Curriculum Aligned Competency Based Test Items

Mathematics

Class - 9

Central Board of Secondary Education

Sri Aurobindo Society
Creating the Next Future

ACER

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Curriculum Aligned Competency Based Test Items
Class 9
Foreword

The National Education Policy (2020), Government of India, envisions transforming school education by equipping students with 21st century skills. The endeavour is to shift focus from rote-learning to acquisition of competencies with a resolve to make education more meaningful and relevant.

The Central Board of Secondary Education (CBSE) in its continuous endeavour to improve the quality of education has already introduced some initiatives in this direction. Strengthening these efforts, the Board had signed an MoU with Sri Aurobindo Society (SAS), Pondicherry in November 2019. As a part of this initiative, SAS is supporting CBSE to develop resource materials, train teachers and take other measures that would facilitate adoption of Competency Based Education in schools. SAS has engaged with Australian Council for Educational Research (ACER) as its knowledge partner for this project.

CBSE, in collaboration with SAS and ACER, has prepared this resource material- ***Curriculum Aligned Competency Based Test Items (Class 9)*** in February, 2022 which is a compilation of assessment items in Mathematics that are aligned to the NCERT/CBSE curriculum. These tasks based on authentic real life situations focus on developing critical understanding among learners in the discipline. Each test covers about 10 questions from a chapter. The assessments, useful for students' practice, are also exemplars for teachers who with their ingenuity can develop many similar items.

— Team CBSE

About CBSE

The Central Board of Secondary Education (CBSE) is a national Board under the Ministry of Education, Government of India. The Board has more than 27,000 schools affiliated to it in India and overseas, in 25 countries. These include the Kendriya Vidyalayas, the Jawahar Navodaya Vidyalayas, schools run by Central Government organizations such as The Army, Navy, Air Force etc., schools run or aided by the State Governments and independent private schools. The Board's mission is to encourage quality of education focussed on holistic development of learners. It motivates schools and teachers to adopt learner centric enquiry-based pedagogies and use innovative methods to achieve academic excellence. The Board is committed to providing a stress-free learning environment to develop competent and confident students who emerge as enterprising citizens of tomorrow, promoting harmony and peace in the world.

About SAS

Sri Aurobindo Society (SAS) is an international, spiritual, and cultural, not-for-profit NGO. SAS has been recognised by the Government of India as a Charitable Organisation, a research institute and an institute of national importance. Sri Aurobindo Society has more than 300 centres and branches across the country, with its head office in Puducherry. SAS is setting up models, centers of excellence and training institutions that are sustainable, scalable and replicable in the country.

About ACER

Australian Council for Educational Research (ACER) is a leading and pioneer international organization working in the field of competency based learning. ACER has been instrumental in coordinating a consortium of international organizations for the implementation of the Programme for International Students Assessment survey in 2000, 2003, 2006, 2009 and 2012.

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Test Item

Scoring Key

Curriculum Aligned Competency Based Test Items
Mathematics
Class 9 – Chapter 1
Number System

SAS21M09Q0101

1 A number line consists of an infinite number of points. Points on it are associated with a rational number.
Khushi says – 'A point on the number line can represent different forms of a rational number.'
Akash says – 'I think each point represents a unique rational number.'
Who is correct? Give an example to support your argument.

_____

_____

SAS21M09Q0102

2 Which of the following statements is true?

A. Every irrational number can be represented as a fraction.
B. Every irrational number can be represented with the help of decimals.
C. Every rational number can be represented as a terminating decimal.
D. Every rational number can be represented as an integer.

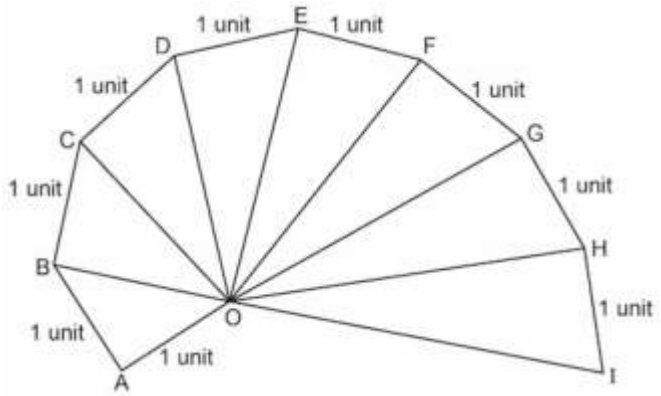
SAS21M09Q0103

3 Irrational numbers can provide more precision on measuring scale.
What can be the possible arguments in favour and against this statement?

_____

_____

Deep draws the spiral of irrational numbers below on a paper.



SAS21M09Q0104

4 What is the length of OE in the spiral?

_____

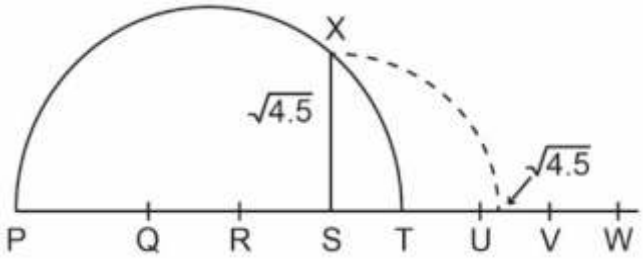
_____

SAS21M09Q0105

5 Simplify:

A. -1
B. $\sqrt{3}$ -$\sqrt{5}$
C. -4+$\sqrt{15}$
D. 4-2$\sqrt{15}$

Vasu represents $\sqrt{4.5}$ on the number line PW. The length of TS = 1 unit. His representation is shown below.



SAS21M09Q0106

6 Which letter represent 0 of the number line?

A. P
B. R
C. X
D. S

SAS21M09Q0107

7 Between which two points does 5.2 lie on this number line?

A. U and V
B. T and U
C. S and T
D. V and W

SAS21M09Q0108

8 Screen size is defined by the distance between two diagonally opposite corners of a screen. A manufacturer can make rectangular display screens as per clients' demands.
A client purchased a display screen of size $\sqrt{70}$ units from the manufacturer last year. For an upgrade, he wants the same type of screen with a larger display.
What are the possible dimensions of the screen purchased by the client last year?

_____

_____

SAS21M09Q0109

9 The new screen size must be more than double, but it should be less than three times that of the existing one.
Which of the following screen sizes meets the client's requirement?

A. $\sqrt{145}$ units
B. $\sqrt{175}$ units
C. $2\sqrt{70}$ units
D. $\sqrt{580}$ units

SAS21M09Q0110

10 The new display screen is to be installed in a space measuring 3 m × 3 m. To make the desired screen for the client, what other information is required by the manufacturer?

