

SMJK SAN MIN, TELUK INTAN
PEPERIKSAAN PERCUBAAN SPM TAHUN 2022
MATHEMATICS

Paper 1

One hour and thirty minutes

NAME :

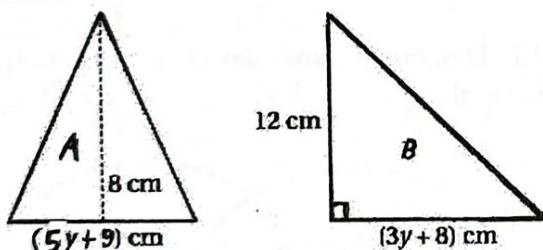
CLASS :

INSTRUCTIONS :

This paper consists of 40 questions. Answer all the questions. For each question, choose only one answer from the options A, B, C, or D.

1. The price of 1kg of durian is RM15. Meanwhile the price of 3 kg of rambutan is $\frac{3}{5}$ of the price of 1kg of durian. How much does Aleena need to pay if she buys 3 kg of durian and 2kg of rambutan?
A RM24 B RM51
C RM54 D RM216

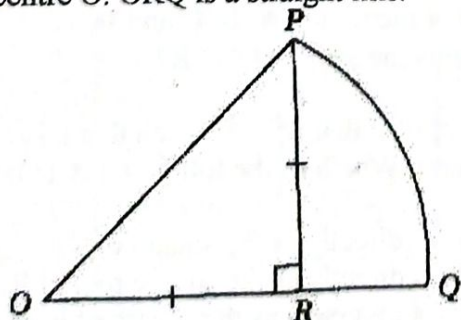
2. Diagram below shows two triangles, A and B.



It is given that the area of both triangles is the same. Find the value of y

- A 8 B 7 C 6 D 5

3. Diagram shows a sector POQ with centre O. ORQ is a straight line.



POR is an isosceles triangle. Given $PR = 5$ cm. Calculate the length, in cm, of arc PQ. [Use $\pi = \frac{22}{7}$]

- A 5.556 B 7.071 C 12.627 D 19.305

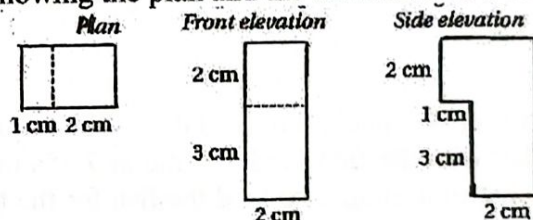
4. The midpoint of the diagonal of a square is 2 units from the vertex of the square. Calculate the area, in units², of the square.

- A 6 B 8 C 10 D 12

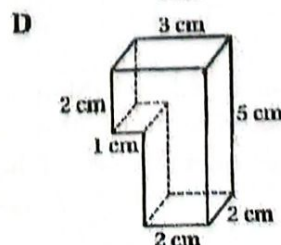
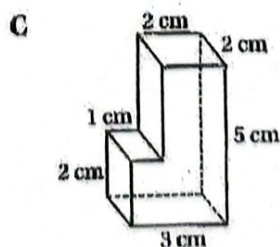
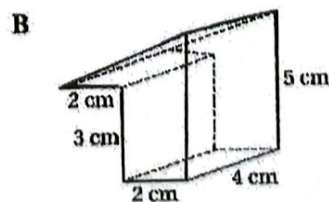
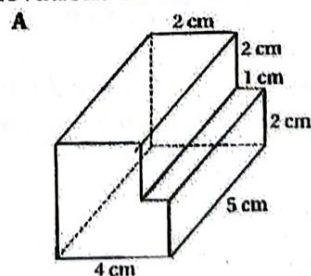
5. Given $4s^2 = \left(\frac{3t-4u}{5}\right)^2$, calculate the value of t when $s = \frac{1}{3}t$ and $t = 2 - u$.

- A $-\frac{24}{11}$ B $-\frac{2}{11}$ C $\frac{24}{11}$ D $\frac{2}{11}$

6. Diagram below is the orthogonal projection showing the plan and the elevations of a solid.



Which solid represents the plan and the elevations of the solid?



7. Solve

$$\frac{a}{5} - 6 = 2a + 3$$

- A 6 B -3 C -4 D -5

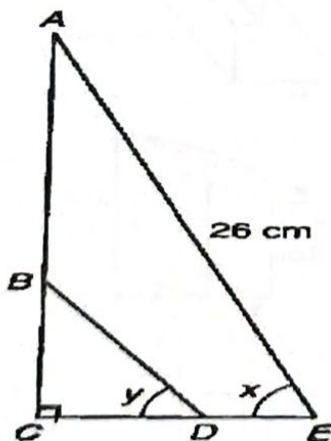
8. The diagram shows an automatic fish feeder and its specifications.



