ISMC International Singapore Maths Competition

INTERNATIONAL SINGAPORE MATHS COMPETITION (Primary 5)

60 minutes

Instructions to participants

1. Do not open the booklet until you are told to do so.
2. Attempt ALL 25 questions.
3. Write your answers neatly in the Answer Sheet provided.
4. Marks are awarded for correct answers only.
5. All figures are not drawn to scale.
6. Calculators may be used.

Questions in Section A carry 2 marks each, questions in Section B carry 4 marks each and questions in Section C carry between 6 to 10 marks each.

Jointly organised by

EDUKULTUR ALPHA ACADEMY LEARNERS' CONNECTIONS

Section A

Each of the questions 1 to 10 carries 2 marks.

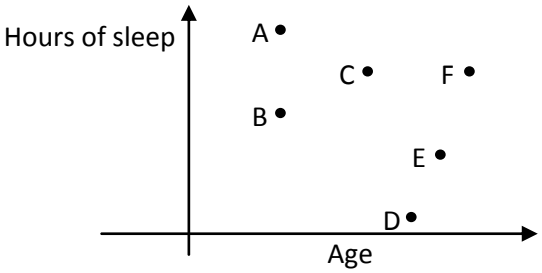
1. Matthew had 740 stickers and he was able to give them away equally among his classmates. His class had between 30 to 40 pupils. How many more stickers would Matthew need if he wanted to give each classmate 25 stickers instead?

2. In how many ways can 3 different numbers be selected from the set {13, 14, 15, 16, 17, 18} such that the sum of the 3 numbers is an even number?

3. Bobo always tells the truth on Mondays, Tuesdays, Wednesdays, and Thursdays.
Qiqi always tells the truth on Mondays, Fridays, Saturdays, and Sundays.
On the rest of the days, they may tell the truth or they may lie.

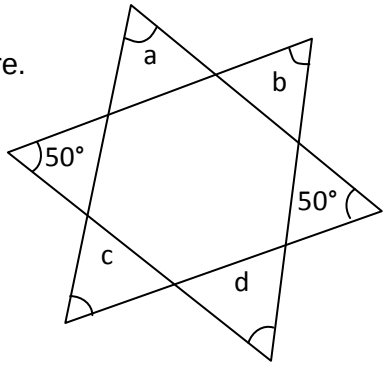
   One day last week, Bobo and Qiqi both said, "I lied yesterday."
On which day of the week did that happen?

4. The graph below shows the age and the hours of sleep of six children A, B, C, D, E and F.

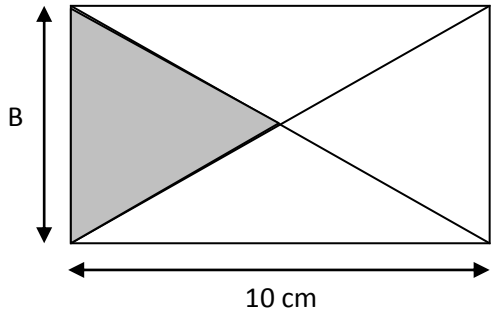


   Name the child who is younger than C and gets less sleep than C.

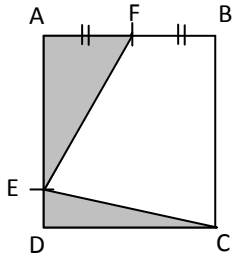
5. Find the value of $\angle a + \angle b + \angle c + \angle d$ in the figure.



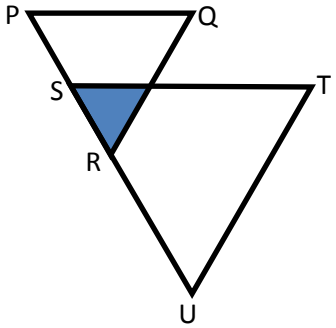
6. Given that the shaded area is 20 cm^2, what is the value of B?



7. The area of triangle AFE is $\frac{1}{5}$ of the area of rectangle ABCD. What is the ratio of the area of triangle AFE to the area of triangle CDE?



8. In the figure below triangles PQR and STU are equilateral triangles.
The ratio of the lengths of PR to SU is 2 : 3.
25% of PQR is shaded. What percentage of the whole figure is shaded?



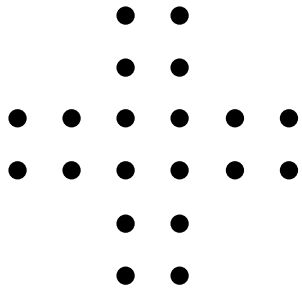
9. I am thinking of a fraction. The sum of its numerator and denominator is 41. When I add 39 to its denominator, the fraction becomes $\frac{1}{4}$. What is the fraction I am thinking of?