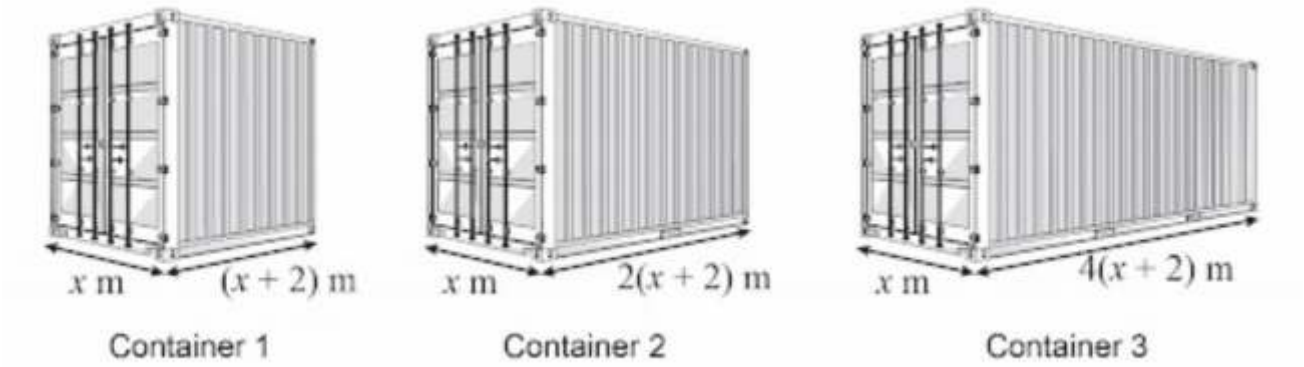
_____

_____

केंद्रीय माध्यमिक शिक्षा बोर्ड
CENTRAL BOARD OF SECONDARY EDUCATION

Curriculum Aligned Competency Based Test Items
Mathematics
Class 9 – Chapter 2
Polynomials

A shipment service provider uses three types of containers for shipping materials. The height and width of the three containers are the same. The containers' height is 0.15 m more than their width, and the volume of the smallest container is 652 m^3



SAS21M09C0201

1 Write a polynomial relating Container 1's length, breadth and height with its volume.

_____

_____

SAS21M09C0202

2 Which of the following statements is true?

A. The volume of the three containers is the same.
B. The length of the three containers is the same.
C. The volume of Container 3 is 2,608 m^3.
D. The length of Container 3 is 4 times the length of Container 2.

SAS21M09C0203

3 What is the height of each container?

_____

_____

Hard plastic square shaped sheets are available in the.
The side length of sheets is as per requirement.
The price of a sheet is z per square meter.
Anuj requires two sheets – a smaller sheet with side length x m and a larger sheet with side length y m. He has two choices:
Choice 1 – buy two separate sheets of side lengths x m and y m
Choice 2 – buy a single sheet with side length $(x + y)$ m

SAS21M09C0204

4 What is the height of each container?

_____

_____

SAS21M09C0205

5 What is the difference in price between the two choices?

_____

_____

SAS21M09C0206

6 The area of a rectangle is $(3x^2 + x - 2)$ square units. Its width is $(1 + x)$ units. What is the length of the rectangle?

_____

_____

SAS21M09C0207

7 A polynomial is expressed as $x^3 + bx^2 + cx + d = 0$. The same polynomial can be written in factor form as $x + px + qx + r = 0$.
How is the constant term in the polynomial related to its factors p, q, and r?

A. $d = p + q + r$
B. $d = (p + q) \times r$
C. $d = p \times q \times r$
D. $d = pq + qr + pr$

SAS21M09C0208

8 A polynomial is divided by $(x-1)$. The quotient obtained is $3x^3 - x^2 - x - 4$, and the remainder is -5. Which polynomial meets these conditions?

A. $3x^3 - x^2 - x - 9$
B. $3x^3 - x^2 - x - 4$
C. $3x^4 - 4x^3 - 3x + 4$
D. $3x^4 - 4x^2 - 3x - 1$

SAS21M09C0209

9 What is the common factor of $x^3 - x^2$ and $-22x^2 + 142x - 120$?

A. x
B. $(x-1)$
C. x^2
D. 1

SAS21M09C0210

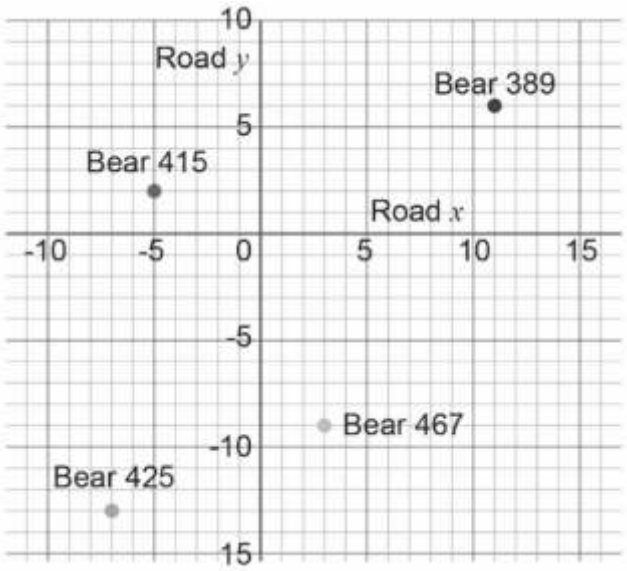
10 A polynomial is expressed as: $p(x) = x^3 + x^2 - x - 1$
At what values of x is the polynomial $p(x) = 0$?

_____

_____

Curriculum Aligned Competency Based Test Items
Mathematics
Class 9 – Chapter 3
Coordinate Geometry

A forest ranger keeps track of bears in his area. He plotted their location on a graph. The origin represents the ranger's control room's location. To access and maintain equipment, Road *x* and Road *y* have been laid and paved inside the forest. They pass through the control room.



One unit on the graph paper represents 1 km.

SAS21M09S0301

1 Which bear is nearest to a paved road?

A. Bear 389
B. Bear 415
C. Bear 425
D. Bear 467

SAS21M09S0302

2 Bear 467 has been injured. The forest rescue team starts from the control room and decides to use the paved road as much as possible. Which road should they take?

