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மேல் மாகாணக் கல்வித் திணைக்களம் - கொழும்பு கல்வி வலயம்
Western Provincial Education Department - Colombo Educational Zone

දෙවන වාර ඇගයීම -2016
இரண்டாம் தவணை மதிப்பீடு -2016
Second Term Evaluation -2016

10 ශ්‍රේණිය தரம் 10 Grade 10	ගණිතය II පත්‍රය கணிதம் வினாத்தாள் - II Mathematics Paper - II	පැය තුනයි Three Hours

- Answer ten questions selecting five questions from part A and five questions from part B
- Each question carries 10 marks.

Part – A

- Answer five questions only.

(01)

a) A 20% duty was charged for a computer imported to Sri Lanka by paying Rs. 180 000.

i. Calculate the amount of duty paid for the computer.

ii. If Rs. 1500 was spent when transporting the computer and after that 15% profit is expected by the trader, find the marked price of the computer.

b) The annual income of Mr. Dissanayake is Rs. 1 000 000. The limits and the percentages of income taxes which should be given to the government are shown in the following table.

Income	Percentage charged as tax
For the first 400 000	Tax free
For the second Rs. 400 000	5%
For the third Rs. 400 000	8%

Calculate the total amount Mr. Dissanayaka pays, as tax for a year.

(02) An incomplete table of values of x and y obtained to draw the graph of the function $y = 2x^2 - 5$ is given below.

x	-3	-2	-1	0	1	2	3
y	13	3	-3	.....	-3	3	13

i. Find the value of y when $x = 0$

ii. Draw the graph of the above function by taking 10 small divisions as one unit along the x – axis and 10 small divisions as two units along the y – axis.

Using the graph,

iii. write the equation of the axis of symmetry.

iv. write the range of values of x where the function decreases negatively.

v. when the above function is moved 3 units upwards along the y axis, write the equation of the new function obtained.

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(03)

a) The cost of 8 pens and 5 erasers is Rs. 348. The cost of 4 pens is equal to the cost of 12 eresers. Build up a pair of simultaneous equations by taking the price of a pen as Rs. x and price of an eraser as Rs. y according to the above data.

By solving the above equations find the cost of a pen and an eraser separately.

b) Solve; i. $3x + 2\left\{\frac{1}{2}(4x - 2) - x + 3\right\} = 9$

ii. $3x^2 - 15x = 0$

(04)

a) Factorise.

i. $ax - ay - x + y$

ii. $x^2 - 13x + 40$

b) Find the value using the knowledge of factors; $\frac{22}{7} \times 8.5^2 - \frac{22}{7} \times 1.5^2$

c) Solve; $\frac{7}{2x-3} = \frac{5}{3 - 2x}$

(05)

a) Without using the logarithmic tables,

i. Simplify ; $\log_3 24 + \log_3 5 - \log_3 40$

ii. Solve; $\lg x + \lg 4 = \lg 8 + \lg 25$

b) Copy the following steps in to your answer script and using the logarithmic tables,

i. Fill in the blanks in the index form

$x = 375.2 \times 8.04$

$= 10^{\cdots\cdots} \times 10^{\cdots\cdots}$

$= 10^{\cdots\cdots}$

ii. Simplify, using the logarithmic tables $x = \frac{375.2 \times 8.04}{10.02}$

(06) 9 men working 8 hours a day can build $\frac{3}{4}$ of a certain building in 12 days.

i. Find the number of man hours needed to build $\frac{3}{4}$ of the building.

ii. Give the remaining amount of work in man hours.

iii. If three men left before completing the remaining work due to sickness, find the number of days needed for the others to finish the remaining work by working 8 hours a day.

iv. If the rest of men worked 12 hours a day to complete the remaining work of the building find the number of days they needed to complete this work.

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Part – B

- Answer five questions only.

(07) a)

i. What is the common term of the number sequence -7 , -4 , -1 , 2 , ... ?

ii. Find the 12th term of the above number sequence.

iii. Is (+42) a term of this number sequence ? Give reasons.

b) Find the first three terms of the number sequence which common term is 16 – 3n.