10. Mr Pang has some money. If he buys 8 pens, he will need \$0.40 more. If he buys 9 pens and 4 erasers, he will need \$3.70 more. The cost of each eraser is \$0.60. How much does Mr Pang have?

Section B

Each of the questions 11 to 20 carries 4 marks.

11. The figure shows an arrangement of 20 points.
How many squares can be formed with any 4 of the points as vertices?



12. Three friends A, B and C, have surnames Lee, Ong and Tan.
One of them is a fireman, another a scientist and the last, a doctor.
Person A is neither a fireman nor a doctor. Person C is not a doctor.
Mr Lee is not a fireman. Neither Persons B nor C is Mr Tan.
What are the surnames of Persons A, B and C respectively?

13. The ratio of the number of Sarah's stickers to the number of William's stickers was 4 : 1. After Sarah bought another 13 stickers and William bought another 7 stickers, the ratio of Sarah's stickers to William's stickers became 3 : 1. How many stickers did Sarah have at first?

14. Mr Li had 144 kg of red and green beans. 25% of the beans were red. He bought some more red beans and the percentage of red beans increased to 40%. How many kilograms of red beans did he buy?

15. A total of 170 students are in a hall. $\frac{3}{5}$ of the boys and $\frac{3}{7}$ of the girls wore spectacles. The number of boys who do not wear spectacles is equal to the number of girls who do not wear spectacles. How many girls are there in the hall?

16. John had $15 more than James for his weekly allowance. They each spent $60 weekly and saved the rest. John saved $315 and James saved $210 after a few weeks. How many weeks did it take John to save the $315?

17. The table below shows the number of candidates taking piano examinations.

Grade	1	2	3	4	5	6	7	8
Number of candidates	18	15	12	10	10	12	7	6

The results of the piano examinations are as follows:

40% of the candidates who took the Grade 4 to Grade 8 piano examinations passed and $\frac{3}{5}$ of the candidates who took the Grade 1 to Grade 5 piano examinations passed.

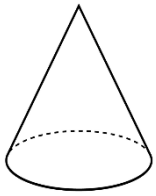
Grade	1	2	3	4	5	6	7	8
Number of candidates who passed	?	11	10	3	?	7	2	2

What percentage of the candidates who passed the piano examinations are those who took the Grade 1 examination?

18. $\angle x$ is the acute angle between the hour and the minute hands of a clock at 20 minutes to 12 o'clock. What is the value of x?

19. Mali placed rectangular pieces of paper, each measuring 15 cm long by 9 cm wide, together edge to edge without overlapping to form a square. What was the least number of rectangular pieces of paper she was able to use?

20. If the height and radius of the base of a cone are decreased by 50%, by what percentage would the volume of the cone decrease?



Section C

Questions 21, 22, 23, 24 and 25 carry 6, 7, 8, 9 and 10 marks respectively.

21. Find the sum of $\frac{6}{2016} + \frac{12}{2016} + \frac{18}{2016} + \frac{24}{2016} + \ldots\ldots\ldots + \frac{2016}{2016}$

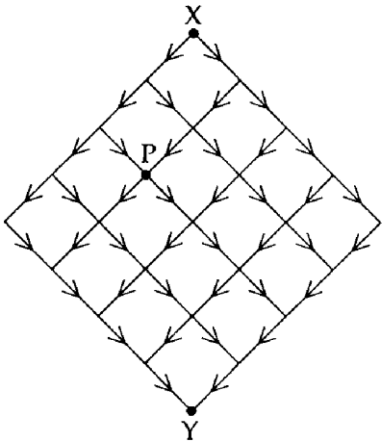
22. Last year, the ratio of boys to girls in a choir was 3 : 4. This year, 63 new members joined the choir. As a result, the ratio of the number of members last year to this year is 4 : 5 and the new ratio of boys to girls became 11 : 10. How many of the new members are boys?

23. Six boys, A, B, C, D, E and F went for a selection test in order to take part in a Mathematics competition. The results were as follows:

    (i) Between A and B, at least one was selected.
    (ii) A and D were not both selected.
    (iii) Between A, E and F, only two were selected.
    (iv) B and C were either both selected or both not selected.
    (v) Between C and D, only one was selected.
    (vi) If D was not selected, E would not be selected too.

    Which boys were selected to take part in the competition?

24. Following the arrows given in the diagram, how many different routes are there from X to Y passing through P?



25. Given that $10^1 = 10$
$10^2 = 10 \times 10$
$10^3 = 10 \times 10 \times 10$
$10^4 = 10 \times 10 \times 10 \times 10$,
and so on,

How many numbers from 10^1 to 10^{200} have the sum of their digits equal to 2?

End of Paper