Topic 15 - Factors & Multiples

1 How many whole numbers between 1 and 100 are multiples of 3, but are not multiples of 8?

You should include 3 itself.

A   21

B   25

C   27

D   29

E   33

2

Kim and Jamie each think of a different whole number that is greater than zero and less than 50.

Kim's number is a multiple of 5.

Jamie's number is an even number which is a multiple of 7.

What is the difference between the **largest** possible value of Kim's number and the **smallest** possible value of Jamie's number?

A   31

B   36

C   38

D   39

E   43

3

The numbers 4 and 40 have highest common factor 4 and lowest common multiple 40.

A second pair of numbers also has highest common factor 4 and lowest common multiple 40.

What is the sum of the second pair of numbers?

A 13

B 14

C 24

D 28

E 48

4

Four of the numbers on the cards have the same remainder when divided by 5:

33 **43** **68** **83** **119**

Which number has a **different** remainder?

A   33

B   43

C   68

D   83

E   119

5

When an even number is divided by 8, what are all of the possible remainders?

A 2

B 2, 4

C 2, 4, 6

D 1, 3, 5, 7

E 1, 2, 3, 4, 5, 6, 7

6 Mateo is thinking of a whole number.

If he multiplies his number by 3, the answer is less than 30.

If he multiplies his number by 6, the answer is greater than 40.

There is more than one number Mateo could be thinking of.

What is the sum of all of the numbers Mateo could be thinking of?
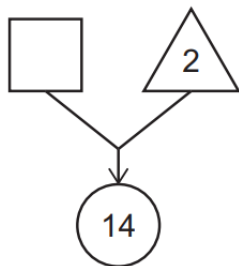
A 7

B 13

C 15

D 17

E 24

7

The diagram below follows these rules:

- Multiply the number in the square by 4.
- Multiply the number in the triangle by 3.
- Find the difference between these two results and write it in the circle.

The number in the square is greater than one.

What is the number in the square?

A 2

B 4

C 5

D 8

E 20

8

Three different numbers are chosen from the numbers 3, 5, 6 and 8.

They are then added together.

Which of these statements is/are correct?

    1   The total cannot be a multiple of 8.

    2   The total can be a multiple of 3.

    3   The total is always odd.

A   none of them

B   statement 1 only

C   statement 2 only

D   statement 3 only

E   statements 2 and 3 only

Answer Key

1	Between 1 and 100 there are 33 multiples of 3, because 3 × 33 = 99. However, some of these are multiples of 8. The multiples of 8 less than 100 which are also multiples of 3 are 3 × 8 = 24, 6 × 8 = 48, 9 × 8 = 72 and 12 × 8 = 96. So there are 33 – 4 = 29 numbers between 1 and 100 which are multiples of 3 but not multiples of 8. So the correct answer is **D 29**. Alternatively, 100 ÷ 3 = 33 remainder 1, so there are 33 multiples of 3 between 1 and 100. The lowest common multiple of 3 and 8 is 24. There are four multiples of 24 between 1 and 100 (24, 48, 72 and 96). So the remaining 29 multiples of 3 are not multiples of 8.
2	Kim's number is a multiple of 5 so it must end with a 5 or a 0. Kim's number is less than 50, so the largest possible value for Kim's number is 45. Jamie's number is even and is also a multiple of 7. The smallest number greater than zero which is both a multiple of 7 and an even number is 14 because 2 × 7 = 14. So the difference between the largest possible value of Kim's number and the smallest possible value of Jamie's number is 45 – 14 = 31. The correct answer is **A 31**.
3	D
4	E
5	C
6	E
7	C
8	A