If Eng Wei decides to feed the fishes 4 times a day with the first feeding time at 7:35a.m., at what time should he feed the fish for the third feeding?

- A 5:15 p.m. B 7:15 p.m.
C 5:35 p.m. D 7:35 p.m.

9. Diagram belows shows triangles ACE and BCD. CDE is a straight line. It is given that $CD : DE = 3 : 2$



Given that $\sin x = \frac{12}{13}$ and $\cos y = \frac{3}{5}$, find the total length, in cm, for AB and DE

- A 10 B 18 C 20 D 24

10. A car travels at a speed of 115km/h. The speed is decreased to 95 km/h in 30 minutes. Calculate the acceleration, in km/h^2 , of the car.

- A 40 B 30 C - 30 D - 40

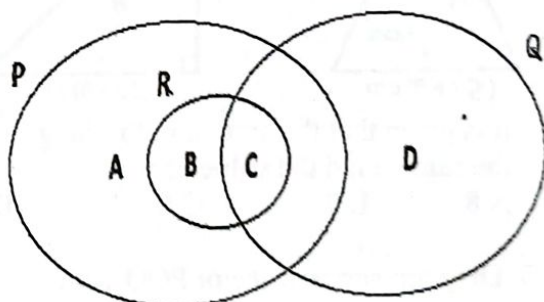
11. Laila wants to buy x notebooks and y drawing books. The prices of a notebook and a drawing book are RM3 and RM7 respectively. She wants to spend of not more than her amount of money, which is RM30 and has the balance of at most RM4. She also needs at least two drawing books. State the system of linear inequalities for the situation.

- A $3x + 7y \leq 30$ B $3x + 7y \leq 30$
 $3x + 7y \geq 26$ $3x + 7y > 26$
 $y \geq 2$ $y \geq 2$
C $3x + 7y \leq 30$ D $3x + 7y \leq 30$
 $3x + 7y \geq 4$ $3x + 7y \leq 4$
 $y \leq 2$ $y \leq 2$

12. If an individual is using vehicle without valid road tax, he or she can be fined?

- A. Not exceeding RM1 000
B. Not exceeding RM2 000
C. Not exceeding RM3 000
D. Not exceeding RM4 000

13. Diagram below shows a Venn diagram with the universal set $\xi = P \cup Q \cup R$.



Which of the region A, B, C and D, represents the set $P \cap Q' \cap R$?

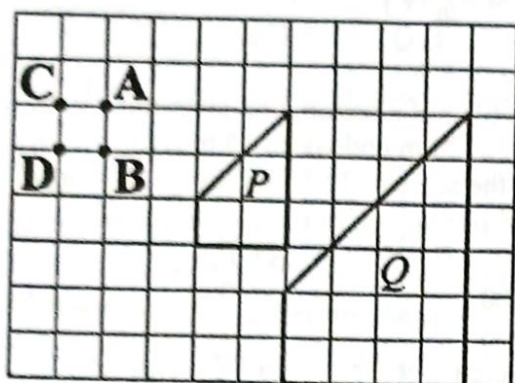
14. It is given that $R^2T = k$ such that k is a constant. Which of the following statements is true?

- A T varies directly as the square of R.
B T varies directly as the square root of R.
C T varies inversely as the square of R.
D T varies inversely as the square root of R.

15. The height of an equilateral triangle is $(y+10)$ cm and its base is y cm. Given that the area of the triangle is 19.5 cm^2 , calculate the height of the equilateral triangle.

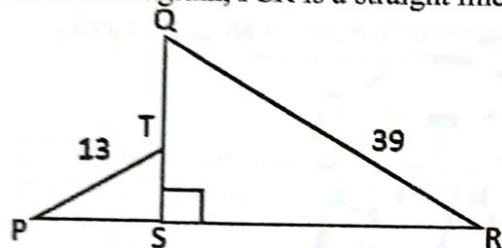
- A. 3 cm B. 9 cm
C. 13 cm D. 15 cm

16. Diagram below shows two trapeziums P and Q. Q is the image of P under an enlargement.



Which of the points, A, B, C and D is the centre of enlargement?

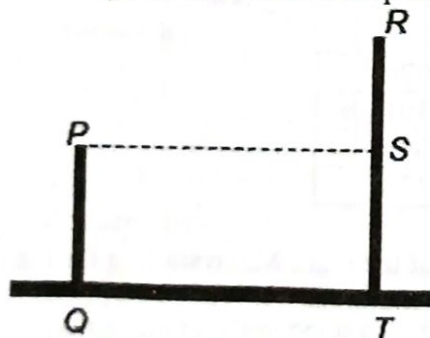
17. In the diagram, PSR is a straight line



Given $\sin \angle RQS = \frac{12}{13}$ and $\cos \angle QTP = \frac{-5}{13}$
Find the length, in cm, of TQ.

