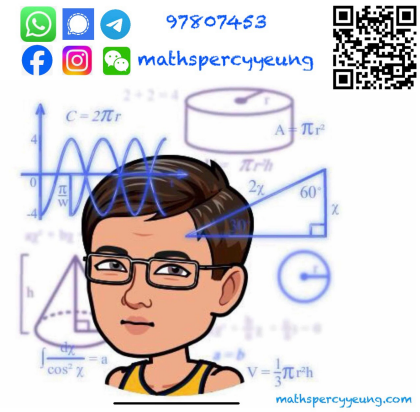
2022-2023 S5
1st TERM UT
MATH CP
PAPER 2

MC



2022 – 2023
S5 First Term Uniform Test

MATHEMATICS Compulsory Part

PAPER 2

7th November, 2022
10:50 am – 11:30 am (40 minutes)
Total Marks: 24

INSTRUCTIONS

1. Read carefully the instructions on the Answer Sheet. After the announcement of the start of the examination, you should insert the information required in the spaces provided.

2. When told to open this book, you should check that all the questions are there. Look for the words '**END OF PAPER**' after the last question.

3. All questions carry equal marks.

4. **ANSWER ALL QUESTIONS**. You should use an HB pencil to mark all your 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 will lose marks if the answers cannot be captured.

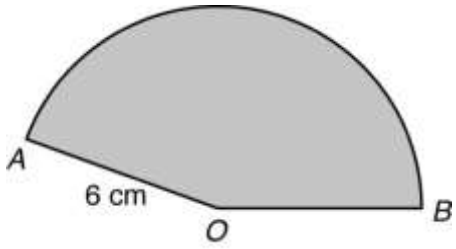
5. You should mark only **ONE** answer for each question. If you mark more than one answer, you will receive **NO MARKS** for that question.

6. No marks will be deducted for wrong answers.

There are 15 questions in Section A and 9 questions in Section B.
The diagrams in this paper are not necessarily drawn to scale.
Choose the best answer for each question.

Section A

1. In the figure, the area of the sector AOB is 16π cm^2. Find the arc length of the sector, correct to 3 significant figures.



A. 8.38 cm
B. 16.8 cm
C. 33.6 cm
D. 50.3 cm

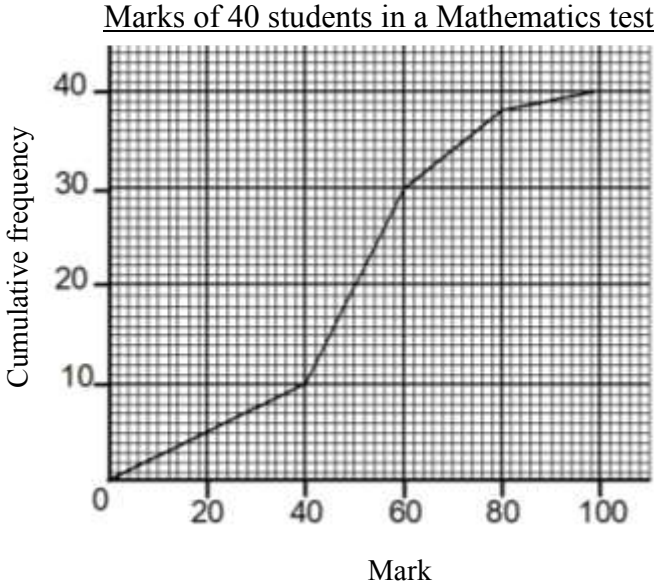
2. The following table is the frequency distribution of the hourly wages of 100 workers.