(08) Using a straight edge, a pair of compasses and a cm / mm scale and showing the construction lines clearly,

i. construct the triangle ABC of which AB = 6.5 cm, $A\hat{B}C = 75^0$ and AC= 8cm

ii. construct a perpendicular to the line AB from the point C and name the intersecting point of the perpendicular and AB as P.

iii. construct the locus of a moving point which is equidistant to the straight lines AB and AC and name the intersecting point of this locus and the above perpendicular as O.

iv. construct,the circle with the centre O and the radius OP and write the length of the radius.

(09) The given frequency distribution shows the information about the number of limes contained in one kilogram.

No. of limes	10	11	12	13	14	15
No. of kg s	4	7	8	12	6	3

i. Write the mode number of limes contained in one kilogram.

ii. Express the number of kilograms which contained 12 or less than 12 limes as a fraction of the total number of kilograms

iii. Find the mean number of limes contained in a kilogram to the nearest whole number.

iv. If the cost of 1 kg of lime is Rs. 210, find the cost of a lime.

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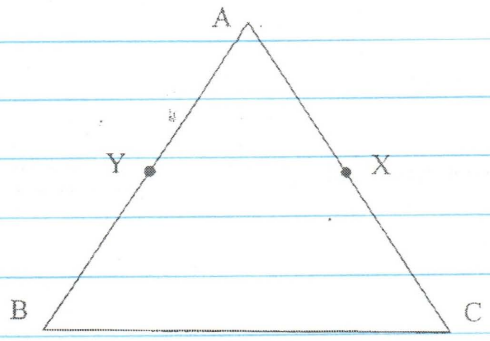
(10) In the triangle ABC, BX is drawn perpendicular to AC and CY is perpendicular to AB and BX = CY.



i. Copy the above diagram and complete it by inserting the given data.

ii. Prove that $\Delta ABX \equiv \Delta ACY$

iii. Show that $A\hat{B}C = A\hat{C}B$

iv. If the interescting point of BX an CY is O, prove that BOC is an isosceles triangle

v. If $B\hat{A}C = 70^0$, find the value of $O\hat{B}C$.

(11)

a) Write two properties which a quadrilateral should possess for it to be a parallelogram.

b) ABCDEF is a regular hexagon which vertices A , B , C , D , E and F lie on a circle in order. AC and DF are joined.

i. Include the above data in a diagram and prove that AC = DF.

ii. Show that ACDF is a rectangle.

(12) A group of students in grade 10 left their school at 5.00 a.m. for an educational tour by bus. They travelled $2\frac{1}{2}$ hours at a uniform speed of 40kmh^{-1} and after that stayed 45 minutes for their breakfast. Finally they travelled another 90km at a uniform speed within 90 minutes and reached the end of their journey.

i. Draw a distance – time graph for the above data

ii. Find the distance from their school to the place where the students had their breakfast.

iii. Find the uniform speed they travelled by bus in the second part of the journey.

iv. At what time did they reach the end of the journey?

v. Find the average speed of the bus.

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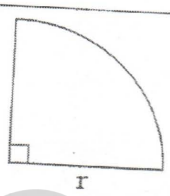
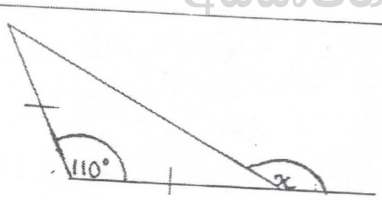
Part – A

- Answer all questions on this paper itself.

01	Select the correct answer and fill in the blank. The 1st approximation of $\sqrt{11}$ is ..... (3.1 / 3.2 / 3.3)
02	Simplify $\frac{2x}{4x^{-2}}$
03	Write an algebraic expression for the perimeter of the given sector using π and r. 
04	Express $lg\ x = 3$ in index form and find the value of x.
05	Find the value of x. 
06	What is the actual length represented by 3.5cm in a scale diagram which is drawn to the ratio 1 : 30000 ?
07	Solve $\frac{3}{5x} - \frac{1}{2x} = 1$

