UK Maths Trust

Junior Kangaroo

Tuesday 10 June 2025

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a member of the Association Kangourou sans Frontières

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England & Wales: Year 8 or below | *Scotland: S2 or below* | *Northern Ireland: Year 9 or below*

Instructions

1. Do not open the paper until the invigilator tells you to do so.
2. Time allowed: **60 minutes**.
   No answers may be entered after the allowed time is over.
3. The use of blank or lined paper for rough working is allowed; **squared paper**, **calculators and measuring instruments are forbidden**.
4. **Use a B or an HB non-propelling pencil.** Mark at most one of the options A, B, C, D, or E on the Answer Sheet for each question. Do not mark more than one option.
5. **Do not expect to finish the whole paper in the time allowed.** The questions in this paper have been arranged in approximate order of difficulty with the harder questions towards the end. You are not expected to complete all the questions during the time. You should bear this in mind when deciding which questions to tackle.
6. **Scoring rules:**
   5 marks are awarded for each correct answer to Questions 1-15;
   6 marks are awarded for each correct answer to Questions 16-25;
   In this paper you will not lose marks for getting answers wrong.
7. **Your Answer Sheet will be read by a machine.** Do not write or doodle on the sheet except to mark your chosen options. The machine will read all black pencil markings even if they are in the wrong places. If you mark the sheet in the wrong place, the machine will interpret the mark in own way.
8. **The questions on this paper are designed to challenge you to think, not to guess.** You will gain more marks, and more satisfaction, by doing one question carefully than by guessing lots of answers. This paper is about solving interesting problems, not about lucky guessing.

Enquiries about the Junior Kangaroo should be sent to:

challenges@ukmt.org.uk *www.ukmt.org.uk*

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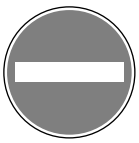
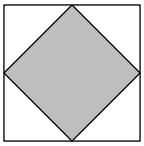
1. Which of the following traffic signs has the greatest number of lines of symmetry?

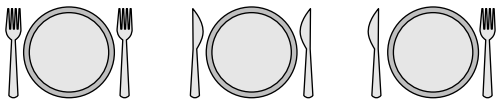
A B C  D E

2. Joseph draws a square with side-length 10 cm. He joins the midpoints of the sides to make a smaller square, as shown in the diagram. What is the area, in cm^2, of the smaller square?



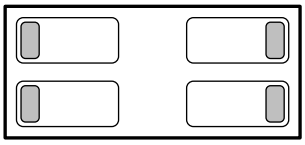
A 10 B 20 C 30 D 40 E 50

3. Millie's mother likes her to set the table with a knife on the right-hand side of the plate and a fork on the left-hand side. Starting with the arrangement in the diagram, what is the smallest number of times Millie needs to swap the positions of a knife and a fork in order to satisfy her mother?



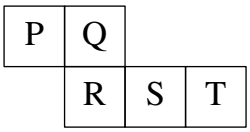
A 1 B 2 C 3 D 5 E 6

4. On the left-hand side of the room, Jia and Lottie are sleeping with their heads on the pillows and facing each other. On the right-hand side of the room, Anaya and Isla are sleeping with their heads on the pillows with their backs to each other. How many of the girls are sleeping with their right ear on their pillow?



A 0 B 1 C 2 D 3 E 4

5. The piece of paper shown is folded along the dotted lines to make an open box. The box is placed on the table with the top open. What is the letter on the face that is on the table?



A P B Q C R D S E T

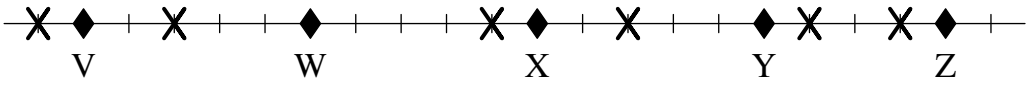
6. Which of the following figures *cannot* be formed by gluing these two identical squares of paper together?

A B C D E

7. 2025 is a square. How many distinct primes divide exactly into 2025?

A 1 B 2 C 3 D 4 E 5

8. Five squirrels V, W, X, Y and Z are sitting on the line shown below.



There are six nuts on the line, marked with crosses. At one instant, the five squirrels start running towards the nearest nut at the same speed. As soon as a squirrel reaches a nut, it picks it up and starts running towards the next nearest nut. Which squirrel will get two nuts?

A V B W C X D Y E Z

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9. There are 30 students in a class. They sit in pairs so that each boy is sitting next to a girl and exactly half of the girls are sitting next to a boy. How many boys are there in the class?

A 25 B 20 C 15 D 10 E 5

10. The number 2581953764 is written on a strip of paper. Dilraj cuts the strip twice and gets three numbers. Then he adds these three numbers. What is the smallest possible sum he could get?

