GCE O/L December 2011
Mathematics Paper 1
Duration 2 Hour

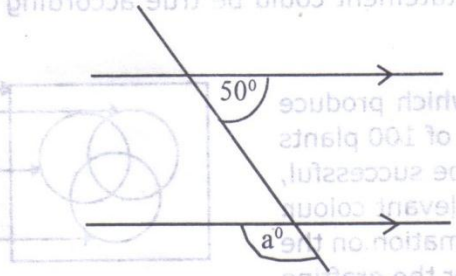
Part A

(1) If the price of 8 pens is 72 rupees, find the price of one pen.

(2) If y - 5 = 0, find the value of y.

(3) Simplify : 0.1 x 0.1

(4) Find the value of a in the figure.

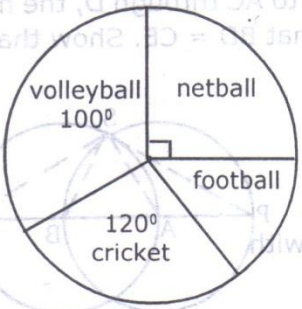


(5) What is the loss that has to be borne when a chair which is bought for 450 rupees has to be sold for 425 rupees?

(6) Simplify : $\frac{4}{a} - \frac{3}{a}$

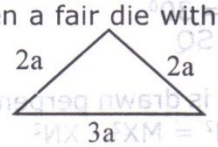
(7) Express 2.08l in millilitres.

(8) The pie chart represents information obtained from a group of students about their favourite sport. Which sport is the favourite of the least number of students?



(9) What is the probability of obtaining an odd number when a fair die with the numbers 1 to 6 marked on its faces is tossed up once?

(10) What is the perimeter of the triangle in the figure?

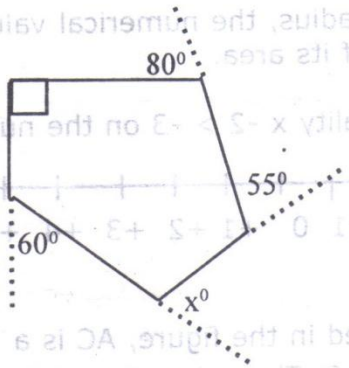


(11) One man requires 8 days to complete a certain task. If two such men work for 2 days, what fraction of the task can they complete?

(12) From the following expressions, select and write down tll the expressions that give the answer 4y.

2(y + y) (2y + y) 2y x 2y 2y + 2y 2 + 2y

(13) Find the value of x based on the information in the figure.



(14) If a water pump takes 24 minutes to fill 2/3 of a tank, how many minutes will it take the pump to fill half the tank?

(15) The marks obtained by 9 students who faced a certain test are given below.

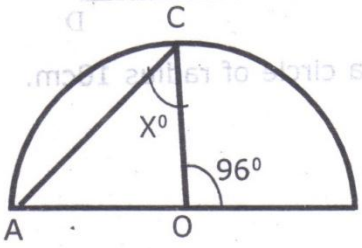
2 3 5 8 4 10 4 6 7

Find (i) the mode
(ii) the range of these marks

(16) Factorize : $x^2 - a^2 + x + a$

(17) A discount of 8% is given on the marked price when an item is sold. Find the marked price of an item which was sold for 368 rupees.

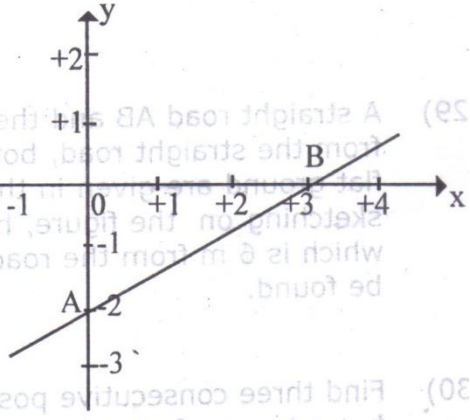
(18) The figure denotes a semi-circle with centre O. If $\hat{COB} = 96^0$, find the value of x.



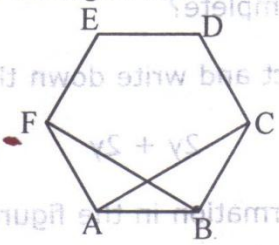
(19) Make "s" the subject of $v^2 = u^2 + 2as$

(20) Find the value of 2log5 + log8 - log2

(21) What is the
(i) gradient
(ii) equation
of the straight line through 'A' and 'B' given in the figure?

