

Year 9 mathsmind questions.

Make any changes you wish to the questions including the order.

1. A simplified “Sudoku” can be played on a 4 x 4 grid.

When completed, each of the numbers 1, 2, 3 and 4 appear in each row and column and also in each 2 x 2 corner of the grid.

	3		
			1
	1	2	
4			

When the grid above is completed, what is the number in the bottom right corner? Ans:3

2. If the current time is 00:35, what time was it 5 hrs and 40 minutes ago?

















Ans: 18:55 or 06:55 or 6:55 or 5 to 7 or equivalent.

3. How many of the first 100 positive integers are divisible by 2,3,4 and 5? Ans:1

4. The wheels of a car are rotating at 300 revolutions per minute when the car is travelling at 45km/hr. What is the circumference of a wheel? Ans: 2.5m

5. A five legged Martian has a drawer full of red, white and green socks. There are at least 5 of each kind of sock. The Martian pulls out one sock at a time without looking. How many socks must the Martian remove from the drawer in order to be certain there will be 5 socks of the same colour? Ans: 13

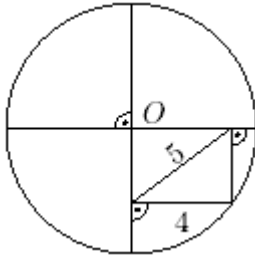
6. Samantha has an average of 45% in her four subjects. If her fifth and final test is out of 60, what mark out of 60 must she get in order that her overall average rises to 50%? Ans: 42
7. Find the value of the ? in the following diagram.

				27
				29
				24
				26
36	23	24	?	

Ans:23

8. What number, when multiplied by one less than itself is equal to the number plus three? There are two possible answers, $X = 3$ and what other? Ans = -1
9. Three boys were to be weighed. They weighed themselves in pairs. Archie and Brian weighed 102kg, Brian and Charlie weighed 111kg, and Charlie and Archie weighed 117kg. What did Brian weigh? Ans: 48kg
10. Miri decided to write all the numbers from one to 1 thousand. If she can write 2 digits per second without pause, how many minutes, to the nearest minute, would it take her to accomplish this task?
Ans: 24 mins

11. What is the length of the diameter of the circle shown in the figure? The pictured angles are 90° .



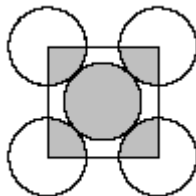
Ans:10

12. A ball is dropped from a height of 40.5 metres. Each time it strikes the ground it rebounds $\frac{2}{3}$ of the distance through which it last fell. How far has the ball travelled in total just as it hits the ground for the fifth time? Ans:162.5m (this is correction #1)

13. There are a certain number of Tui sitting on trees in a park. If there had been just one Tui sitting on a tree, then two Tui would not have had a tree to sit on. However, if there had been two Tui sitting on a tree, there would not have been any Tui sitting on two trees. What is the minimum number of trees in the park? Ans:6

14. A car travels 1 km to a local dairy at an average speed of 45km/hr. What must the car's average speed be for the RETURN JOURNEY in order to average 60 kilometres per hour for the total 2 km return journey? Ans:90km/hr.

15. In the diagram, the five circles have the same radii, and they touch as shown. The small square joins the centres of the four outer circles. What is the ratio of the shaded area of all the circles to the non-shaded area of all the circles?



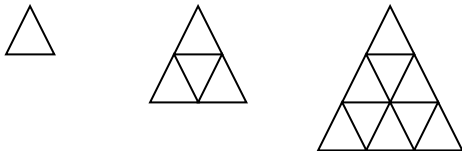
Ans: 2:3

16. A fish has 3 parts: head, body, and tail.

The tail is as long as its head plus a quarter the length of its body. Its body was $\frac{3}{4}$ of its total length. If its head was 4 cm long, what is the entire length of the fish?

Ans: 128 cm

17. In the diagrams below, the first triangle is made from 3 matches, the second from 9 matches and the third from 18 matches. In total 30 matches are needed for these three.

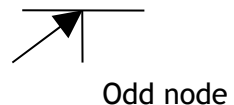


If this pattern were extended from the three in the sequence to eight, how many matches IN TOTAL would be needed to make all eight? Ans: 360

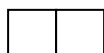
18. From a group of boys and girls, 15 girls leave. There are 2 boys left, for each girl. After this, 45 boys leave. There are now 5 girls for each boy. How many girls were there originally in the group? Ans: 40 girls

19. If $p\#q$ means "the product of p and q divided by the sum of p and q , what is the value (as a simplified fraction) of the expression $3\#5\#7\#9$? Ans: $\frac{315}{248}$

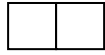
20. The point at which lines meet is called a node. A 1x1 square has 4 nodes and each node has two lines touching it, hence there are 4 even nodes. (even nodes may have 4 or 6 etc lines). An odd node has an odd number of lines meeting the node.



A 2x2 square



has 5 even nodes and 4 odd nodes.



How many even nodes has a 20x20 square? Ans: 365