_____

_____

SAS21M09S0303

3 How far is Bear 425 from Road x?

_____

_____

SAS21M09S0304

4 A tiger is at (11, 4). How far from it is the nearest bear?

A. 2 km
B. 4 km
C. 5 km
D. 7 km

SAS21M09S0305

5 In the forest, rain shelters are at an interval of 2 km along paved roads. A forest ranger is travelling on Road x. He crosses a rain shelter located at (3, 0).
What is likely to be the location of the next shelter?

_____

_____

SAS21M09S0306

6 The control room receives a message about trespassers located at (–9, –8). The trespassers were seen moving towards Road x on foot. The ranger immediately dispatches a team of guards in a jeep towards them. The guards encounter the trespassers before crossing Road x.
Which of the following is most likely to be the location of the encounter?

A. (–9, –14)
B. (–9, –5)
C. (–9, 4)
D. (9, 5)

SAS21M09C0407

7 Ravi planted a red maple tree sapling. The height of the sapling is 0.25 m. The average growth rate of the height of a red maple tree is 0.27 m per year.
The average life of a red maple tree is 80–100 years. Ravi estimated that his tree will grow up to 27 m.
What is the likely reason behind his estimation?

_____

_____

SAS21M09C0408

8 Which of the following equations represents the height (h) of the red maple tree after 't' years of planting?

A. $h=0.25+0.27$
B. $h=0.25t+0.27$
C. $h=0.25+0.27t$
D. $h=0.25+0.27t$

SAS21M09C0409

9 Which of the following is true for the line with equation: $1.x+0.y-4=0$?

A. The distance of the line from the x-axis is 1.
B. The distance of the line from the Y-axis is 4.
C. The distance of the line from the Y-axis is –1.
D. The distance of the line from the x-axis changes from 1 to –4.

SAS21M09C0410

10 The equation of a line is $ax+by+c=0$.
What conditions ensure that the distance of the line from an axis is constant?

A. $c = 0$ and $a, b \neq 0$
B. $c < 0$ and $a, b \neq 0$
C. $c, b \neq 0$ and $a = 1$
D. $c, b \neq 0$ and $a = 0$

Curriculum Aligned Competency Based Test Items
Mathematics
Class 9 – Chapter 4
Linear Equations in Two Variables

SAS21M09C0401

1 A soap manufacturer makes fragrant and non-fragrant liquid soaps. The liquid soaps are filled in plastic bottles and packed in equal size cartons for transportation. Each carton contains 50 bottles. The mass of a full bottle of soap is 220 gm and that of a half-filled bottle is 120 gm. What will be the mass (gm) of the empty bottle?

A. 10
B. 20
C. 100
D. 110

SAS21M09C0402

2 A carton contains both fragrant and non-fragrant liquid soap bottles.
Write an equation representing the number of fragrant and non-fragrant bottles in the carton.

_____

_____

SAS21M09C0403

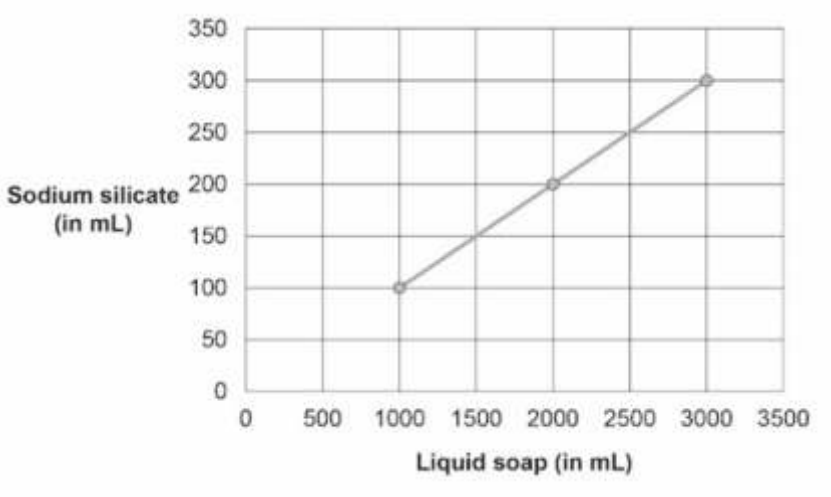
3 A carton is checked randomly. Which of the following cannot be the number of fragrant and non-fragrant liquid bottles in the carton?

A. $(5, 45)$
B. $(15, 35)$
C. $(20, 30)$
D. $(30, 40)$

SAS21M09C0404

4 The soap bottles are available in small and large sizes.
A carton with 10 small and 40 large bottles weighs 10.8 kg. What is the mass of the carton with 50 large bottles?

Sodium silicate is one of the constituents in liquid soap. The graph shows the amount of sodium silicate in liquid soap.



SAS21M09C0405

5 How much sodium silicate (ml) is used for making 10 L of soap?

A. 100
B. 110
C. 1000
D. 10000

SAS21M09C0406

6 Write an equation to show the relation between quantities of sodium silicate and liquid soap.

Curriculum Aligned Competency Based Test Items
Mathematics
Class 9 – Chapter 5
Introduction to Euclid's Geometry

SAS21M09G0501

1 Highways 20A and 56C run parallel to each other for 20 km in a state.
Which of the following statements is most likely to be true regarding them?

A. Both highways are of the same length.
B. There can be no link road between them.
C. The highways make an angle 90° with each other.
D. The distance between the two highways remains almost the same in the state.

Karan marks his city on the map as point A.

SAS21M09G0502

2 Savita says, 'A dot is dimensionless, so your city is also dimensionless.' Why is Savita wrong? Justify your answer.

_____

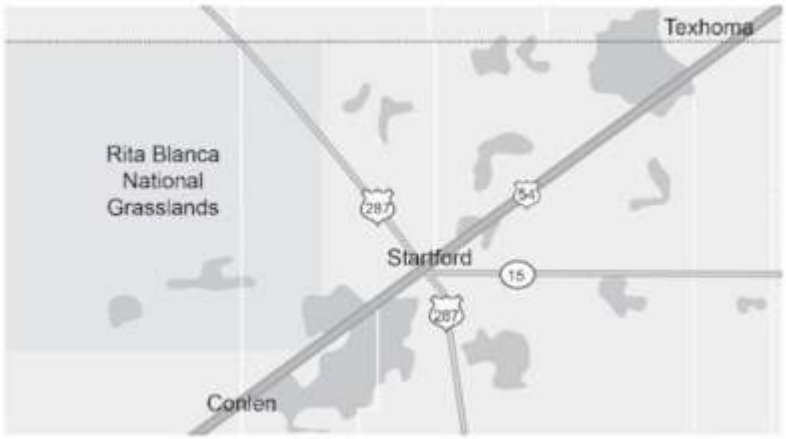
_____

SAS21M09G0503

3 Which of the following is not true?

A. A line has one dimension.
B. A plane has two dimensions.
C. A circle can be drawn with any radius and at any point.
D. Two distinct lines can pass through a point in the same direction.