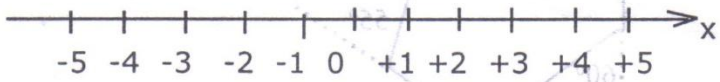


(22) The figure denotes a regular hexagon ABCDEF. Give reasons as to why AC = FB

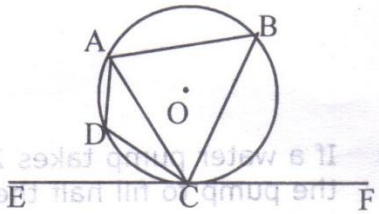


(23) Determine for which value of the radius, the numerical value of the circumference of a circle equals the numerical value of its area.

(24) Indicate the solutions of the inequality x -2 > -3 on the number line given below.

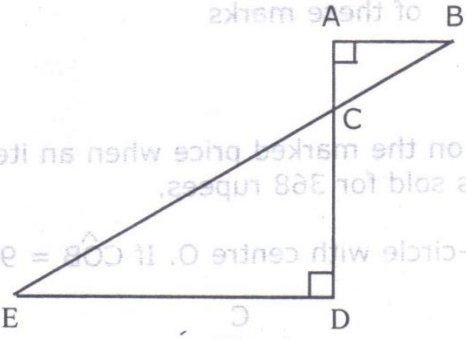


(25) In the circle with centre O illustrated in the figure, AC is a chord and EF is a tangent through C. The points D and B are on the circle. If $A\hat{C}E = 60^0$ find the magnitude of $A\hat{D}C$.

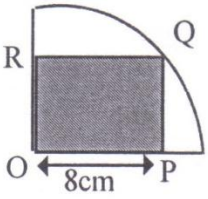


(26) A map has been drawn to the scale 1 : 50 000.
(i) What is the actual distance in metres represented by 1 cm in the map?
(ii) By what length is an actual distance of 250 metres represented in the map?

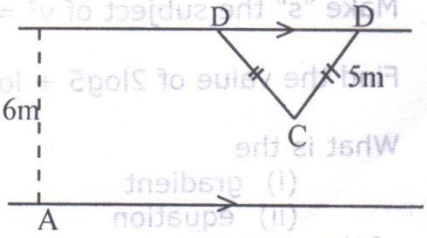
(27) In the figure, AB = 2cm, ED = 8cm and AD = 5cm. Find the length of AC.



(28) The figure denotes a sector of a circle of radius 10cm. If Op = 8cm, find the area of the rectangle OPQR.



(29) A straight road AB and the location C of a tree, 4 m from the straight road, both of which are located on a flat ground are given in the figure. Indicate by sketching on the figure, how the location of a point D which is 6 m from the road and 5 m from the tree can be found.



(30) Find three consecutive positive integers a, b and c such that a + b is a perfect square and b + c is a perfect cube.

Part B

1) Mala bought a stock of mangoes. $\frac{1}{8}$ of the stock was spoilt. $\frac{1}{7}$ of the unspoilt mangoes were raw. Mala sold the remaining portion of unspoilt ripe mangoes.

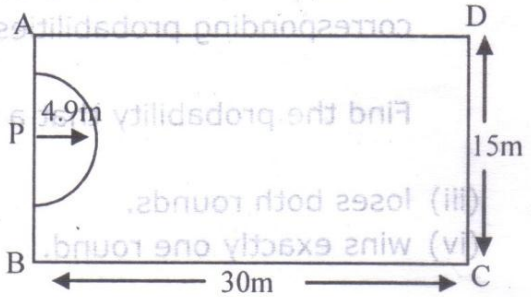
(i) What fraction of the total stock of mangoes was unspoilt ?

(ii) What fraction of the total stock of mangoes was sold ?

(iii) There were 400 fruits in the stock that was bought. If Mala sold the unspoilt ripe mangoes at Rs. 10 per fruit, how much did she earn by selling the mangoes ?

(iv) By selling the mangoes, Mala made 20% more than the amount she spent to buy the stock. Find the price at which she bought the stock of mangoes.

2. A sketch of a rectangular shaped netball court is given in the figure.



(i) Find the perimeter of the netball court.

(ii) Find its area.

