සබරගමුව පළාත් අධ්‍යාපන දෙපාර්තමේන්තුව
Sabaragamuwa Provincial Department of Education

පළමු වාර පරීක්ෂණය 2019 **10 ශ්‍රේණිය**
First Term Test 2019 Grade 10

ගණිතය	I	පැය දෙකයි
Mathematics	I	Two Hours

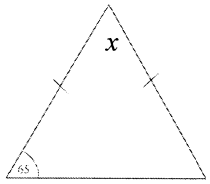
Part A

Answer all questions on this paper itself

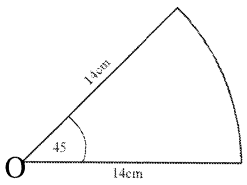
01. How many $\frac{1}{4}$ kg packets can be made out of 20 kg of tea powder

02. Between which two consecutive whole numbers that $\sqrt{22}$ lies

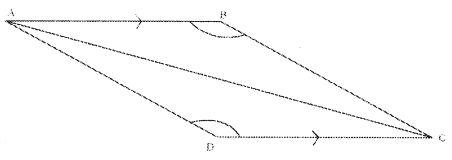
03. Find the value of x



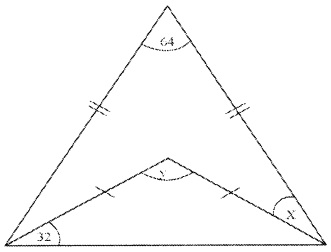
04. Find the perimeter of the following sector . O is the centre of the circle and the radius is 14 cm



05. State the case of congruence for the following pair of triangles

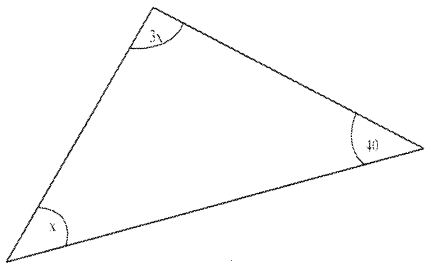


06. Find the values of x and y



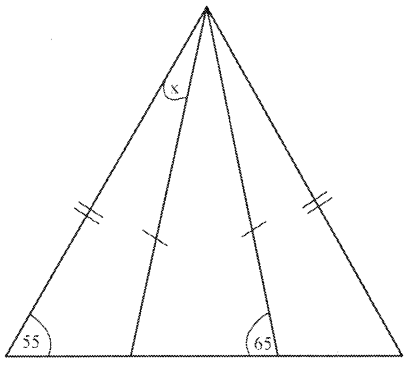
07. Fill in the blanks

$$(2x - 3y)^2 = (\quad) - 2 \times 2x \times 3y + (-3y)^2$$
$$= 4x^2 + (\quad) + 9y^2$$

08. 

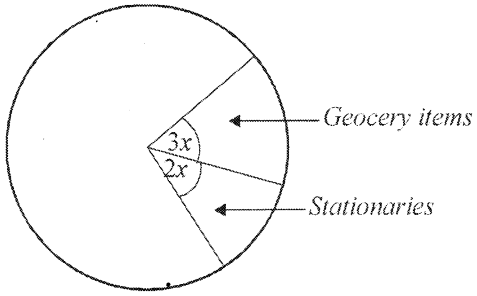
Find the value of x

09. A work can be finished by 4 men in 9 days. Find the number of days requires by 6 men to complete the same work.

10. 

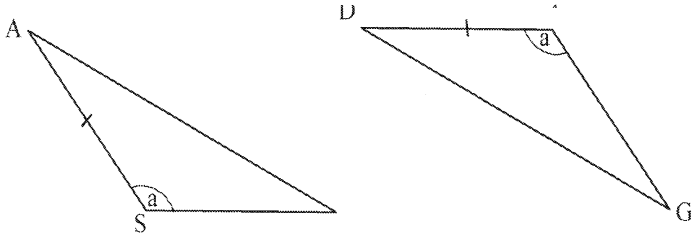
Find the value of x

11. The following pie chart illustrate the information about the daily sales of a Ravindu stores



What is the income from stationaries if the income from stationaries if the income from grocery items is Rs.2400

12.