***Hourly wages* ($)**	*21 – 30*	*31 – 40*	*41 – 50*	*51 – 60*	*61 – 70*
Frequency	12	25	26	25	12

The range of the distribution is

A. $30.
B. $40.
C. $49.
D. $50.

3. The figure shows the cumulative frequency polygon of the marks of 40 students in a Mathematics test.



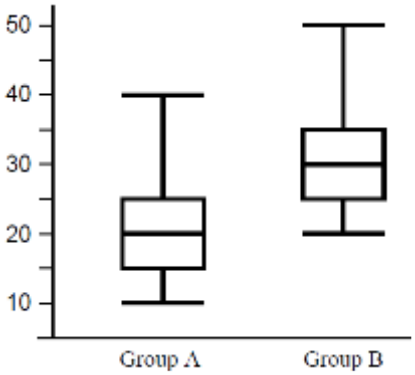
Find the inter-quartile range.

A. 10
B. 20
C. 30
D. 40

4. If the straight lines $\frac{x}{p}+4y=3$ and $y+px+q=0$ are parallel, then $p=$

A. $\frac{1}{2}$ or $-\frac{1}{2}$.
B. 2 or –2.
C. 2 or $\frac{1}{2}$.
D. 1 or –1.

5. Consider the two sets of data in the following box-and-whisker diagrams. Which of the following statements must be true?



I. They have same median.

II. They have same range.

III. They have same inter-quartile range.

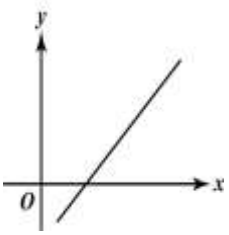
A. II only

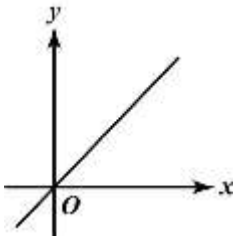
B. III only

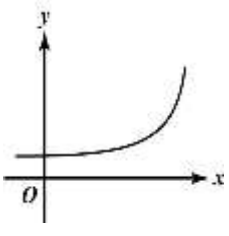
C. I and II only

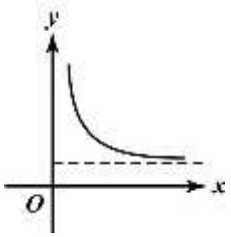
D. II and III only

6. Which of the following graphs shows that y is partly constant and partly varies inversely as x?

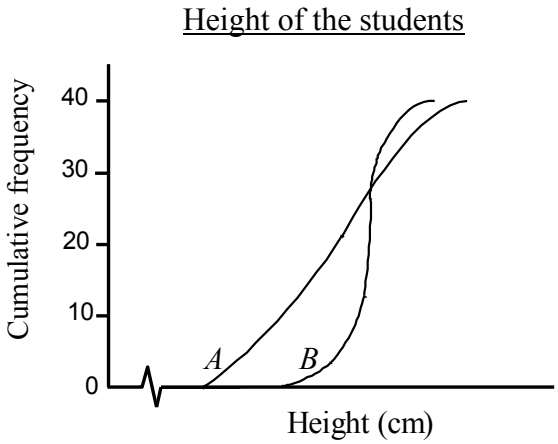
A. 

B. 

C. 

D. 

7. There are two classes of forty students each. The cumulative frequency curves A and B in the figure show the distributions of the heights (in cm) of these students.



Which of the following must be true?

I. Median of A < Median of B

II. Range of A < Range of B

III. Inter-quartile range of A < Inter-quartile range of B

A. I only

B. III only

C. I and II only

D. I and III only

8. Suppose that a varies directly as b^3 and inversely as c. Find the percentage increase in a when b is increased by 50% and c is decreased by 50%.

A. 500%

B. 525%

C. 550%

D. 575%

9. y is partly constant and partly varies directly as x^2. When $x = 1$, $y = 3$; when $x = 2$, $y = 6$. Find the value of y when $x = 3$.

