

## Factors and multiples (Junior UKMT)

These questions must be attempted without a calculator

*Topics covered in the questions below may not necessarily be from the topic of the title.*

1. Which of the following numbers is three less than a multiple of 5 and three more than a multiple of 6?

A 12                  B 17                  C 21                  D 22                  E 27

2. Which of these numbers is not a multiple of 3?

A 12                  B 234                  C 3456                  D 45678                  E 567890

3. The word 'thirty' contains 6 letters and  $6 = 30 \div 5$ . Similarly, the word 'forty' contains 5 letters and  $5 = 40 \div 8$ .

Which of the following is not a multiple of the number of letters it contains?

A six                  B twelve                  C eighteen                  D seventy                  E ninety

4. What is the sum of all the prime numbers which are less than 25?

A 95                  B 98                  C 100                  D 109                  E 115

5. How many of the following numbers are multiples of 5?

A 1                  B 2                  C 3                  D 4                  E 5

6. The year 2003 was a prime year as 2003 is a prime number. In the period 2004-2013 there is just one prime year.

Which is it?

A 2005                  B 2007                  C 2009                  D 2011                  E 2013

7. A four-digit number was written on a piece of paper. The last two digits were then blotted out (as shown). If the complete number is exactly divisible by three, by four, and by five, what is the sum of the two missing digits?

8	6	□	□
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A 4                  B 6                  C 7                  D 9                  E 14

8. A certain number has exactly eight factors including 1 and itself. Two of its factors are 21 and 35.

What is the number?

A 105      B 210      C 420      D 525      E 735

9. There are six different three-digit numbers, each of which contains all the digits 1, 3 and 5.

How many of these three-digit numbers are prime?

A 0              B 1              C 2              D 3              E 4

10. The sum of three different prime numbers is 40.

What is the difference between the two biggest of these three numbers?

A 8              B 12              C 16              D 20              E 24

11. Only one choice of the digit  $d$  gives a prime number for each of the three-digit numbers read across and downwards in the diagram below.

$$\begin{array}{ccc} & 5 & \\ & 1 & d & 3 \\ & 7 & & \end{array}$$

Which digit is  $d$ ?

A 4              B 5              C 6              D 7              E 8

12. The pages of a book are numbered 1, 2, 3 ... . In total, it takes 852 digits to number all the pages of the book.

What is the number of the last page?

A 215              B 314              C 320              D 329              E 422