FOUNDATION

1.11 Factors and Multiples: Test Pack

EDEXCEL 1MA1 · Calculator allowed · about 60 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Write down the first five multiples of 7.

(Total for Question 1 is 1 mark)

2 Write down all the prime numbers between 19 and 31 inclusive. If there is none, write none.

(Total for Question 2 is 2 marks)

3 Here is a list of numbers: 10, 16, 34, 48, 32, 29. From the list, write down (a) the multiples of 2, (b) the multiples of 10. If there are none, write none.

(Total for Question 3 is 2 marks)

4 Which of these numbers is NOT a factor of 40?

- ☐ A) 5
- ☐ B) 8
- ☐ C) 9
- ☐ D) 10

(Total for Question 4 is 1 mark)

© Revision Library | revisionlibrary.co.uk

5 28 and 42 are two numbers. Find their Highest Common Factor (HCF).

(Total for Question 5 is 2 marks)

---

6 Decide whether the statement "every prime number is odd" is true or false. Give a reason for your answer.

(Total for Question 6 is 1 mark)

---

7 Find the Lowest Common Multiple (LCM) of 5, 6 and 9.

(Total for Question 7 is 3 marks)

---

8 Sam says, "If a number is a multiple of 6, it must also be a multiple of 3." Is Sam correct? Give a reason for your answer.

(Total for Question 8 is 2 marks)

---

9 Explain why every multiple of 10 is also a multiple of 5.

(Total for Question 9 is 2 marks)

© Revision Library | revisionlibrary.co.uk

10 State whether each statement about the number 84 is True or False.

(a) 84 is a multiple of 9. **(1)**

(b) 84 is a factor of 168. **(1)**

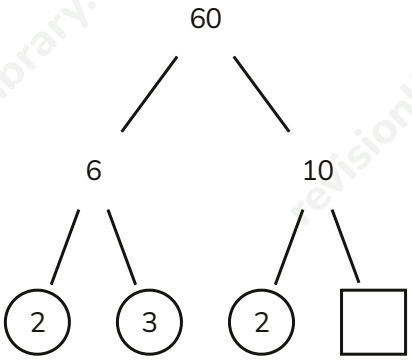
(c) 84 is a prime number. **(1)**

(d) The Highest Common Factor of 84 and 36 is 12. **(1)**

(Total for Question 10 is 4 marks)

---

11 Here is a factor tree for 60. Complete the missing part of the tree, then write 60 as a product of its prime factors.



(Total for Question 11 is 2 marks)

---

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

(Total for Question 12 is 1 mark)

© Revision Library | revisionlibrary.co.uk

13 Write 180 as a product of prime factors.

(Total for Question 13 is 2 marks)

---

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

(Total for Question 14 is 2 marks)

---

15 The numbers 36, 44, 54, 68 and 90 are written on cards.
Sort the cards into two groups: multiples of 6, and numbers that are not multiples of 6.

(Total for Question 15 is 1 mark)

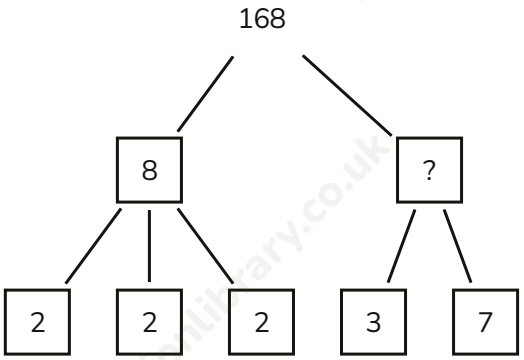
---

16 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 16 is 2 marks)

© Revision Library | revisionlibrary.co.uk

17 The diagram shows part of a factor tree for 168: 168 splits into two branches, 8 and a box marked with a question mark. The branch showing 8 splits further into three boxes: 2, 2 and 2. The box marked with a question mark splits into two boxes: 3 and 7. Work out the number in the box marked with a question mark, and use it to write 168 as a product of its prime factors.



(Total for Question 17 is 2 marks)

---

18 Write 60/84 in its simplest form. Show how you used the highest common factor of 60 and 84 to simplify it.

(Total for Question 18 is 2 marks)

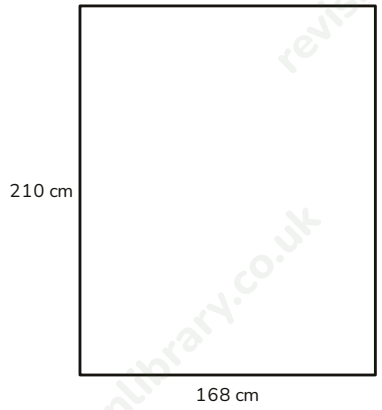
---

19 A student's working to find the lowest common multiple of 8 and 20 is shown below.
Line 1: 8 = 2 x 2 x 2
Line 2: 20 = 2 x 2 x 5
Line 3: LCM = 2 x 2 x 5 = 20
Identify which line contains an error, and write down the correct value of the LCM.

(Total for Question 19 is 2 marks)

© Revision Library | revisionlibrary.co.uk

20 A patio measuring 168 cm by 210 cm is to be covered exactly with square paving slabs, using whole slabs only and no cutting. Work out the side length of the largest possible square slab, and the number of slabs needed to cover the patio.