The map shows three cities Conlen ©, Stratford (S), and Texhoma (T) on a straight highway.



SAS21M09G0504

4 Which of the following is true for the length of the highway between them?

A. The length of the highway between C and S is equal to the length of the highway between S and T.
B. The length of the highway between C and S is three-fourth of the length of the highway between S and T.
C. The length of the highway between S and T is the sum of the lengths of the highway between CT and CS.
D. The length of the highway between C and T is the sum of the lengths of the highway between CS and ST.

SAS21M09G0505

5 A number Y is greater than a number X and another number $Z < 0$.
Which of the following relations can be true for a unique value of Z?

A. $X \times Z = Y \times Z$
B. $X \div Z = Y \div Z$
C. $X - Z = Y$
D. $X + Z = Y$

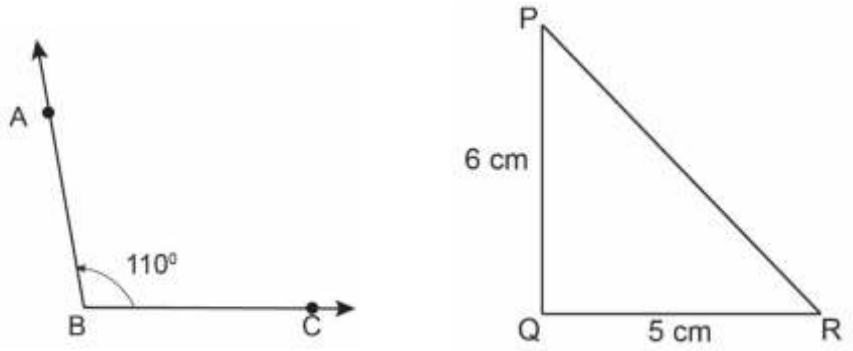
SAS21M09G0506

6 The area of a triangle is equal to the area of a rectangle.
The area of the rectangle is equal to the area of a parallelogram.
What is the relation between the area of the triangle and the area of the parallelogram?

_____

_____

Raghvan claims that the magnitude of the angle ABC is greater than the magnitude of the area of the right triangle PQR.



SAS21M09G0507

7 Is his claim correct? Why?

_____

_____

SAS21M09G0508

8 Two lines intersect at a point P.
Which of the following is true for the distance between the two lines as they travel beyond point P?

A. The distance becomes constant.
B. The distance increases continuously.
C. The distance decreases continuously.
D. The distance increases and decreases depending upon the intersection point.

SAS21M09G0509

9 Balan says, 'The measure of all right angles cannot be equal as their arms can be of different lengths.' Why is Balan's statement not true?

A. The measure of an angle depends upon its orientation.
B. The measure of an angle depends upon the instrument used to measure it.
C. The measure of an angle depends on the length of its angle arms.
D. The measure of an angle depends upon the rotation of one arm on another.

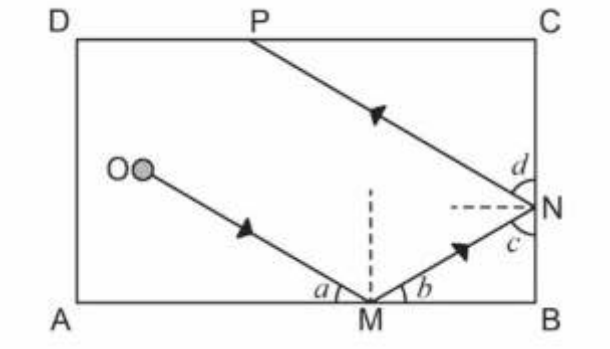
SAS21M09G0510

10 TAB is a straight line. C is the mid-point of AB. D is the mid-point of AC.
Which of the following shows the relation between the line segments?

A. $AD = \frac{1}{2} AB$
B. $AD = \frac{1}{2} CB$
C. $AD = 2AC$
D. $AD = 2DC$

Curriculum Aligned Competency Based Test Items
Mathematics
Class 9 – Chapter 6
Lines and Angles

The game of billiards is played with balls placed on a rectangular table. One ball is struck with the end of a stick, called a cue. The ball bounces into other balls and reflects off the sides of the table. In a real game, the ball may spin, but for mathematical purposes, it is considered that the ball travels in a straight line with the same reflection and incidence angles.



On a billiard table ABCD, the ball placed at O is struck with the cue.

SAS21M09G0601

1 What is the value of ∠a + ∠d?

_____

_____

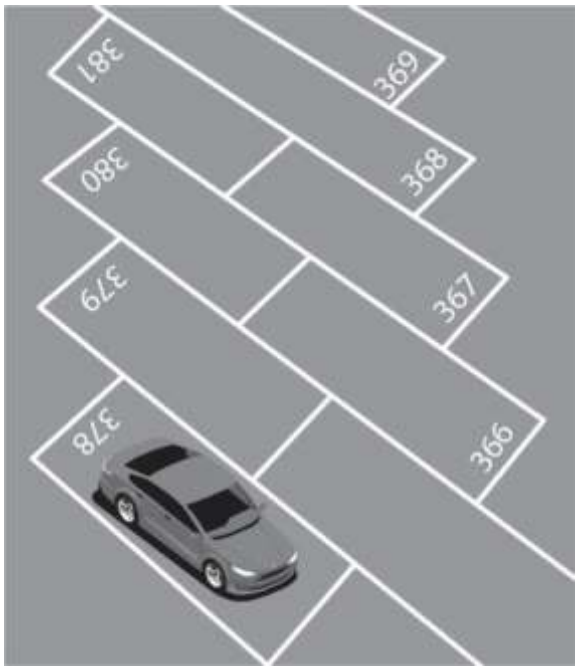
SAS21M09G0602

2 Why is the line OM parallel to PN?

_____

_____

A parking lot for a city mall is shown below. The painted lines that separate the parking spaces are parallel.