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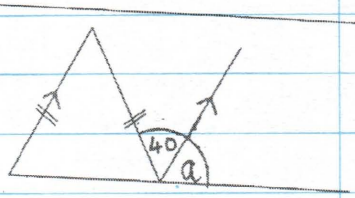
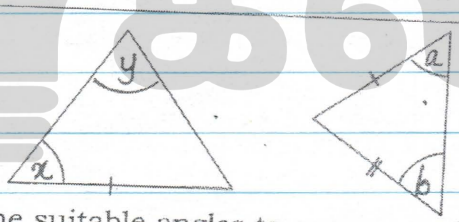
08 Write the set of positive integers which satisfied the inequality $2x - 3 \leq 3$

09 Find the value of 'a' in the given diagram



10 How much interest does a man have to pay in 3 months when a loan of Rs. 1000 is borrowed at a monthly simple interest rate of 3% ?

11



Find the suitable angles to congruent the above two triangles in the case AAS and fill in the blanks.

x = ...

y = ...

12 Make x the subject of the formula $ax = \frac{5 - bx}{3}$

13 Which term should be added to make $x^2 - 12x$ as a perfect square ?

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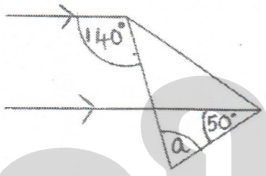
14	If $\xi = \{2, 3, 5, 7, 11\}$ and $A' = \{3, 7\}$, find n (A)
15	If Rs. 200 has to be paid as quarterly rates for a house of assessed annual value at Rs. 20000. Find the percentage rate charged per annum.
16	Write the equation of the straight line parallel to the straight line $2y = 4x-1$ which passes through the origin.
17	Find the value of 'a' in the given diagram 
18	How many hours are taken by a pump passing the water at a speed of $200 l min^{-1}$ to fill a cube shaped tank completely? The base area of the tank is $36m^2$.
19	Factorise $5x^2 - 125$

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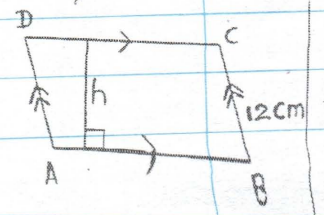
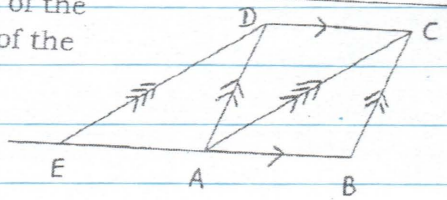
20 If the perimeter of parallelogram ABCD is 54cm.

i) Find the length of AB

ii) If the area of the parallelogram is 75cm², find the value of h.



21 ABCD is a parallelogram. If the area of the triangle ABC is 12cm², find the area of the parallelogram ACDE



22 If $\xi = \{1, 2, 3, 4, 5, 6, 7\}$, $A = \{2, 3, 5, 7\}$, $B = \{2\}$

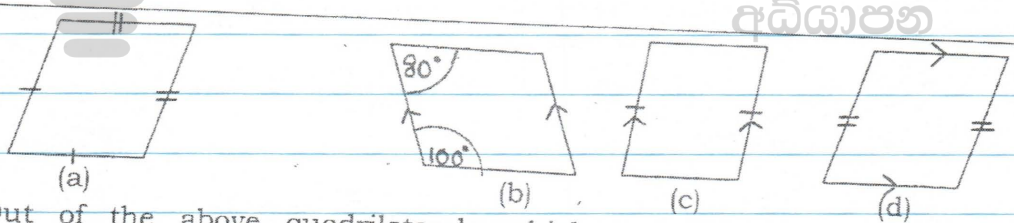
Fill in the blanks using suitable symbols

i) B ..... A

ii) 6 ..... A

23 Find the L.C.M. of $2xy$, $x^2 - xy$ and $(y-x)^2$

24)



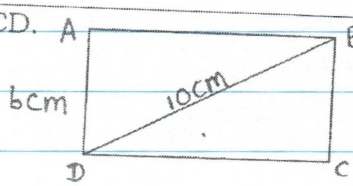
Out of the above quadrilaterals which represent the properties of a parallelogram.

i) a and b only

ii) b and d only

iii) b and c only

25 ABCD is a rectangle. Find the perimeter of ABCD.



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Part – B

- Answer all questions on this paper itself. Each question carries 10 marks.