(iii) It is required to draw a semi-circular goal circle inside the court. The centre 'P' of the goal circle should be at the mid-point of AB. Further, the goal circle should meet AB at the two points which are 2.6m from A and B respectively. Draw a sketch of such a goal circle on the above figure and note down its radius.

(iv) Two goal circles as mentioned in (iii) above are located on both sides of a netball court. If the centre player is not allowed to enter the goal circles. show that the area of the court in which she can move is 374.54 m². (Take $\pi = 22/7$)

3. (a) A and B started a business by investing money in the ratio 4:5

(i) If A invested 20 000 rupees, how much did B invest ?

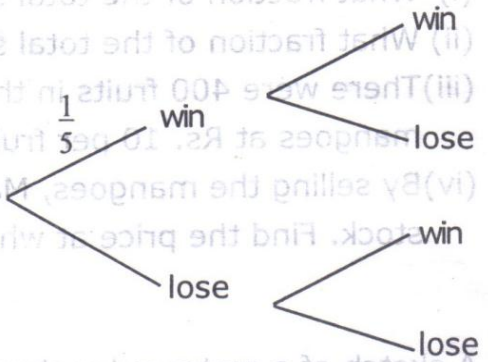
(ii) A profit of 6 000 rupees was made by the end of the year, 10% of which was re-invested in the business. If the remaining amount was divided between the two in the ratio that they invested in the business, find separately the amounts that A and B received.

(b) Sunil's father sent 340 Euro to Sunil who lives in Great Britain. What is its value in Sterling Pounds ? (Take that 1 Euro equals 145 Sri Lankan rupees and that 1 Sterling Pound equals 170 Sri lankan rupees.)

4. (a) In a single player computer game, the player has to drive a motor car two rounds. In any round, either the player wins the round or loses it. The probability that a novice wins the first round is $\frac{1}{5}$

(i) An incomplete tree diagram to represent this information is given below. Write down the corresponding probabilities on the branches.

(ii) If the novice wins the first round, the probability that he will win the second round is $\frac{1}{6}$ and if he loses the first round, the probability that he will win the second round is $\frac{1}{4}$. Extend the above tree diagram to include the probabilities of win/lose of the second round and write down the corresponding probabilities on the branches.



Find the probability that a novice.

(iii) loses both rounds.

(iv) wins exactly one round.

(b) If ε = {1, 2, 3, 4, 5, 6, 7, 8, 9}
A = {Multiples of two less than 10}
B = {Prime numbers less than 10}
write down the set (A U B)' by listing its elements.

5. The rainfall values in millilitres at a certain location, collected during 30 days by the meteorological department are given below.

10	34	45	23	32	24
22	37	34	35	47	32
25	12	60	46	53	33
39	29	47	29	43	55
37	35	38	41	37	35

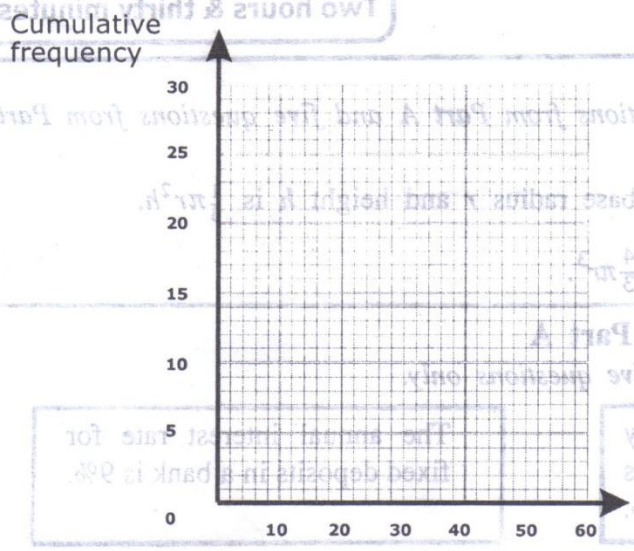
(i) What is the minimum and the maximum rainfall received during the 30 days ?

(ii) An incomplete frequency table including tally marks, prepared for the above data is given below. Complete this table.

Class Interval (Rainfall mm)	Tally mark	Frequency (Number of days)
10 - 20		
20 - 30		
30 - 40		
40 - 50		
50 - 60		

(iii) Add a cumulative frequency column to the above frequency table and complete it.

(iv) Using the information in the frequency table, draw the cumulative frequency curve on the following coordinate plane.



(v) Find the median rainfall during the period, according to the cumulative frequency curve