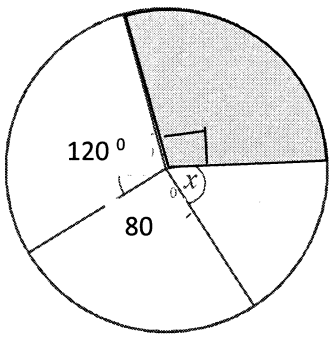


i. Mark the remaining pair of elements in above triangles for congruency

ii. State the case of congruency

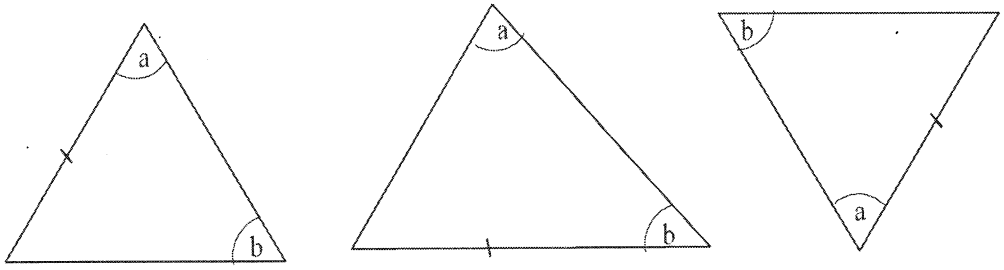
13. Factorize, $10 - 3x - x^2$

14.



If the shaded area of this pie chart represents 27 students find the value represented by the sector with x as the angle

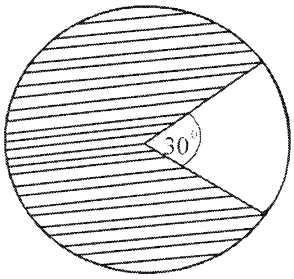
15. What are the two triangles that are congruent?



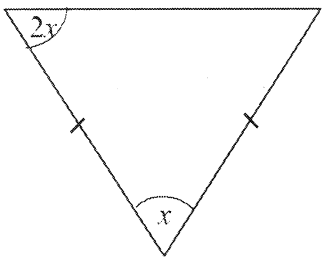
(i) (ii) (iii)

16. If $a+b = 8$, $ab = 15$, find the value of $a^2 + b^2$

17. Area of the following circle is 720 cm^2 . Find the area of the shaded region



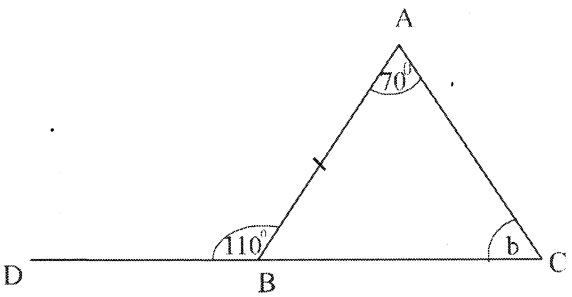
18.

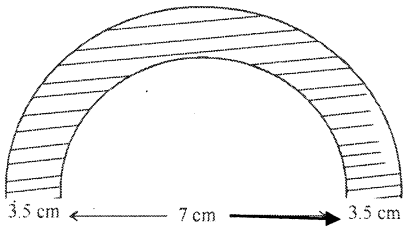


Find the value of x

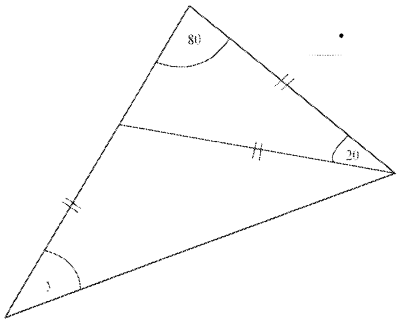
19. Find the least common multiple of $10ab$, $5a^2$, $2b^2$

20. Find the value of $\hat{ACB}$



21. 

