JMC Number Questions

1. Beth, Carolyn and George love reading their favourite bedtime story together. They take it in turns to read a page, always in the order Beth, then Carolyn, then George. All twenty pages of the story are read on each occasion. One evening, Beth is staying at Grandma's house but Carolyn and George still read the same bedtime story and take it in turns to read a page with Carolyn reading the first page.
    In total, how many pages are read by the person who usually reads that page?

    A 1   B 2   C 4   D 6   E 7

2. There are six more girls than boys in Miss Spelling's class of 24 pupils. What is the ratio of girls to boys in this class?

    A 5:3 B 4:1 C 3:1 D 1:4 E 3:5

3. Aroon says his age is 50 years, 50 months, 50 weeks and 50 days old. What age will he be on his next birthday?

    A 56   B 55   C 54   D 53   E 51

4. After playing 500 games, my success rate at Spider Solitaire is 49%. Assuming I win every game from now on, how many extra games do I need to play in order that my success rate increases to 50%?

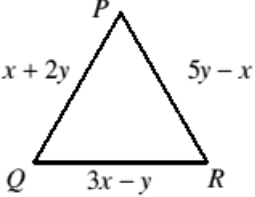   A 1   B 2   C 5   D 10   E 50

5. The pupils in Year 8 are holding a mock election. A candidate receiving more votes than any other wins. The four candidates receive 83 votes between them. What is the smallest number of votes the winner could receive?

    A 21   B 22   C 23   D 41   E 42

6. Last year's match at Wimbledon between John Isner and Nicolas Mahut, which lasted 11 hours and 5 minutes, set a record for the longest match in tennis history. The fifth set of the match lasted 8 hours and 11 minutes.
    Approximately what fraction of the whole match was taken up by the fifth set?

    A $\frac{1}{5}$ B $\frac{2}{5}$ C $\frac{3}{5}$ D $\frac{3}{4}$ E $\frac{9}{10}$

7. Peri the winkle leaves on Monday to go and visit Granny, 90m away. Except for rest days, Peri travels 1m each day (24-hour period) at a constant rate and without pause. However, Peri stops for a 24-hour rest every tenth day, that is, after every nine days' travelling. One which day of the week does Peri arrive at Granny's?

   A Sunday   B Monday   C Tuesday   D Wednesday   E Thursday

8. Gill leaves Lille by train at 09:00. The train travels the first 27km at 96km/h. It then stops at Lens for 3 minutes before travelling the final 29km to Lillers at 96km/h. At what time does Gill arrive at Lillers?

   A 09:35   B 09:38   C 09:40   D 09:41   E 09:43

9. One of the examination papers for Amy's Advanced Arithmetic Award was worth 18% of the final total. The maximum possible mark on this paper was 108 marks. How many marks were available overall?

   A 420   B 480   C 540   D 560   E 600

10. The lengths, in cm, of the sides of the equilateral triangle PQR are as shown.
    Which of the following could *not* be the values of x and y?

    A $(18, 12)$ B $(15, 10)$ C $(12, 8)$ D $(10, 6)$ E $(3, 2)$

11. Nicky has to choose 7 different positive whole numbers whose mean is 7. What is the largest possible such number she could choose?

    A 7   B 28   C 34   D 43   E 49

12. A shape consisting of a number of regular hexagons is made by continuing to the right the pattern shown in the diagram, with each extra hexagon sharing one side with the previous one. Each hexagon has a side length of 1cm. How many hexagons are required for the perimeter of the whole shape to have length 2010cm?

    A 335   B 402   C 502   D 670   E 1005

13. The kettle in Keith's kitchen is 80% full. After 20% of the water in it has been poured out, there are 1152ml of water left. What volume of water does Keith's kitchen kettle hold when it is full?

    A 1400ml   B 1600ml   C 1700ml   D 1800ml   E 2000ml

14. Six friends are having dinner together in their local restaurant. The first eats there every day, the second eats there every other day, the third eats there every third day, the fourth eats there every fourth day, the fifth eats there every fifth day and the sixth eats there every sixth day. They agree to have a party the next time they all eat together there. In how many days' time is the party?

A 30 days   B 60 days   C 90 days   D 120 days   E 360 days

15. At halftime, Boarwarts Academy had scored all of the points so far in their annual match against Range Hill School. In the second half, each side scored three points. At the end of the match, Boarwarts Academy had scored 90% of the points. What fraction of the points in the match was scored in the second half?

A 3/100   B 3/50   C 1/10   D 9/50   E 1/5

16. Pinocchio's nose is 5cm long. Each time he tells a lie his nose doubles in length. After he has told nine lies, his nose will be roughly the same length as a:

A domino   B tennis racquet   C snooker table   D tennis court
E football pitch

17. At a holiday camp, the ratio of boys to girls is 3:4 and the ratio of girls to adults is 5:7. What is the ratio of children to adults at the camp?

A 4:5   B 5:4   C 12:7   D 15:28   E 21:20

18. 'Saturn' chocolate bars are packed either in boxes of 5 or boxes of 12. What is the smallest number of full boxes required to pack exactly 2005 'Saturn' bars?

A 118   B 167   C 168   D 170   E 401

19. In a certain code, $A = 1, B = 2, C = 3$ etc. Words are encoded by multiplying together the values of their letters, so the code for SQUARE is $19 \times 17 \times 21 \times 1 \times 18 \times 5 = 610\,470$. Similarly, the code for RECTANGLE is $31\,752\,000$. What is the code for $TRIANGLE$?

A 2 116 800   B 2 721 600   C 19 051 200   D 25 401 600   E 52 920 000

20. Jack dances clockwise around the Maypole, making one revolution every five seconds. Starting from a point diametrically opposite Jack's starting point, Jill dances anticlockwise, making one revolution every six seconds. How many times do they pass each other in the first minute?
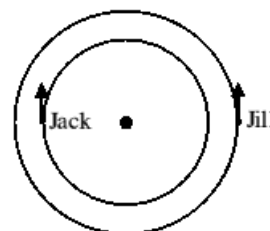
A 11   B 15   C 22   D 30   E 60

21. A robot, which is initially facing North, is programmed to travel 5m then turn through $10°$, travel 5m then turn through $20°$, travel 5m, then turn through $30°$, and so on. Each move consists of moving 5m in a straight line and then turning clockwise through an angle which increases by $10°$ at each move.

How far has it travelled by the time it is first facing due East at the end of a move?

A 9m   B 40m   C 45m   D 50m   E 90m

22. Exactly one of these statements is correct. Which one?

A $44^2 + 77^2 = 4477$ B $55^2 + 66^2 = 5566$ C $66^2 + 55^2 = 6655$
D $88^2 + 33^2 = 8833$ E $99^2 + 22^2 = 9922$

Solutions

1. D
2. A
3. A
4. D
5. B
6. D
7. C
8. B
9. E
10. D
11. B
12. C
13. D
14. B
15. E
16. D
17. B
18. D
19. C
20. C
21. C
22. D