- A. 10 B. 13
C. 15 D. 26

18. In Diagram below, PQ and RST are two vertical poles on a horizontal plane.



State the angle of depression of point Q from point S.

- A $\angle TSQ$
B $\angle TQS$
C $\angle PQS$
D $\angle PSQ$

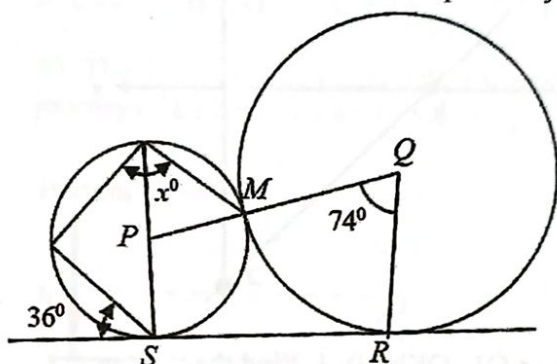
19. Table below shows the purchase of shares by Rafiqah with three different prices.

Units	4 500	5 000	8 000
Price per unit	RM1.32	RM1.40	RM1.38

Calculate the average cost per unit of the shares purchased by Rafiqah.

- A RM1.28
B RM1.33
C RM1.35
D RM1.37

20. Diagram shows two circles with centres P and Q touching at M. SR is the common tangents to the circle at S and R respectively.



Find the value of x.

- A 72 B 81
C 89 D 110

21. An active income and a passive income of Cik Mimi are RM3 250 and RM1860 respectively while her fixed expenses and variable expenses are RM2 820 and RM950 respectively.

For the second month, Cik Mimi's active income is remained the same and her passive income decreases by 20%. At the same time, her fixed expenses and variable expenses increase RM320 and RM400 respectively.

Calculate Cik Mimi's monthly cash flow of the second month.

- A RM178 B RM248
C RM278 D RM 348

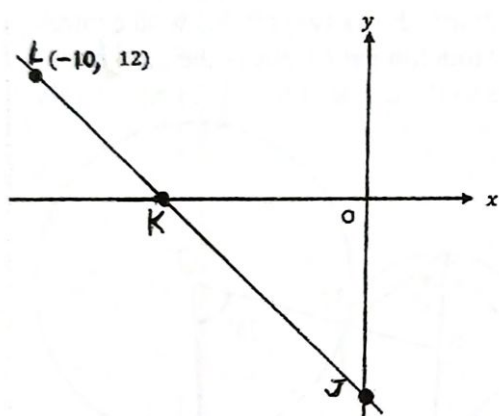
22. Given a set of data : 2.1, 3.2, p, 5.5 and 6.2. If the mean after each of the number multiplied by 4 is 17.2, calculate the value of p.

- A 0.2 B 2.3 C 4.5 D 21.5

23. Nini has a primary medical insurance policy with a deductible provision of RM500 and a co-insurance percentage participation clause of 75/25 in her policy. Calculate the payment, in RM borne by Nini herself if the medical costs covered by her policy amount is RM36 000.

- A 8 875 B 9 375
C 26 500 C 26 625

24. Diagram below shows a straight line JKL in a Cartesian plan.



Given $OJ : OK = 3 : 1$. Find the y-intercept for straight line JKL.

- A -18 B -24 C -33 D -42

25. 7 out of 20 COVID-19 test kit in a box are damage. Two COVID-19 test kit are randomly chosen from the box. Calculate the probability of both of the test kits are in good condition.

- A $\frac{39}{100}$ B $\frac{21}{190}$ C $\frac{39}{95}$ D $\frac{169}{400}$

26. Given that $(k - 2)$ is the highest common factor 24 and 54. What is the value of k ?

- A 6 B 8 C 9 D 10

27. Simplify $\frac{a^4bc^3}{\sqrt{a^{-2}b^4c^8}}$

- A $\frac{a^5b}{c^{-1}}$ B $\frac{a^5}{bc}$ C $\frac{a^5b}{c}$ D $\frac{a^{-5}b}{c}$

28. Given that $A = \begin{bmatrix} 8 & -2 \\ 1 & 4 \end{bmatrix}$ and $AX = \begin{bmatrix} 12 \\ 10 \end{bmatrix}$

State the order of matrix X.

