St. Paul's College

F.2 Mid-year Examination 2021-2022

MATHEMATICS
PAPER 2

Multiple Choice Questions

Time Allowed: 30 minutes

Name: _____ Class: _____ Class No. _____

INSTRUCTIONS

1. Read carefully the instructions on the Multiple Choice Answer Sheet. Write down the subject, your name, class and class number in the spaces provided and mark the corresponding boxes with an HB pencil.
2. All questions carry equal marks.
3. Answer ALL questions. You are advised to use an HB pencil to mark all the answers on the Answer Sheet, so that wrong marks can be completely erased with a clean rubber. You must mark the answers clearly; otherwise you lose marks if the answers cannot be captured.
4. You should marked only ONE answer for each question. If you mark more than one answer, you will receive no mark for that question.
5. The diagrams in this paper are not necessarily drawn to scale.
6. No marks will be deducted for wrong answers.

There are 20 questions in this section. (30 Marks)
Choose the best answer for each question.

1. $\dfrac{(3x^3)^2}{(2x^4)(18x^9)} =$

   A. $\dfrac{1}{4x^7}$.

   B. $\dfrac{1}{12x^7}$.

   C. $\dfrac{1}{4x^{30}}$.

   D. $\dfrac{1}{12x^{30}}$.

2. If a and b are constants such that $x^2 + a \equiv (x + b)(x - 4) + 8$, then $a =$

   A. –8.

   B. –4.

   C. 4.

   D. 8.

3. If the interior angle of a regular n-sided polygon is 3 times its exterior angle, which of the following are true?

   I. Each interior angle of the polygon is 135°.

   II. $n = 8$

   III. The number of diagonals of the polygon is 8.

   A. I and II only.

   B. I and III only.

   C. II and III only.

   D. I, II and III.

4. $(6x + y)^2 - (6x - y)^2 =$

   A. 0.

   B. $12y^2$.

   C. $24xy$.

   D. $36xy$.

5. Let a, b and c be non-zero numbers. If $4a = 3b$ and $b : c = 2 : 1$, $a : b : c =$

A. 3: 4 : 2.

B. 8 : 6 : 3.

C. 3 : 4 : 1.

D. 9 : 4 : 2.

6. If $p = 2 - \dfrac{4}{q+3}$, then $q =$

A. $\dfrac{-3p-2}{2+p}$.

B. $\dfrac{3p+10}{2+p}$.

C. $\dfrac{3p-2}{2-p}$.

D. $\dfrac{-3p+10}{2-p}$.

7. On a map with the scale 1 : 250 000, the length of a harbour is 2.5 cm. Find the actual length of the harbour.

A. 2.5 km.

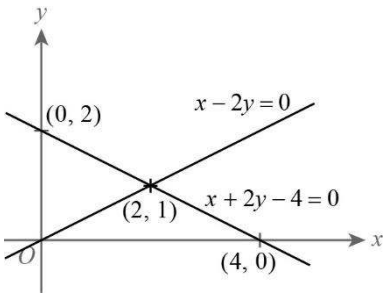
B. 6.25 km.

C. 250 km.

D. 625 km.

8. The figure shows the graph of $x - 2y = 0$ and $x + 2y - 4 = 0$.

Solve the simultaneous equations $\begin{cases} y = \dfrac{1}{2}x \\ x + 2y = 4 \end{cases}$ graphically.



A. $x = 0, y = 0$.

B. $x = 0, y = 2$.

C. $x = 2, y = 1$.

D. $x = 4, y = 0$.

9. If $7x + 4y = 50 = 9x - 2y$, then $y =$

A. -2.

B. 2.

C. 3.

D. 6.

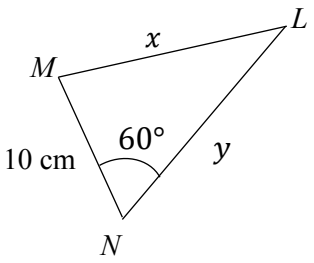
10. In the figure, if $\triangle LMN \sim \triangle YXZ$, find the values of x and y.

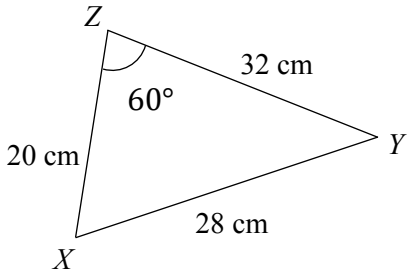
A. $x = 16, y = 14$.

