of 10 and 6	**M1**
identifies a common multiple	**M1**
30 minutes cao	**A1**

Answer: 30 minutes

Question 12

B (9) cao	**B1**

Answer: B) 9

Question 13

correct list of multiples of 9 (9,18,27,36,...) and 12 (12,24,36,...), or other correct method	**M1**
36 cao	**A1**

Answer: 36

Question 14

29 is prime cao	**B1**

Answer: 29 is prime.

Question 15

identifying that the LCM of 15 and 20 is required	**M1**
correct multiples of 15 (15,30,45,60) and 20 (20,40,60) or other valid method	**M1**
60 seconds cao (accept 1 minute)	**A1**

Answer: 60 seconds

Question 16

recognising that every even number greater than 2 has 2 as a factor as well as 1 and itself, so it has more than two factors	**B1**
concluding that 2 itself only has the factors 1 and 2, so 2 is prime, oe	**B1**

Answer: Every even number greater than 2 can be divided exactly by 2, so it has at least three factors (1, 2 and itself), meaning it cannot be prime. 2 itself has only the factors 1 and 2, so 2 is prime and is the only even prime number.

Question 17

56 / 8 = 7 (or 8 x 7 = 56) shown	**B1**
72 / 8 = 9 (or 8 x 9 = 72) shown, cso	**B1**

Answer: 8 is a common factor of 56 and 72 (56 = 8x7, 72 = 8x9)

Question 18

No, Zara is not correct	**B1**
valid counterexample given, e.g. 4 is a factor of 20 (20=4x5) but 4 is not a factor of 30 (30/4=7.5), oe	**B1**

Answer: No, Zara is not correct

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Question 19

Correct method: list factors of 48 and 72, or find HCF(48,72) = 24	**M1**
1, 2, 3, 4, 6, 8, 12, 24 cao	**A1**

Answer: 1, 2, 3, 4, 6, 8, 12, 24 (any order)

Question 20

correct factors of 90 listed: 1, 2, 3, 5, 6, 9, 10, 15, 18, 30, 45, 90 (or equivalent method)	**M1**
correctly identifies which of these are multiples of 6: 6, 18, 30, 90	**M1**
30 cao	**A1**

Answer: 30

Question 21

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	**M1**
Apply inclusion-exclusion: 49+33+19 -16-9-6 +3 = 73 cao	**A1**

Answer: 73

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