UK Maths Trust

Grey Kangaroo

Thursday 19 March 2026

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England & Wales: Year 9 or below | *Scotland: S2 or below* | *Northern Ireland: Year 10 or below*

Instructions

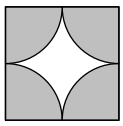
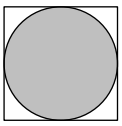
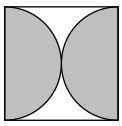
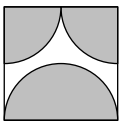
1. Do not open the paper until the invigilator tells you to do so.
2. Time allowed: **60 minutes**.
   No answers, or personal details, may be entered after the allowed time is over.
3. The use of blank or lined paper for rough working is allowed; **squared paper**, **calculators and measuring instruments are forbidden**.
4. **Use a B or an HB non-propelling pencil.** Mark at most one of the options A, B, C, D, 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, or leave bits of eraser stuck to the page, the machine will interpret the mark in its own way, or reject the answer sheet.
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 Grey Kangaroo should be sent to:

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

supported by Overleaf

1. The diagrams show four squares of the same size and a circle and parts of a circle, all of which have the same radius. In which diagram does the shaded part have the largest area?

A  B  C  D 

E All shaded parts have the same area

2. There are three different routes from Exe to Wye. There are five different routes from Wye to Zed. Ahmed travels from Exe to Zed via Wye. He wants to travel back from Zed to Exe via Wye using a route that is not completely the same as the route he used from Exe to Zed.
How many different routes could he use for his return trip?

A 5 B 6 C 10 D 12 E 14

3. Jo wants to write the digits 2, 0, 2 and 6 in the boxes shown with one digit in each box and to calculate the result. What is the smallest positive result she could obtain?

$$\frac{\square + \square}{\square - \square}$$

A $\frac{1}{6}$ B $\frac{1}{4}$ C $\frac{1}{3}$ D $\frac{1}{2}$ E $\frac{2}{3}$

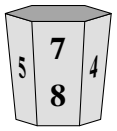
4. Which of the following numbers is *not* the sum of two or more consecutive positive integers?

A 6 B 7 C 8 D 9 E 10

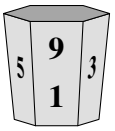
5. Eva is looking at four seats in a row, numbered 1 to 4 from left to right, which are occupied by Andi, Budi, Citra and Dira, but not in that order. The following statements are true: Andi is not in seat 1; Budi is seated directly to the right of Andi; Dira is not at either end.
In what order, from left to right, do they sit?

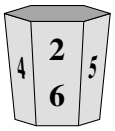
A Budi, Dira, Andi, Citra B Citra, Andi, Dira, Budi C Citra, Dira, Andi, Budi
D Citra, Dira, Budi, Andi E Dira, Citra, Budi, Andi

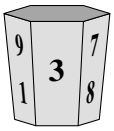
6. My mug has the digits 1 to 9 on it. It can be seen in four of the pictures below.
Which picture shows a different mug?

A 

B

C 

D 

E 

7. A sports storeroom contains three types of bats: cricket bats, table tennis bats and baseball bats. On Monday, some children each remove two bats chosen at random.
What is the smallest number of children who could remove bats to be sure that at least two of them have exactly the same types of bat?

A 8 B 7 C 6 D 5 E 4

8. Mariam has 13 dollars less than the the total amount that Ria and Emma have. Ria has 5 dollars more than the total amount that Mariam and Emma have. How many dollars does Emma have?

A 18 B 12 C 8 D 7 E 4

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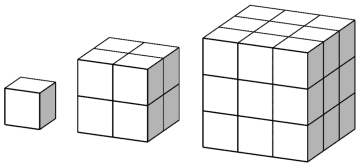
9. Mirko the mouse has three different-sized blocks of cheese, each made up of identically-sized small cubes, as shown in the diagram. He ate 40% of the first block, 40% of the second and 20% of the third. What percentage of the total amount of cheese did Mirko eat?

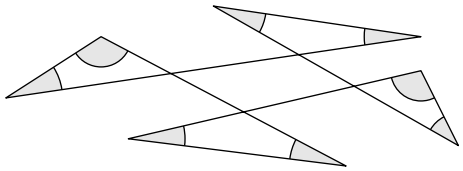


A 21% B 22% C 23% D 24% E 25%

10. Five junior elves and a senior elf live in a magic forest. Each junior elf eats six cherries a day. Each day, the senior elf eats five more cherries than the mean number of cherries eaten by the six elves. How many cherries does the senior elf eat each day?

A 10 B 11 C 12 D 13 E 14

11. What is the sum of the shaded angles?



A 180° B 240° C 270° D 360° E 450°

12. There are more than 23 and fewer than 29 people in my class. Everyone likes at least one of Maths or French. Twice as many people like Maths as like French. The same number of people like both Maths and French as like only French. Which of these is the total number of people in my class?