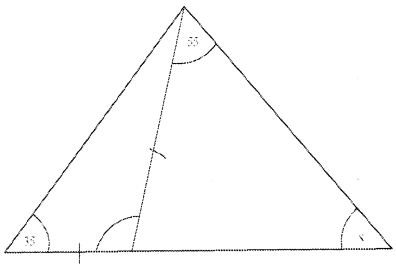
Find the perimeter

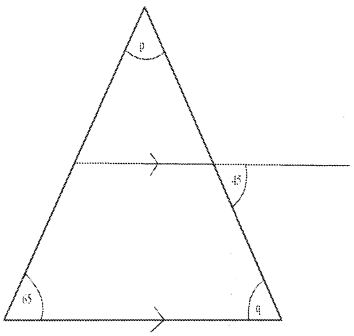
22. 

Find the value of x and y

23. Find the L C M of $2x + 10$, $x^2 + 5x$

24. Find the value of x and y

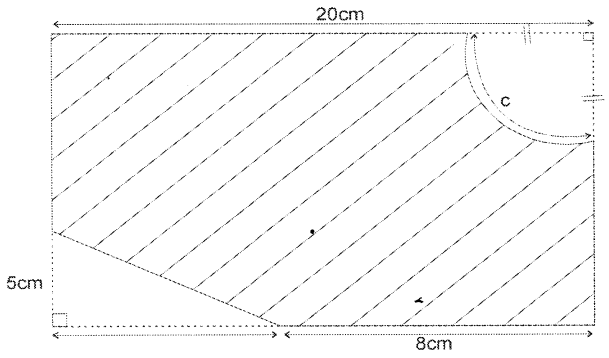


25. 

Find the value of P and Q

Part B

01.



A sector and a triangular part is removed form a rectangular land of length 20cm
and breadth 10cm. The radius of the sector is 7cm.

i. Find the values of a, b, c

ii. Find the perimeter of the shaded part

iii. Find the area of the triangular part

iv. Find the area of the sector

v. Find the area of the shaded part

02. Sithuka travelled $\frac{2}{3}$ of a certain journey by train $\frac{1}{4}$ by bus and the remaining 7 km on foot.

i. What fraction is the distance he has travelled by both train and bus.

ii. What fraction is the distance he travelled on foot

iii. What is the total distance he travelled

iv. Find the distance he travelled by train and bus separately.

03. In a vehicle manufacturing company,15 men can manufacture a motor car in 9 days.

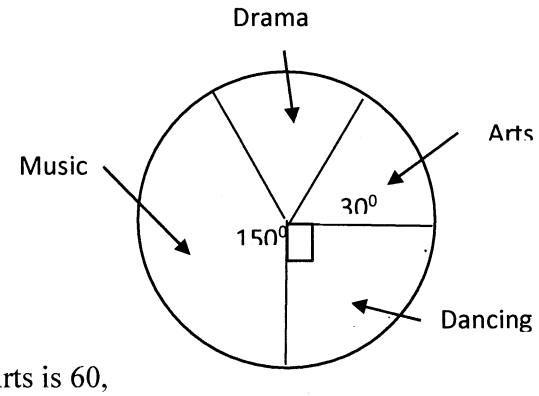
i. Find the number of man days needed to manufacture a motor car

ii. After working for three days 5 men from the above 15 has taken sick leave

iii. How many more days are needed for the remaining 10 men to complete the work?

iv. If the labour cost per day for a worker who works on manufacturing motor car is Rs.3500, find the difference between the salary earned by a worker who has taken leave and the sallery earned by a worker who hasn't taken leave.

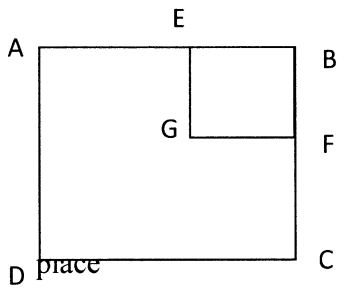
04. Following pie chart shows the information about the number of students of a certain school who selected each aesthetic subject to study .



i. What is the angle of the sector who are studying drama as a subject

ii. If the number of students who study Arts is 60, what is the number of students study music