- A 1 X 1 B 1 X 2
C 2 X 2 D 2 X 1

29. Given graph $G(V, E)$ has $E = \{ (P, Q), (P, S), (Q, P), (R, P), (S, R), (S, P), (S, Q) \}$. Determine the vertex which has the maximum value of $d_{in}(V)$

- A P B Q C R D S

30. A plan of a rectangular swimming pool of length 20 m and width 15 m is drawn by using the scale of 1 : 500. Calculate the area in cm^2 , of the plan of the swimming pool.

- A 12 B 60
C 3 000 D 6 000

31. Given that the roots of the quadratic function $f(x) = -x^2 + 2x + 8$ are -2 and 4. Find the coordinates of the maximum point.

- A (-1, 11) B (-1, 9)
C (1, 9) D (1, 11)

32. Diagram below shows an alarm clock.



Calculate the angle subtended by the minute hand if the minute hand is rotated anticlockwise from number 3 to number 10.

- A 25° B 150° C 210° D 335°

33. Which of the following is true?

A	$53_{10} > 107_9$
B	$53_{10} > 110110_2$
C	$53_{10} > 53_8$
D	$53_{10} > 2100_3$

34. The area of the giant Malaysia flag for the independence march is $9.9 \times 10^3 \text{ m}^2$. The width of the flag is 9000 cm. Calculate the length in, cm of the flag.

- A 1.1×10^2
B 1.1×10^3
C 1.1×10^4
D 1.1×10^5

35.

If 4 is an odd number, then 4 is not divisible by 2

Determine the contrapositive for the above implication

- A If 4 is not divisible by 2, then 4 is an odd number
- B If 4 is divisible by 2, then 4 is an even number
- C If 4 is an even number, then 4 is divisible by 2
- D If 4 is an odd number, then 4 is divisible by 2

36. Which of the following statements is correct?

- A 34° and 56° are conjugate angles
- B 98° and 82° are supplementary angles
- C 204° and 156° are complementary angles
- D 105° and 255° are reflex angles

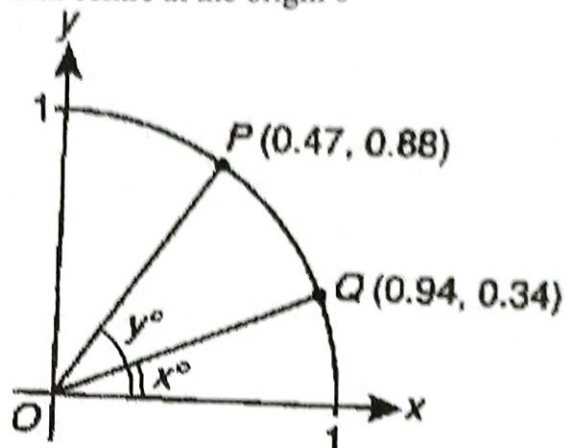
37. Which of the following sets of ordered pairs is a function?

- A $P = \{ (4, 2), (4, 4), (6, 2), (6, 3) \}$
- B $Q = \{ (8, 4), (12, 8), (16, 4), (20, 8) \}$
- C $R = \{ (6, 2), (6, 3), (10, 2), (14, 2) \}$
- D $S = \{ (10, 5), (16, 4), (20, 4), (20, 5) \}$

38. What is needed to be done before applying mathematics to solve the problems

- A Reporting the findings
- B Refining the mathematical model
- C Identifying and defining the problems
- D making assumptions and identifying the variables

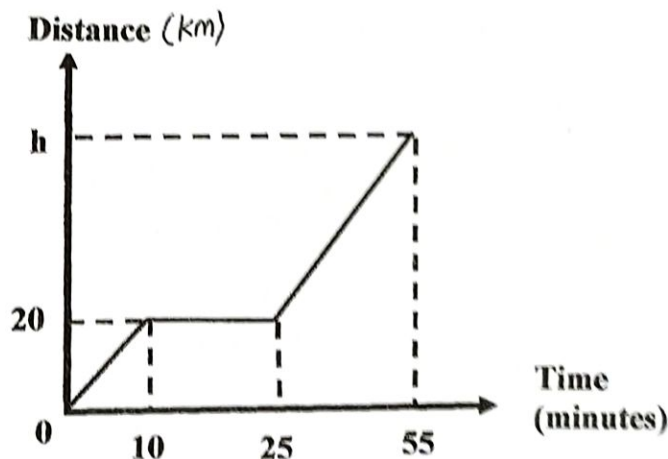
39. In the diagram below, P and Q are two points on the circumference of a unit circle with centre at the origin O



Find the value of $\sin x + \cos y$

- A 1.82
- B 1.41
- C 1.22
- D 0.81

40. The distance-time graph below shows the journey of a car between two tourist spots.



Find the value of h given the average speed of the whole journey is 72 kmh^{-1} .

- A 64
- B 66
- C 68
- D 70

END OF QUESTION PAPER