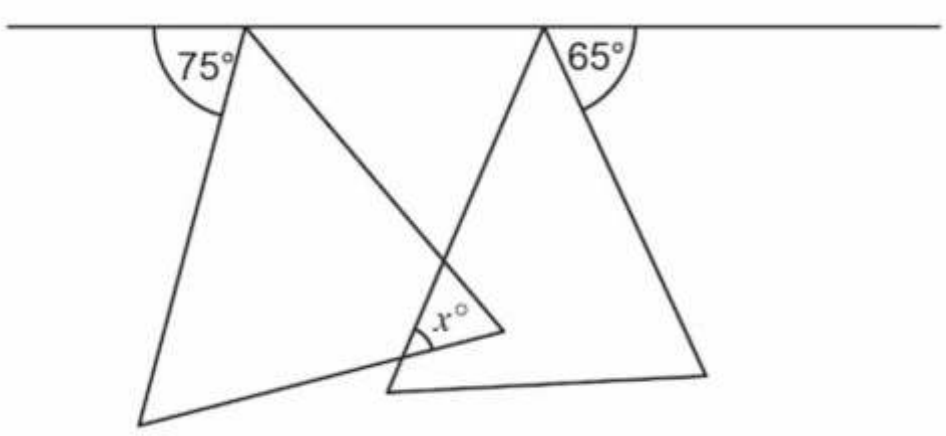
SAS21M09G0603

3 Parking space number 378 is inclined at 60° to the horizon line. At what angle is parking space 380 inclined to the horizontal line? Why?

_____

_____

Two equilateral triangles on a straight line are shown below.

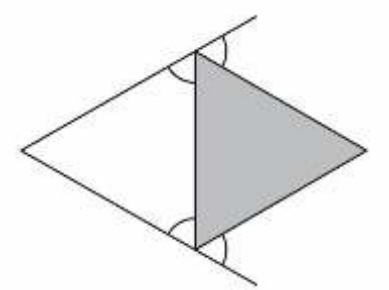


SAS21M09G0604

4 What is the measure of 'x'?

A. 30
B. 40
C. 60
D. 65

The figure below shows an equilateral triangle bounded by two straight lines.

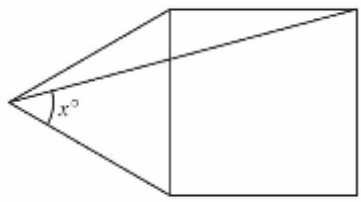


SAS21M09G0605

5 What is the sum of the four marked angles?

A. 180°
B. 240°
C. 270°
D. 360°

The figure below consists of a square and an equilateral triangle connected together with a common side.

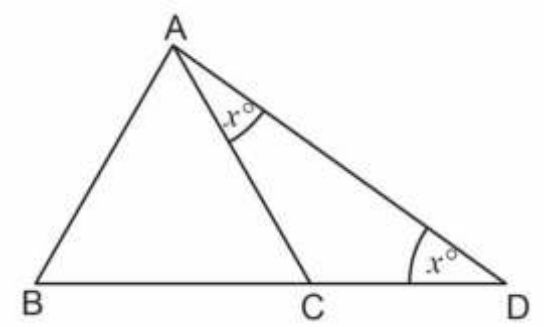


SAS21M09G0606

6 What is the measure of 'x'?

A. 15
B. 30
C. 45
D. 60

In the figure below, BC = AC.

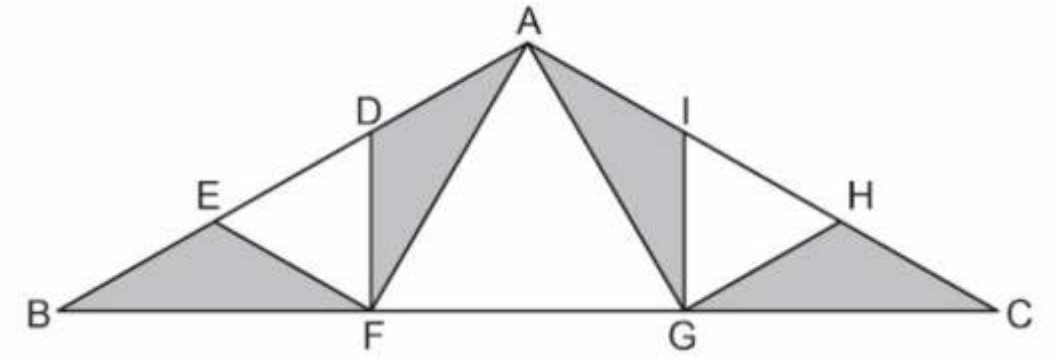


SAS21M09G0607

7 What is the measure of ∠BAD?

A. 30°
B. 60°
C. 75°
D. 90°

The figure below consists of a square and an equilateral triangle connected together with a common side.



In the design, DF and IG are two iron rods perpendicular to BC. The measure of ∠BAC = 120°.

SAS21M09G0608

8 Which type of triangle is ABC? Why?

_____

_____

SAS21M09G0609

9 The central triangle AFG is equilateral. What is the measure of ∠FDA?

A. 30°
B. 60°
C. 90°
D. 120°

SAS21M09G0610

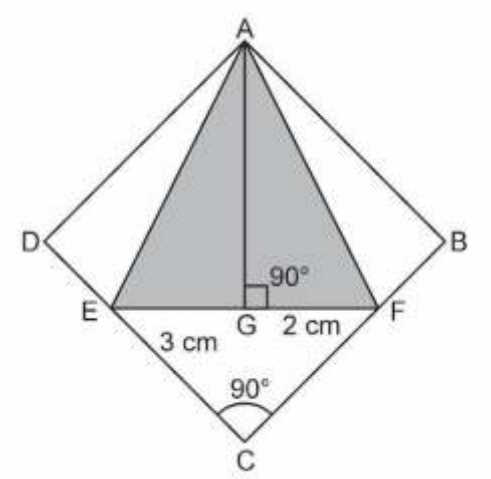
10 The length of IG is half of the length of GC. Write a proof for the statement.

_____

_____

Curriculum Aligned Assessment Items
Mathematical Literacy
Class 9 – Chapter 7
Triangles

In the given figure, $\Delta AFB \cong \Delta AFG$, $\Delta ADE \cong AGE$ and $\angle EAF = 45°$.



SAS21M10S0701

1 What is the measure of $\angle DAB$?

A. 60°
B. 90°
C. 120°
D. 135°

SAS21M10S0702

2 What is the length of AD?

_____

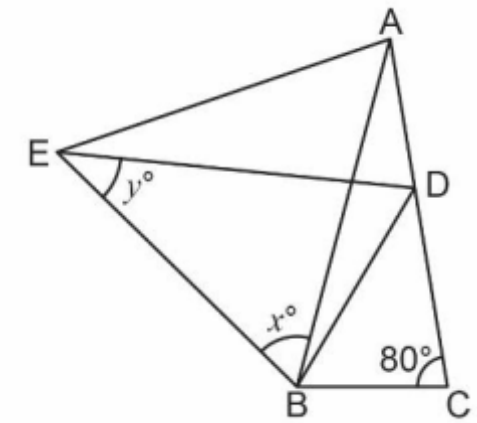
_____

SAS21M10S0703

3 What is the area of the shaded region?

A. $12.5\ cm^2$
B. $15\ cm^2$
C. $20\ cm^2$
D. $36\ cm^2$

In the given figure, the isosceles triangle ABC ≅ EAD. The point E is equidistant from both A and B.