05. The following figure is a sketch of a square land.The area of the land is $52m^2$ Vegetables are cultivated in the small square named EBFG.The area of the small square is 20 m^2



i. Find the length of a side of a small square

ii. Find the length of the land,correct to the first decir place

iii. They decided to construct a square shaped pond in which the area is 4 m^2 ,in the land adjacent to FC & DC . Draw with measurements a sketch of the part to be added in the above figure

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Sabaragamuwa Provincial Department of Education

පළමු වාර පරීක්ෂණය 2019 First Term Test 2019	**10 ශ්‍රේණිය** Grade 10
ගණිතය II Mathematics II	පැය තුනයි Three Hours

- Answer 10 questions by selecting 5 questions from part A and 5 questions from part B
- Write relevant steps and correct units when answering the questions.
- Each question carries 10 marks.

Part A

Answer (05) five questions only

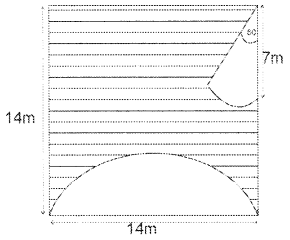
1) A sector of a circle of 60^0 and a semi circular part are kept in a square shaped ground whose length is 14 m to make fish tank. Grass is grown on the rest of the ground.

i. Find the area of the square

ii. Find the area of the ground which is kept to make fish tanks.

iii. Find the area of the ground where grass is grown

iv. If a fence is constructed around the shaded area, find the length of barbed wire need to it to make three rounds.



2) a) Simplify

i. $\frac{5}{6} \div \frac{3}{8} \times \left(1\frac{2}{3}\right)$

ii. $\frac{5}{6} \div \frac{3}{8}$ of $1\frac{2}{3}$

b) There is a water tank full of water. First day $\frac{1}{4}$ of water from it is used. $\frac{5}{6}$ of remaining water is used in second day.

i. Represent the remaining water at the and of the first day as a fraction

ii. Represent the quantity of water used in second day out of the full tank as a fraction

iii. Write remaining water at the end of the second day as a fraction

iv. If the remaining water at the end of the second day was 500l find quantity of water used in first day in liters.

3) a). Expand:

i. $(5x - 3y)^2$ ii. $(\frac{a}{3} + \frac{b}{2})^2$

b). Find the value using the knowledge of factors 95×105

c). Find the factors $x^2 - x - 6$

d). If $x^2 + y^2 = 34$, $xy = 15$, Find the value of $(x + y)$

4) a). Find the factors

i. $a^2b^2 - 1$

ii. $x^2 - 10x + 24$

b). Fill in the blanks

i. $p^2 + 20p + \ldots\ldots = (p + \ldots\ldots)^2$

ii. $25a^2 + \ldots\ldots + 4b^2 = (5a + \ldots\ldots)^2$

c). Length of one side of a square shaped piece of cloth is $5a - 3b$

i. Find out the area of the square in terms of "a" and "b"

ii. If $a = 2$, $b = 1$ find the real value of area.

5) a). Find the least common multiple of following algebraic expressions.

i. $18, 6x^2, 12x$

ii. $x^2 + ax, (x - a)^2, x^2$

b). If $mn = 40$, $m + n = 13$, Find the value of $m - n$

6) a). Expand the following binomial expressions

i. $(2x - 3)^2$ ii. $(1 - 3x)^2$

b). Find the factors of $1 - 9x^2$

c). Find the L.C.M of $3x(x - 3)^2$, $2x^2(x - 3)$

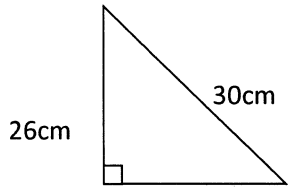
Part B

7)

i. Obtain the value of $\sqrt{85}$ for the first approximation

ii. Find the square root of $\sqrt{11449}$

iii. Calculate the length marked with English letter. Express the result correct to two decimal places



8)