01) A man spends $\frac{1}{3}$ of his monthly salary on food, spends $\frac{1}{4}$ on education of his children.

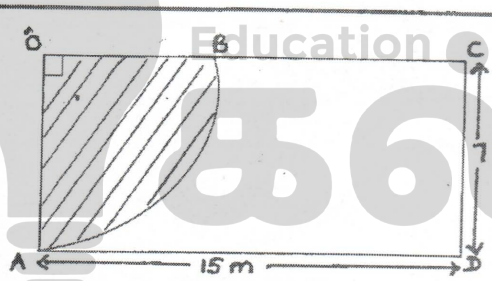
i. What is the whole fraction that he spends on food and education?

ii. If he spends $\frac{4}{5}$ of the remaining, on other expenses, find the fraction of his salary he spends on other expenses.

iii. What is the remaining fraction of the salary ?

iv. If the remaining amount of the salary is Rs. 5000, find the amount he spends on other expenses.

02)



The diagram illustrates a rectangular ground. Right angular sector of the circle AOB is covered with flower plants. $\left(\pi = \frac{22}{7}\right)$

i. Find the arc length of AB.

ii. Find the perimeter of ABCD which is not covered with flower plants

iii. Find the area of ABCD.

iv. Instead of the above sector AOB, If flower plants are planted in a right angled triangular part with a base AO which is equal to the area of AOB. Draw a sketch diagram related to the above information with the measurements.

v. If Rs. 66500 is spent to cover the remaining part which is not covered with flower plants with grass, find the amount of money to be spent to cover $1m^2$ of it.

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03) Piyal borrowed Rs. 80000 from a certain financial institution at 24% annual simple interest rate.

i. Find the monthly simple interest rate if the institution calculates the interest monthly

ii. Calculate the interest that should be paid for the loan for a month.

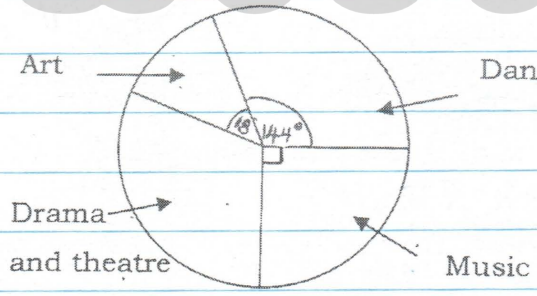
If piyal expects to settle the loan after 10 month,

iii. what is the total interest should be paid?

iv. calculate the total amount he had to pay to be released from the loan.

v. if the above loan amount and the interest should be paid in 10 equal monthly instalments, find the value of an instalment.

04) The following pie chart illustrates the number of students who are doing art, dancing, music, drama and theatre.



i. Find the angle of the sector which represents drama and theatre.

ii. If two students are doing art, How many students are doing dancing?

iii. It is intended to take the students who are doing drama and theatre to watch a drama and each student should buy a ticket at Rs. 550/-, find the total amount of money to be collected from the students who are going to watch the drama.

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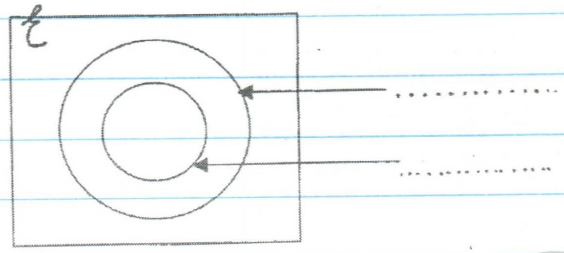
iv. Find the probability of student who won't watch the drama.

v. Express the ratio between the number of students who are doing art and dancing in the simplest form.

05) The given Venn diagram represents 75 applicants who faced the G.C.E. (O/L) examination in English and Mathematics only.



- All 30 students who have passed mathematics, passed English as well
- 12 students failed both subjects

i. Include the above data in the Venn diagram and name the given sets.

ii. How many have passed English but failed mathematics?

iii. If the set of students who have passed Mathematics is taken as M and those who have passed English is taken as E, express those who have passed English only in set notation.

iv. Show that the number of students who are eligible to enter the A/L class by passing mathematics does not exceed 50%

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