SAS21M09S0704

4 What is the value of x?

A. 40°
B. 60°
C. 70°
D. 80°

SAS21M09S0705

5 What is the value of y?

_____

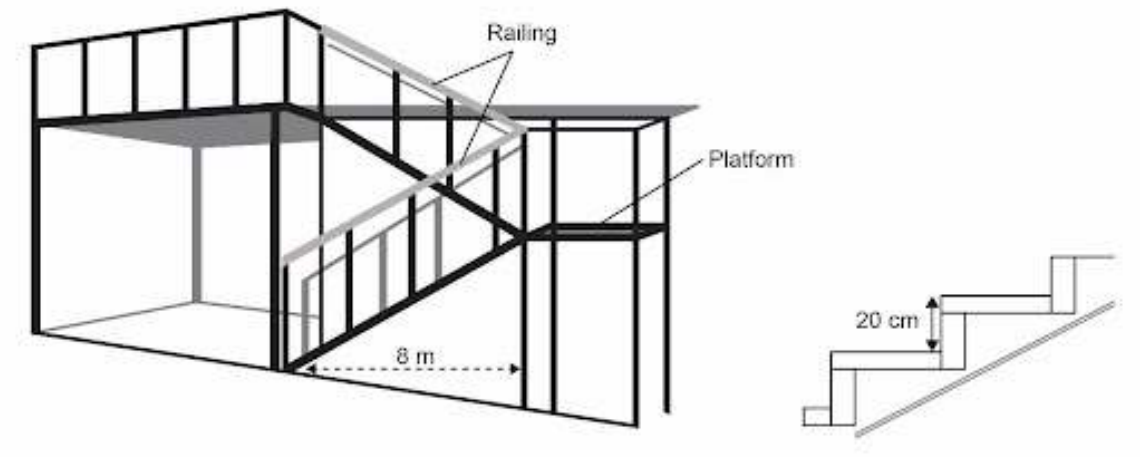
_____

SAS21M09S0706

6 What is the value of ∠BDC?

A. 30°
B. 40°
C. 50°
D. 70°

The picture below shows a staircase outside a house. Each step of the staircase is congruent and there are 25 steps in the staircase from the floor to the platform and 25 steps from the platform to the roof.



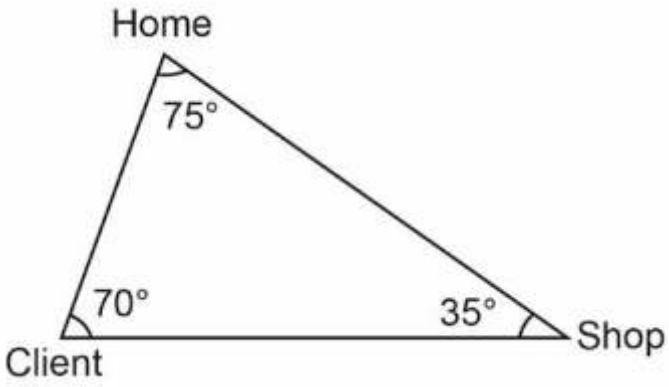
SAS21M09S0707

7 What is the length of the staircase railing?

_____

_____

In a toy game, a robot starts from Home, picks an object from the Shop, delivers it to the Client and goes back Home.



SAS21M09S0708

8 Which is the longest segment of the path travelled by the robot? Write the correct words.

_____ to _____

SAS21M09S0709

9 Rita says, 'For two triangles to be congruent, any three parameters of the six (3 sides and 3 angles) should be equal.'
Give examples in favour of and against her statement.

_____

_____

SAS21M09S0710

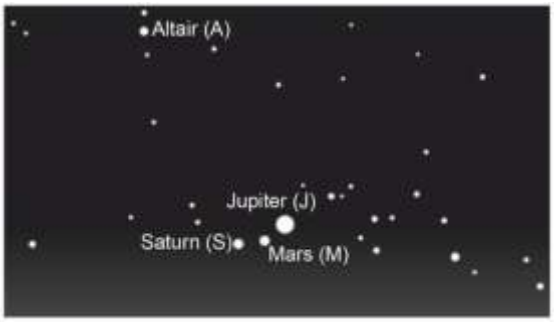
10 'Two triangles with a pair of equal angles are congruent.'
Why is it necessary to have the side between the two angles be of the same length for both the triangles?

_____

_____

Curriculum Aligned Assessment Items
Mathematical Literacy
Class 9 – Chapter 8
Quadrilaterals

Atul likes to observe the stars with his telescope. He likes to track the movements of stars in the sky. He took a picture of the night sky one day. On that day, Mars was equidistant from Saturn and Jupiter.



He draws a circle such that the dots showing the planets Mars (M), Jupiter (J), Saturn (S) and a star Altair (A) lies on the boundary of a circle and ∠SMJ = 150°.

SAS21M09S0801

1 What is the measure of ∠SAJ?

A. 30°
B. 45°
C. 150°
D. 210°

SAS21M09S0802

2 Atul claims that the quadrilateral MJAS is a kite.
What additional information is required to confirm his claim?

A. Distance between Altair and Saturn is equal to the distance between Mars and Jupiter.
B. Distance between Altair and Jupiter is equal to the distance between Mars and Saturn.
C. Distance between Altair and Saturn is equal to the distance between Altair and Mars.
D. Distance between Altair and Saturn is equal to the distance between Altair and Jupiter.

SAS21M09S0803

3 The adjacent sides of quadrilateral A are equal to corresponding sides of Quadrilateral B. All angles of Quadrilateral A measure 90°. The angles of Quadrilateral B are 120°, 60°, 120° and 60° respectively. Which quadrilateral has a greater area? Give reasons.

_____

_____

SAS21M09S0804

4 Sanya has a triangular piece of land. She wants to divide it into four equal areas. Suggest a way to do so.

_____

_____

SAS21M09S0805

5 Does joining four distinct points always produce a quadrilateral? Justify your answer.

_____

_____

The figure below shows the side view of a shopping trolley. The metal plate is fixed on the side by the store keeper for advertisement.