(Total for Question 20 is 3 marks)

---

21 Show that the lowest common multiple of 12, 18 and 45 is 180.

(Total for Question 21 is 2 marks)

---

22 How many positive integers less than 150 are divisible by exactly one of 3 or 5 (that is, divisible by 3 or by 5, but not both)? Show your working.

(Total for Question 22 is 3 marks)

© Revision Library | revisionlibrary.co.uk

Mark scheme · 1.11 Factors and Multiples: Test Pack

Question 1

7, 14, 21, 28, 35 all correct **B1**

Answer: 7, 14, 21, 28, 35

Question 2

tests numbers for factors other than 1 and itself **M1**

all primes and no others **A1**

Answer: 19, 23, 29, 31

Question 3

multiples of 2 correct **B1**

multiples of 10 correct **B1**

Answer: multiples of 2: 10, 16, 34, 48, 32; multiples of 10: 10

Question 4

C (9) cao **B1**

Answer: C) 9

Question 5

correct list of factors of 28 (1,2,4,7,14,28) and 42 (1,2,3,6,7,14,21,42), or other correct method **M1**

14 cao **A1**

Answer: 14

Question 6

False, with 2 identified as a prime, even counter-example cao **B1**

Answer: False, because 2 is a prime number and 2 is even.

Question 7

correct multiples of at least two of the three numbers **M1**

correct multiples of all three numbers leading to a common value, e.g. multiples of 5 up to 90, multiples of 6 up to 90, multiples of 9 up to 90 **M1**

90 cao **A1**

Answer: 90

Question 8

Yes, Sam is correct **B1**

valid reason, e.g. 6 = 2 x 3, so any multiple of 6 is 6 x k = 3 x (2k), which is a multiple of 3, oe **B1**

Answer: Yes, Sam is correct

Question 9

recognising that 10 = 5 x 2 (or 10 is itself a multiple of 5), oe **B1**

concluding that any multiple of 10 can be written as 10k = 5 x (2k), which is a multiple of 5, oe **B1**

Answer: 10 = 5 x 2, so any multiple of 10 is 10 x k = 5 x (2k) for some whole number k, which is always a multiple of 5.

Question 10

(a) False cao, since 84/9 = 9.33... is not a whole number **B1**

(a) Answer: False

(b) True cao, since 168 = 84 x 2 **B1**

(b) Answer: True

(c) False cao, since 84 = 2 x 2 x 3 x 7 has factors other than 1 and itself **B1**

(c) Answer: False

(d) True cao **B1**

(d) Answer: True

Question 11

the missing branch correctly completed as 5 **M1**

60 = 2 x 2 x 3 x 5 (or 2^2 x 3 x 5) oe, cao **A1**

Answer: Missing branch = 5; 60 = 2 x 2 x 3 x 5 (or 2^2 x 3 x 5)

Question 12

15 cao **B1**

Answer: 15

Question 13

Correct factor tree or prime factor method shown (e.g. 180 ÷ 2 = 90, etc.) **M1**

180 = 2^2 * 3^2 * 5 cao **A1**

Answer: 2^2 * 3^2 * 5

Question 14

Correct method: list factors of 90 or note factors that are divisible by 3 **M1**

3, 6, 9, 15, 18, 30, 45, 90 cao **A1**

Answer: 3, 6, 9, 15, 18, 30, 45, 90 (any order)

Question 15

Multiples of 6: 36, 54, 90; not multiples of 6: 44, 68 cao (all five correctly sorted) **B1**

Answer: Multiples of 6: 36, 54, 90. Not multiples of 6: 44, 68.

Question 16

Correct method to find HCF of 24 and 40 (e.g. prime factors or Euclid's algorithm) **M1**

8 metres cao **A1**

Answer: 8 m

Question 17

Missing branch value found: 168 / 8 = 21 (oe) **M1**

168 = 2^3 x 3 x 7 cao (allow 2 x 2 x 2 x 3 x 7) **A1**

Answer: The missing box shows 21; 168 = 2^3 x 3 x 7.

Question 18

Finds HCF(60,84) = 12 (method shown) **M1**

5/7 cao **A1**

Answer: 5/7

© Revision Library | revisionlibrary.co.uk

Question 19

Line 3 identified as the error: the highest power of 2 seen is 2^3 (from 8), not 2^2, so 2^3 should have been used (oe)	**M1**
40 cao	**A1**

Answer: Line 3 contains the error; the correct LCM is 40.

Question 20

Finds HCF of 168 and 210 (method shown)	**M1**
Side length 42 cm cao	**A1**
20 slabs cao, ft from their side length: (168 / their side) x (210 / their side)	**A1**

Answer: Side length 42 cm; 20 slabs needed.

Question 21

Prime factorises all three: $12 = 2^2 \times 3$, $18 = 2 \times 3^2$, $45 = 3^2 \times 5$	**M1**
Takes the highest power of each prime and multiplies: $2^2 \times 3^2 \times 5 = 180$ cso	**A1**

Answer: 180 (shown: $2^2 \times 3^2 \times 5 = 180$)

Question 22

Counts multiples of 3 and of 5 up to 149: floor(149/3) = 49, floor(149/5) = 29	**M1**
Counts multiples of 15 (both) = floor(149/15) = 9 and combines correctly, e.g. (49 - 9) + (29 - 9), oe	**M1**
60 cao	**A1**

Answer: 60

© Revision Library | revisionlibrary.co.uk