A 2675 B 2975 C 2978 D 4217 E 4298

11. My granny bought enough cat food to last her four cats for twelve days. However, on her way home, she found two stray cats and brought them home. Each cat was given the same amount of food each day. How many days did her cat food last?

A 8 B 7 C 6 D 5 E 4

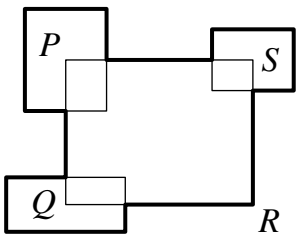
12. Each letter in the eight-digit integer '$BENJAMIN$' represents one of the digits 1, 2, 3, 4, 5, 6 or 7. Different letters represent different digits. The integer '$BENJAMIN$' is odd and divisible by 3. Which digit is represented by N?

A 1 B 3 C 4 D 5 E 7

13. Tim, Tom and Jim are triplets. Their brother Carl is three years younger. Which of the following could be the sum of the ages of the four brothers?

A 53 B 54 C 56 D 59 E 63

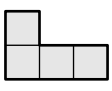
14. The perimeter of the rectangle $PQRS$ is 30 cm. A new shape is formed by placing three other rectangles so that their centres are at the points P, Q and S, as shown in the diagram. The sum of the perimeters of the three added rectangles is 20 cm. What is the total perimeter of the new shape?

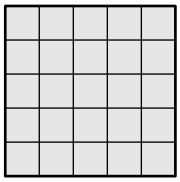


A 50 cm B 45 cm C 40 cm D 35 cm E 33 cm

15. Run Ze writes down all the integers with the following properties: the first digit is 1; each of the following digits is at least as large as the digit before it; the sum of the digits of the integer is 5. How many integers does he write?

A 9 B 8 C 7 D 6 E 5

16. What is the largest number of shapes of this form  that can be cut out from the 5×5 square shown on the right?



A 2 B 4 C 5 D 6 E 7

17. Luigi opened a small restaurant. His friend Giacomo gave him some square tables and some chairs. When he tried to arrange all the tables as single tables with four chairs each, he found he had six chairs too few. When he decided to arrange the tables in pairs with six chairs for each pair of tables, he found he had four chairs left over. How many tables did Luigi receive from Giacomo?

A 8 B 10 C 12 D 14 E 16

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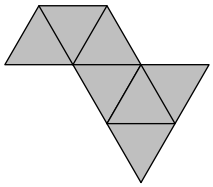
18. Lily wants to make a large triangle from small triangular tiles. She has already put some tiles together, as shown in the diagram. What is the smallest number of small tiles that she now needs to complete a large triangle?

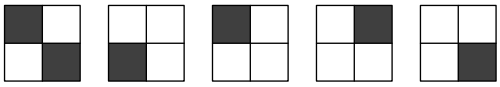


A 5 B 9 C 12 D 15 E 18

19. Three vertices of the rectangle $PQRS$ are at $P(1,1)$, $Q(7,4)$ and $R(5,8)$. What are the co-ordinates of S?

A $(-1,4)$ B $(0,5)$ C $(-2,6)$ D $(-1,5)$ E $(-1,6)$

20. A large cube was built from eight equally-sized small cubes, some of which were painted black and some painted white. Five of the faces of the large cube are shown in the diagram. What does the sixth face of the large cube look like?

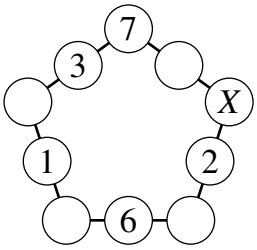


A B C D E

21. A rectangular swimming pool of length 20 m is surrounded on all four sides by a path 2 m wide. The area of the path is the same as the area of the pool. What is the width, in metres, of the pool?

A 6.5 B 6 C 5.5 D 5 E 4.5

22. Kirsten wrote numbers in five of the ten circles arranged around a pentagon, as shown in the diagram. She wants to write a number in each of the remaining five circles so that the sums of the three numbers along each side of the pentagon are equal. Which number should she write in the circle marked X?



A 7 B 8 C 11 D 13 E 15

23. Joey is playing with his calculator. He starts with the number 12 and then multiplies or divides by 2 or by 3 until he has done 60 calculations. Which of the following could *not* be his answer?

A 12 B 18 C 36 D 72 E 108

24. The digits of the three-digit integer 'XYZ' are all different. The sum of the digits of the three-digit integer 'XXY' is the two-digit integer 'YZ'. The sum of the digits of the two-digit integer 'YZ' is the one-digit integer 'Y'. What digit does 'X' represent?

A 4 B 5 C 6 D 8 E 9

25. Two three-digit integers have all six of their digits distinct. The first digit of the second integer is twice the last digit of the first integer. What is the smallest possible sum of two such integers?

A 597 B 546 C 537 D 535 E 301

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