SAS21M09S0806

6 Three angles of the basket are obtuse. Which type of angle is the fourth?

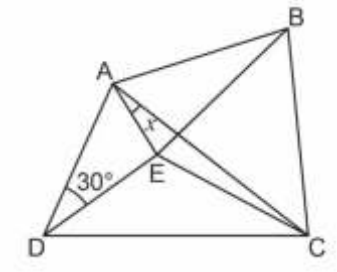
A. Acute
B. Obtuse
C. Right
D. Reflex

SAS21M09S0807

7 What is the shape of the metal plate?

A. Square
B. ectangle
C. Rhombus
D. Parallelogram

In the quadrilateral ABCD given below, ∠DAC = 90° and AB = AC = AD = DE = EB.



SAS21M09S0808

8 What is the value of ∠EAC?

A. 15°
B. 30°
C. 45°
D. 90°

SAS21M09S0809

9 Which type of quadrilateral is ABCE?

A. Rhombus
b. Kite
c. Trapezium
d. Parallelogram

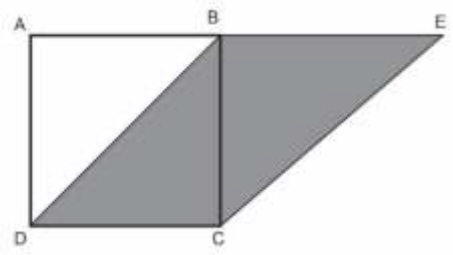
SAS21M09S0810

10 What is the value of ∠ABE?

A. 20°
B. 30°
C. 45°
D. 60°

Curriculum Aligned Assessment Items
Mathematical Literacy
Class 9 – Chapter 9
Areas of Parallelograms and Triangles

In the figure given below, ABCD is a square of area 144 cm^2 andBECD is a parallelogram.



SAS21M09S0901

1 What is the length of CE?

A. 12 cm
B. 14.4 cm
C. $12\sqrt{2}$ cm
D. 24 cm

SAS21M09S0902

2 What is the measure of ∠DCE?

A. 45°
B. 90°
C. 120°
D. 135°

SAS21M09S0903

3 Shashi claims that all parallelograms between two parallel lines and the same base are congruent. Justify.

_____

_____

SAS21M09S0904

4 The area of a triangle and a parallelogram are equal.
Which of the following statements is true for them?

A. The base length and the altitude of the triangle and the parallelogram are the same.
B. Both the triangle and the parallelogram lie between the same set of parallel lines and their bases are the same.
C. The base length and the corresponding altitude of the triangle are two times the base length and the corresponding altitude of the parallelogram.
D. Either the corresponding base length or the corresponding altitude of the triangle is the double of the parallelogram's base length or altitude.

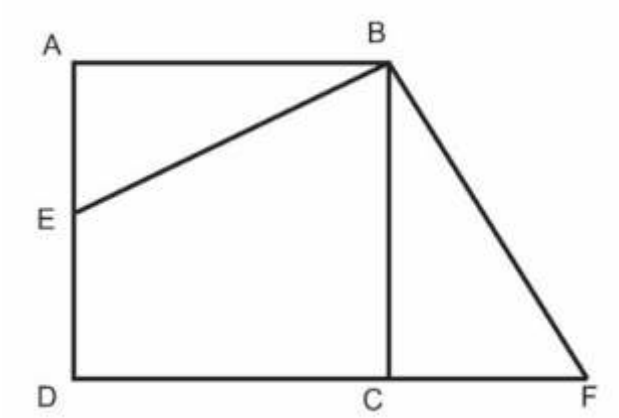
SAS21M09S0905

5 Preeti wants to divide a scalene triangle into two triangles having equal areas. Suggest one way to do so.

_____

_____

In the given figure, ABCD is a square with perimeter 8 cm. E is the mid-point of AD and AE = CF.



SAS21M09S0906

6 What is the measure of ∠EBF?

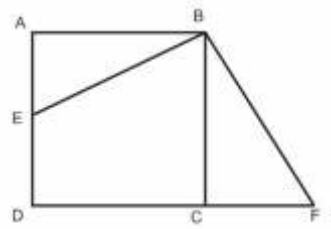
A. 60°
B. 75°
C. 90°
D. 135°

SAS21M09S0907

7 What is the area of ΔBCF?

A. $1\ cm^2$
B. $2\ cm^2$
C. $4\ cm^2$
D. $8\ cm^2$

In the figure given below, each small square represents an area of $1\ cm^2$.



SAS21M09S0908

8 What is the ratio between the area of the rectangle and the shaded region?

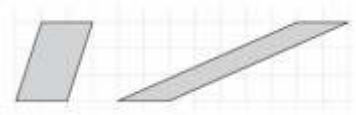
A. 1:1
B. 2:1
C. 3:1
D. 3:2

SAS21M09S0909

9 What is the area (in cm^2) of the trapezium in the given figure?

A. $6\ cm^2$
B. $8\ cm^2$
C. $9\ cm^2$
D. $12\ cm^2$

The two parallelograms on a unit square grid are shown below.



SAS21M09S0910

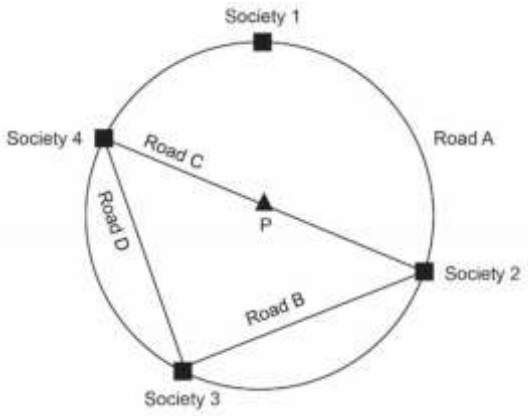
10 Compare the areas of the two parallelograms.

_____

_____

Curriculum Aligned Competency Based Test Items
Mathematics
Class 9 – Chapter 10
Circles

Given below is the map giving the position of four housing societies in a township connected by a circular road A.



Society 2 and 3 are connected by straight road B, society 4 and 2 are connected by straight road C and society 4 and 3 are connected by road D. Point P denotes the position of a park. The park is equidistant to all four societies.
Rubina claims that it is not possible to construct another circular road connecting all four societies.

SAS21M09S1001

1 Which of the following options justifies Rubina's claim?

A. Equal chords of congruent circles subtend equal angles at the centre.
B. The perpendicular from the centre of a circle to a chord bisects the chord.
C. There is a unique circle passing through three non-collinear points.
D. Points equidistant from a given point will lie on a circle.