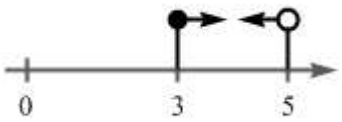
A. 10

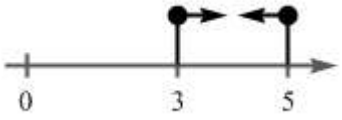
B. 11

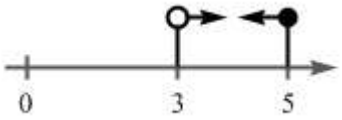
C. 12

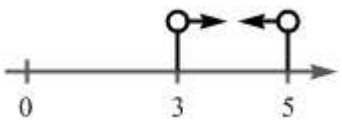
D. 13

10. The graphical representation of $3 < x \leq 5$ is:

A. 

B. 

C. 

D. 

11. Solve $\frac{1}{2}(y-2) \leq y-3 \leq \frac{2}{5}(3+y)$.

A. $3 \leq y \leq 5$

B. $4 \leq y \leq 7$

C. $3 \leq y \leq 8$

D. $2 \leq y \leq 5$

12. Solve the inequality $x^2 + x - 56 < 0$.

A. $-8 < x < 7$

B. $-8 \leq x \leq 7$

C. $x < -8$ or $x > 7$

D. $x \leq -8$ or $x \geq 7$

13. The sum of the squares of two consecutive odd integers is less than 200. If the larger number is x, find the least possible value of x.

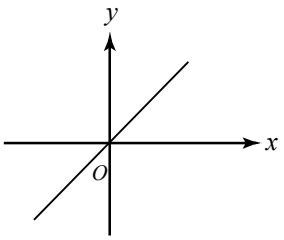
A. –3

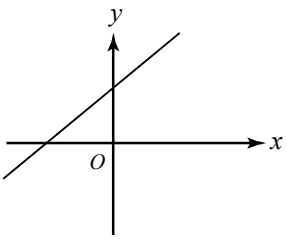
B. –5

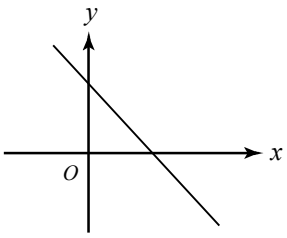
C. –7

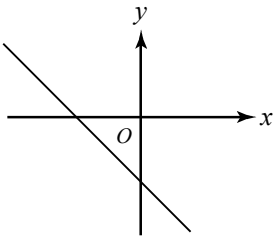
D. –9

14. If a, b and c are all positive, which of the following represents the graph of $ax = by - c$?

A. 

B. 

C. 

D. 

15. Which of the following straight lines is perpendicular to the line $2x-y+3=0$ and passes through the point (1 , −2)?

A. $2x+y=0$
B. $2x-y-4=0$
C. $x+2y+3=0$
D. $x+2y-3=0$

Section B

16. If $5^{3m+1}=5^{3m+2}-100$, then $m=$

A. $-\frac{1}{3}$.
B. $-\frac{1}{2}$.
C. $\frac{1}{3}$.
D. $\frac{1}{2}$.

17. $\frac{\log a^3}{\log a^2}=$

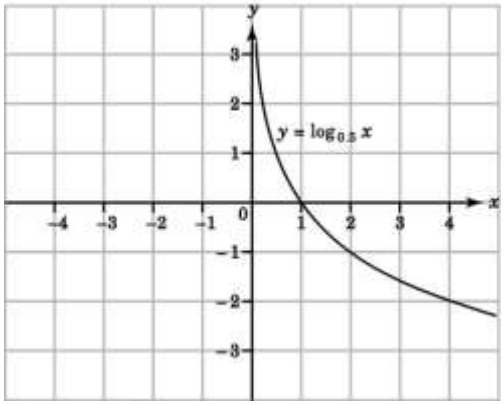
A. $\log a^3-\log a^2$.
B. $\log(a^3-a^2)$.
C. a.
D. $\frac{3}{2}$.

