

## Miscellaneous (Junior UKMT)

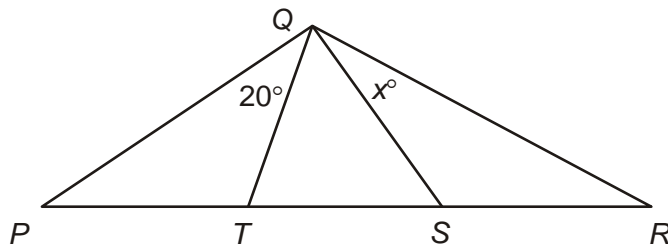
These questions must be attempted **without a calculator**

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

1. If the digit 4 is replaced by the digit 3 in each of the numbers below, which number is reduced by the largest amount?  
A 45678      B 87654      C 95400      D 74000      E 99949
  
2. Last year, to help sell his house, Southampton butcher Simon Broadribb offered to give the buyer meat worth £20 every week for one year.  
  
It was stated that this could be either 40 burgers, or 96 sausages, or 140 rashers of bacon, or 30 lamb cutlets, or 35 portions of mince.  
  
Based on that offer, which is the most expensive?  
A a burger      B a sausage      C a rasher of bacon  
D a lamb cutlet      E a portion of mince
  
3. What is the remainder when 354972 is divided by 7 ?  
A 1      B 2      C 3      D 4      E 5
  
4. What is the remainder when 2 400 040 002 is divided by 5?  
A 0      B 1      C 2      D 3      E 4
  
5. Three-quarters of the junior members of a tennis club are boys and the rest are girls.  
  
What is the ratio of boys to girls among these members?  
A 3 : 4      B 4 : 3      C 3 : 7      D 4 : 7      E 3 : 1
  
6. A book has 256 pages with, on average, 33 lines on each page and 9 words on each line.  
  
Which of the following is the best approximation to the number of words in the book?  
A 64 000      B 68 000      C 72 000      D 76 000      E 80 000

7. Five pings and five pongs are worth the same as two pongs and eleven pings.  
How many pings is a pong worth?
- A  $\frac{1}{2}$       B 2      C  $2\frac{1}{2}$       D 9      E can't be sure
8. How many times between midday and midnight is the hour hand of a clock at right angles to the minute hand?
- A 11      B 12      C 20      D 22      E 24
9. To celebrate the year 2001 a square pavement was made using equal sized square tiles, coloured either red or blue. In the pattern all the tiles were red apart from those along the two main diagonals, which were made using a total of 2001 blue tiles.  
How many red tiles were needed?
- A 1 000 000      B 996 000      C 250 000      D 1 002 001      E 4 002 000

10. In the diagram below,  $PT = QT = TS$ ,  $QS = SR$ ,  $\angle PQT = 20^\circ$ .  
What is the value of  $x$ ?



- A 20      B 25      C 30      D 35      E 40
11. Amrita has written down four whole numbers. If she chooses three of her numbers at a time and adds up each triple, she obtains totals of 115, 153, 169 and 181.  
What is the largest of Amrita's numbers?
- A 66      B 53      C 91      D 121      E 72
12. Just William's cousin, Sweet William, has a rectangular block of fudge measuring 2 inches by 3 inches by 6 inches. He wants to cut the block up into cubes whose side lengths are whole numbers of inches.  
What is the smallest number of cubes he can obtain?
- A 3      B 8      C 15      D 29      E 36