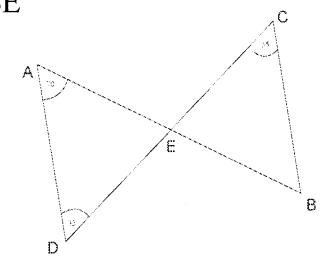
In ABC triangle AC = BC. The angle bisector of $\hat{ACB}$ meet AB line at D

i. Prove that ADC △ ≡ BSC △

ii. Prove that AD =DB

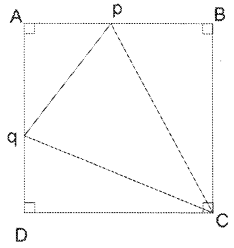
iii. Prove that $\hat{BDC}$ =90^0

9) a). The straight lines AB and CD intersect at E . If ADE =35^0, DAE =70^0 and ECB =55 Find the magnitude of CBE



b). In the figure, the straight line drawn from the point A perpendicular to the side BA of the triangle ABC meets the bisector of ABC at P. Prove that BAC + ABC = 2APB

10) In the square ABCD, the points p and |Q lie on the sides AB and AD respectively such that QPC =PQC. Prove that BP =QD



11) a). Fill in the blanks considering direct proportion

i. $\square : 4 = 60 : 80$

$2 : 3 = \square : 15$

b). A group of men, who completed a certain task in 18 days, recruited 5 more men to work on a similar task. Id together they completed the task in 12 days, find how many men there were in the initial group.

12) In ABCD rectangle BD = 2AB . Diagonals of the rectangle intersect each other at O. The side CD has been produced up to E such that CD=DE. Also EB meets AD at F prove that

i. ACE is an equilateral triangle

ii. EO =AD

iii. AFB $\triangle \equiv$ DOC $\triangle$

MATHEMATICS II

Part A

(01) i) $196\ m^2$ → 01

ii) $102.6\ m^2$ → 02

iii) $93.4\ m^2$ → 02

iv) 71.33 m (one round) → 02

214 m (three rounds) → 03

(02) A) i) $\frac{100}{27}$ → 02

ii) $\frac{4}{3}$ → 02

B) i) $\frac{3}{4}$ → 01

ii) $\frac{5}{8}$ → 02

iii) $\frac{1}{8}$ → 01

iv) 1000 ℓ → 02

(03) A) i) $25x^2 - 30xy + 9y^2$ → 01

ii) $\frac{a^2}{9} + \frac{ab}{3} + \frac{b^2}{4}$ → 02

B) 9975 → 02

C) $(x-3)(x+2)$ → 02

D) ± 8 → 03

(04) A) i) $(ab-1)(ab+1)$ → 01

ii) $(x-12)(x+2)$ → 01

B) i) 100 , 10 → 02

ii) $20a$, $2b$ → 02

C) i) $25a^2 - 30ab + 9b^2$ → 02

ii) 49 → 02

(05) A) i) $36x^2$ → 03

ii) $x^2(x-a)^2(x+a)$ → 03

B) ± 3 → 04

(06) A) i) $4x^2 - 12x + 9$ → 02

ii) $1 - 6x + 9x^2$ → 02

B) $(1-3x)(1+3x)$ → 02

C) $6x(x-3)^2$ → 04

Part B

07) i) 9.21 → 02

ii) 107 → 03

iii) 14.96 cm → 05

08) i) $\triangle ADC \equiv \triangle BCD$ (SAS) → 05

ii) AD = DB → 02

iii) $B\hat{C}D = 90°$ → 03

09) a) $A\hat{E}D = 75°$

$C\hat{B}D = 180 - (75 + 55)$

$= 50°$ → 05

b) → 05

10) $\triangle PBC \equiv \triangle QDC$ (RHS)

$\therefore PB = QD$ → 10

(corresponding elements of congruent triangles)

11) A) i) 3 → 02

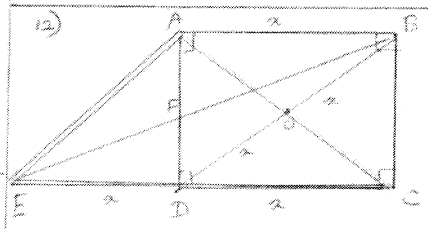
ii) 10 → 02

B) $x \times 18 = k$

$(x+15) \times 12 = k$

$\therefore x = 5$ → 06

12)



4) i. Drama = 360 - (150 + 30 + 90) = 90^0

II. Music = 90 x 2 = 180