18. Simplify $\frac{3\log\sqrt{x}+\frac{1}{3}\log x}{\log\sqrt{x}-\log x^2}$, where $x > 0$ and $x \neq 1$.

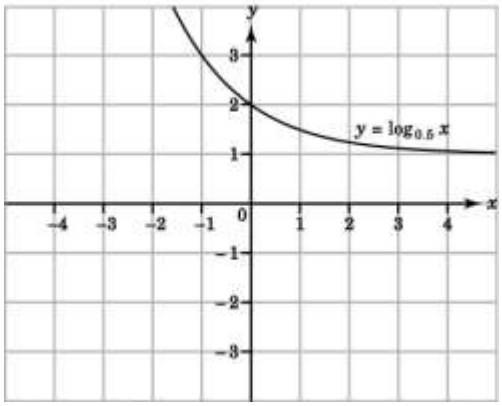
A. $-\frac{11}{4}$
B. $-\frac{11}{9}$
C. $\frac{11}{4}$
D. $\frac{11}{9}$

19. Which of the following graphs represents the graph of $y=\log_{0.5}x$?

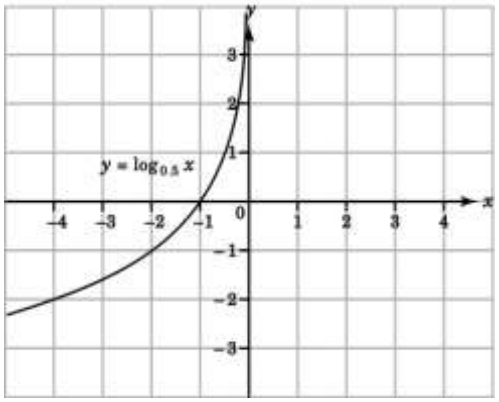
A.



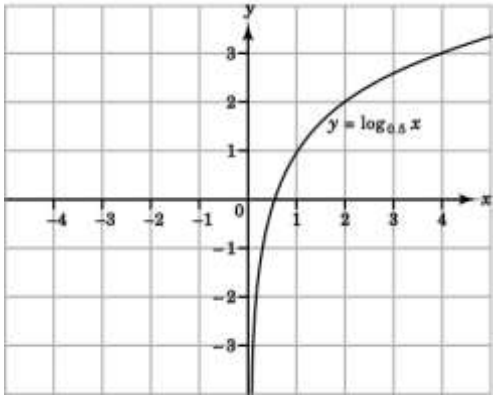
B.



C.

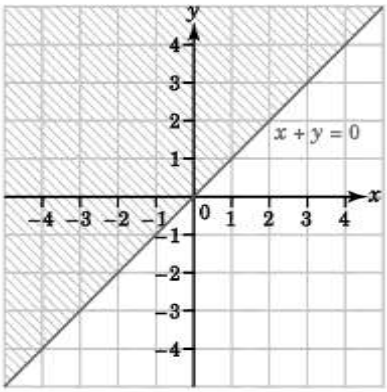


D.

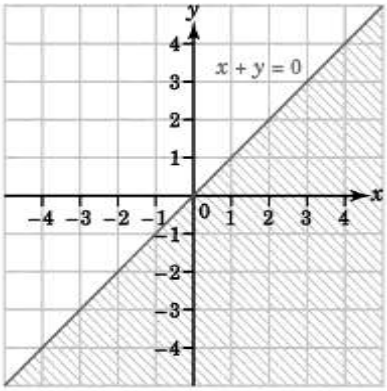


20. Which of the following shaded regions represents the inequality $x + y \le 0$?

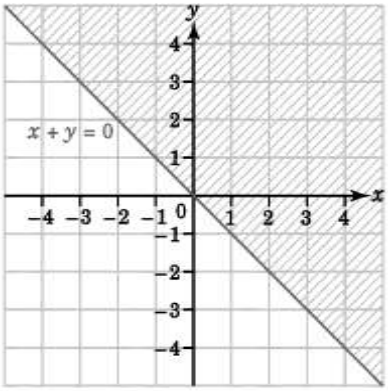
A.