A 24 B 25 C 26 D 27 E 28

13. The units digit of a number is 1. Julio removes this digit to obtain a new number that is 2026 less than the original number. What is the sum of the digits of the original number?

A 10 B 12 C 14 D 16 E 18

14. Two buses left at 08:00, one travelling from Ell to Em and one travelling from Em to Ell, along the same road. The buses both travelled at constant speeds, without stopping. They passed each other at 8:30 and continued along their routes. One bus arrived at its destination at 8:45.
At what time did the other bus arrive at its destination?

A 8:45 B 9:00 C 9:15 D 9:30 E 9:45

15. In the addition shown, each letter represents a single digit and different letters represent different digits.
What is the value of $L + M + N$?

$$\begin{array}{r} L\ M\ N \\ +\ L\ N\ M \\ \hline N\ 4\ L \end{array}$$

A 16 B 17 C 18 D 19 E 20

16. I have two old watches, my grandfather's watch and my father's watch. My grandfather's watch loses 5 minutes every hour and my father's watch gains 5 minutes every hour. Yesterday, I set them both to the correct time at 09:00 pm. When I woke up the next morning, my grandfather's watch showed 08:00. What time did my father's watch show at that moment?

A 09:00 B 09:30 C 10:00 D 10:30 E 11:00

17. Three kangaroos wanted to share some radishes. Initially, they shared them in the ratio 7 : 6 : 5 but then changed their minds and shared them in the ratio 6 : 5 : 4 in the same order. As a result of this change, one kangaroo received four extra radishes. How many radishes did they share?

A 270 B 300 C 360 D 420 E 480

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18. The rectangle shown is divided into six rectangular parts. The areas of five of the parts are given. What is the area of the sixth part?

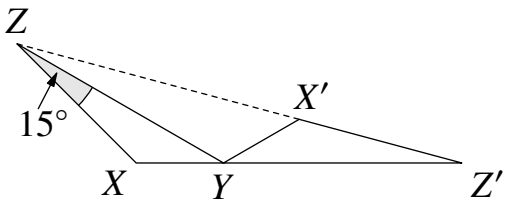
24	42	
	9	?
12	18	

A 14 B 15 C 16 D 18 E 21

19. Anna, Bea and Cili went to a store to buy pens and rulers. Each of them bought exactly 10 items in total. Anna bought twice as many pens as Cili bought rulers. Bea bought twice as many pens as Anna bought rulers. Altogether, the girls bought an even number of rulers. How many pens did Bea buy?

A 2 B 4 C 6 D 7 E 8

20. Triangle $X'YZ'$ is obtained by rotating triangle XYZ around vertex Y. The points Z, X', and Z' lie on a straight line as do X, Y and Z'. The size of $\angle YZX$ is 15°. What is the size of $\angle YXZ$?



A 105° B 115° C 125° D 135° E 140°

21. A large cube, of side-length 4, is made up from small cubes of side-length 1. What is the smallest number of small cubes that could be removed from the large cube to leave a shape whose surface area is 50% larger than that of the large cube?

A 6 B 8 C 10 D 12 E 18

22. How many of the four statements below are true?

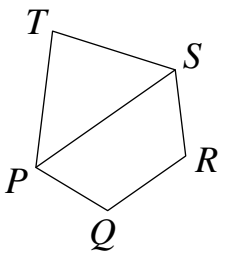
1. Exactly two of the statements are false.
2. This statement is true.
3. The previous statement is true.
4. The first three statements are false.

A 0 B 1 C 2 D 3 E 4

23. Deindra wants to arrange the five numbers 1, 2, 3, 4, and 5 into a row such that the last number is odd, and the sum of any three adjacent numbers is divisible by the first number of the three. How many such arrangements could she make?

A 1 B 2 C 3 D 4 E 5

24. The diagram shows a pentagon $PQRST$ with diagonal PS, in which $TP = TS$ and $PQ = RS$. Also PS is parallel to QR but PQ is not parallel to SR. Angles PTS and PSR are equal, and the ratio of the sizes of $\angle TSP$ and $\angle QPS$ is 3 : 2. What is the size of $\angle SRQ$?



A 135° B 125° C 120° D 115° E 110°

25. Anna, Elsa and their mother are playing a reasoning game. They are sitting round a table on which are the five sweets pictured below. Their mother tells Anna and Elsa that she is thinking of one of the sweets. She tells Anna the pattern on its wrapper and tells Elsa its shape. When she asks "Do you know which sweet I am thinking of?", both Anna and Elsa say "no". The mother then asks "Now, do you know?". Again, both answer "no". However, when the mother asks a third time, both Anna and Elsa together answer correctly. Which sweet was their mother thinking of?

A B C D E

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