B. $x = 14, y = 16$.

C. $x = 64, y = 56$.

D. $x = 56, y = 64$.





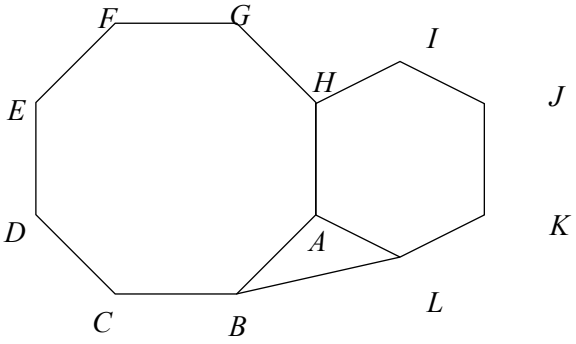
11. In the figure, *ABCDEFGH* is a regular octagon and *AHIJKL* is a regular hexagon. Find $\angle CBL$.

A. 157.5°.

B. 165°.

C. 172.5°.

D. 180°.



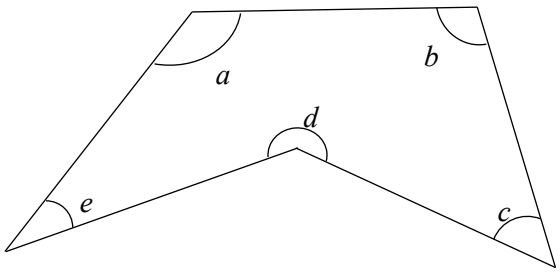
12. Find $a + b + c + d + e$.

A. 360°.

B. 540°.

C. 720°.

D. 900°.



13. The following stem-and-leaf diagram shows the numbers of emails received by a group of adults yesterday.

Numbers of emails received by a group of adults yesterday

***Stem* (*10*)**	*Leaf* (*1*)
0	3 6
1	2 5 5 *x* 8 9 9
2	1 2 4 6 7 7

It is given that one-third of the adults in the group received at most 17 emails yesterday. Find x.

A. 5.

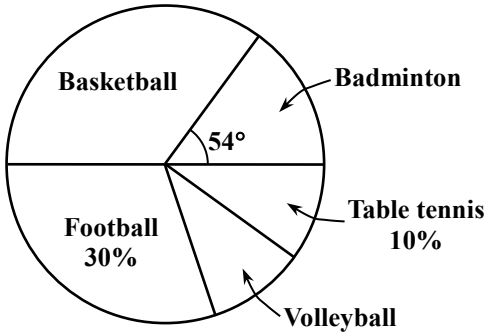
B. 6.

C. 7.

D. 8.

14. The pie chart below shows the favourite ball games of S1A students.

Favourite ball games of S1A students



Which of the following must be true?

I. 10 students choose table tennis.

II. The number of students choosing basketball is more than that choosing volleyball.

III. The number of students choosing football is twice that choosing badminton.

A. I and II only

B. I and III only

C. II and III only

D. I, II and III

15. $(3x+9y)(9y+3x)=$

A. $3x^2+27xy+9y^2$.

B. $3x^2+54xy+9y^2$.

C. $9x^2+27xy+81y^2$.

D. $9x^2+54xy+81y^2$.

16. $\dfrac{1}{2x-y}-\dfrac{1}{2y-x}=$

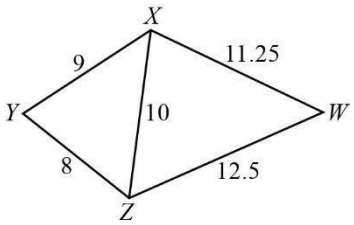
A. $\dfrac{3(x-y)}{(2x-y)(2y-x)}$.

B. $\dfrac{y-x}{(2x-y)(2y-x)}$.

C. $\dfrac{y-3x}{(2x-y)(2y-x)}$.

D. $\dfrac{3(y-x)}{(2x-y)(2y-x)}$.

17. In the figure, which of the following is/are true?



I. $XY \,//\, WZ$

II. $XW \,//\, YZ$

A. I only.

B. II only.

C. I and II.

D. None of the above.

18. Which of the following must **NOT** be an exterior angle of a regular polygon?

A. 36°.

B. 32°.

C. 30°.

D. 20°.

19. Ray performs a typing task for 5 hours. His average typing speeds for the first 2 hours and the last 3 hours are 52 words per minute and 48 words per minute respectively. Find his average typing speed for the 5 hours.

A. 49 words per minute

B. 49.6 words per minute

C. 50 words per minute

D. 50.5 words per minute

20. If x and y are non-zero numbers such that $\frac{5x-3y}{4x+3y} = \frac{2}{3}$, then $x : y =$

A. 7 : 15.

B. 15 : 7.

C. 15 : 23.

D. 23 : 15.

End of Paper

Mathematics 2122F1T1Paper2 ANS

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