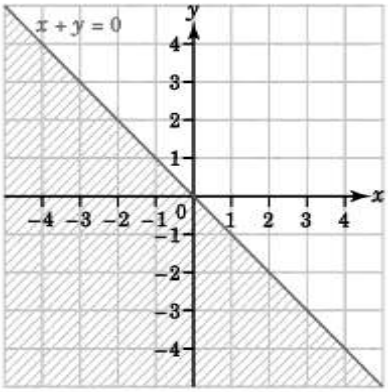
B.



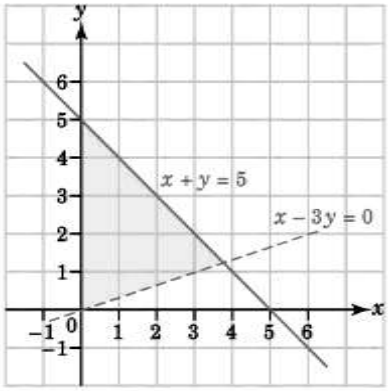
C.



D.



21.



The shaded region represents the solutions of

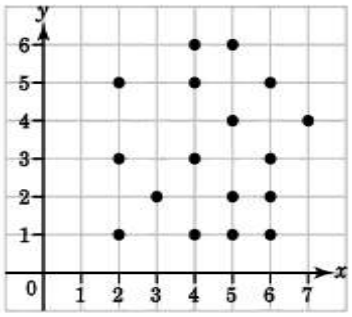
A. $\begin{cases} y \ge 0 \\ x + y \le 5 \\ x - 3y > 0 \end{cases}$.

B. $\begin{cases} y \ge 0 \\ x + y \ge 5 \\ x - 3y < 0 \end{cases}$.

C. $\begin{cases} x \ge 0 \\ x + y \le 5 \\ x - 3y < 0 \end{cases}$.

D. $\begin{cases} x \ge 0 \\ x + y \ge 5 \\ x - 3y > 0 \end{cases}$.

22. In the figure, find the coordinates of the marked points at which $x + 3y - 5$ attains its maximum value.



A. (5 , 6)
B. (6 , 5)
C. (4 , 6)
D. (7 , 4)

23. Solve the simultaneous equations :

$$\begin{cases} 2^{x+y} = 8 \\ 8^{x-y} = 2 \end{cases}$$

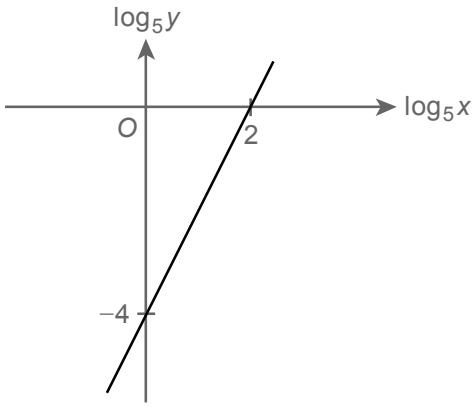
A. $x = \frac{5}{3},\ y = \frac{4}{3}$

B. $x = \frac{4}{3},\ y = 1$

C. $x = -\frac{4}{3},\ y = \frac{15}{4}$

D. $x = \frac{11}{6},\ y = \frac{7}{6}$

24. The graph in the figure shows the linear relation between $\log_5 x$ and $\log_5 y$.



Which of the following must be true?

A. $xy = 22$

B. $xy = 1024$

C. $y = \frac{x^2}{625}$

D. $y = \frac{x^4}{25}$

END OF PAPER

2022 – 2023 S5 First Term Uniform Test Math Paper2 answers

No	Ans	No	Ans	No	Ans	No	Ans	No	Ans
1.	B	6.	D	11.	B	16.	C	21.	C
2.	D	7.	A	12.	A	17.	D	22.	A
3.	B	8.	D	13.	C	18.	B	23.	A
4.	A	9.	B	14.	B	19.	A	24.	C
5.	D	10.	C	15.	C	20.	D	25.	