SAS21M09S1002

2 What is the position of the park P with respect to road A?

A. Chord
B. Centre
C. Sector
D. Segment

SAS21M09S1003

3 The length of Road B is equal to the length of Road D.
Which of the following options can be true for the roads in the township?

A. Road B bisects Road D.
B. Road B and Road make an acute angle.
C. Road B, Road C and Road D are of equal length.
D. Road B and Road D subtend equal angles at society 1.

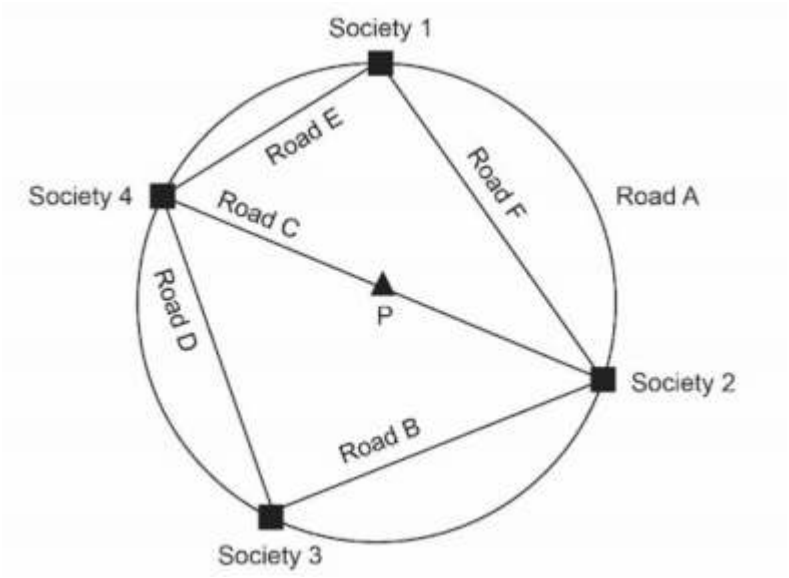
SAS21M09S1004

4 Alex says, "The angle made by road B on road D is a right angle."
Jai and Angad give different justifications to support Alex's claim.
Jai says, "Angles in the same segment of a circle are equal."
Angad says, "The angle in a semicircle is a right angle."
Who has given the correct justification?

_____

_____

Two new roads, Road E and Road F were constructed between society 4 and 1 and society 1 and 2.



SAS21M09S1005

5 What would be the measure of the sum of angles formed by the straight roads at society 1 and society 3?

A. 60°
B. 90°
C. 180°
D. 360°

SAS21M09S1006

6 Krish says, "The distance to go from society 4 to society 2 using Road D will be longer that the distance using Road E"
Is Krish correct? Justify your answer with examples.

_____

_____

SAS21M09S1007

7 Road G, perpendicular to Road F was constructed to connect the park and Road F.
Which of the following is true for Road G and Road F?

A. Road G and road F are of same length.
B. Road F divides Road G into two equal parts.
C. Road G divides Road F into two equal parts.
D. The length of road G is one-fourth of the length of Road F.

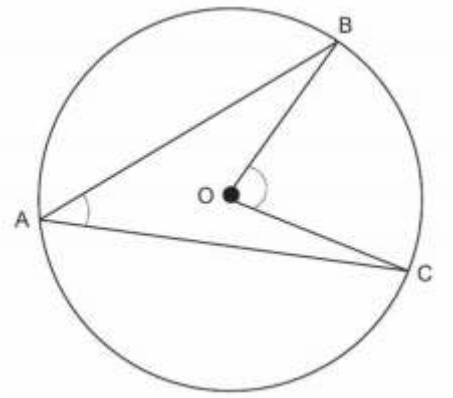
SAS21M09S1008

8 Priya said, "Minor arc corresponding to Road B is congruent to minor arc corresponding to Road D."
Do you agree with Priya? Give reason to support your answer.

_____

_____

Given below is the figure of a circle with centre O.
The measure of ∠BOC = 88°.



SAS21M09S1009

9 What is the measure of ∠BAC?

A. 44°
B. 60°
C. 88°
D. 176°

SAS21M09S1010

10 Priya claims, "The length of OB is equal to the length of OC."
Siya and Aditi provide different justifications for Priya's claim.
Siya says, "OB and OC are radii of the same circle."
Aditi says, "OC is the base of ∠BOC."

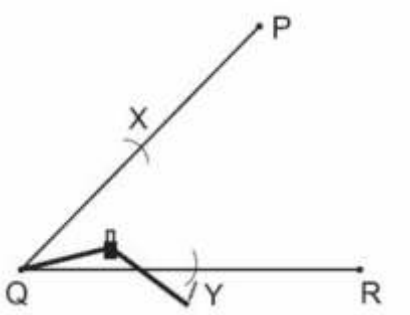
Who has given the correct justification for Priya's claim?

_____

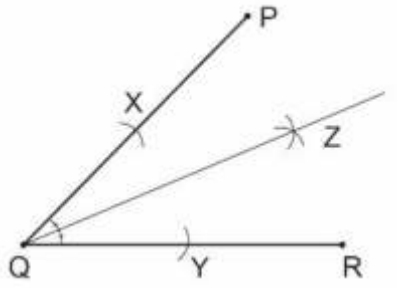
_____

Curriculum Aligned Competency Based Test Items
Mathematics
Class 9 – Chapter 11
Constructions

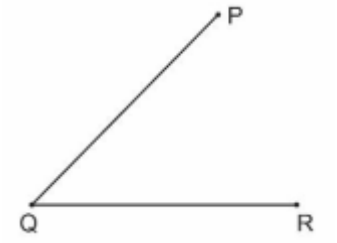
Pradeep bisects a given angle using a compass and a ruler.
Here are some images of Pradeep's work.



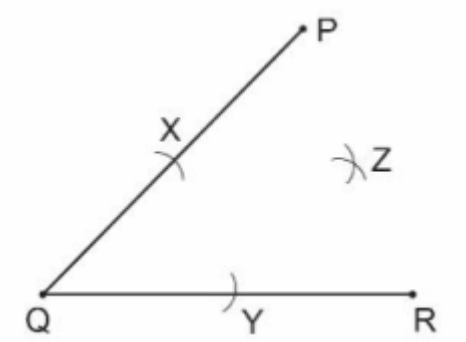
Step 2: Without changing the radius from the intersection of each arc and the leg of the angle, mark arcs off in the angle's interior so that they intersect.



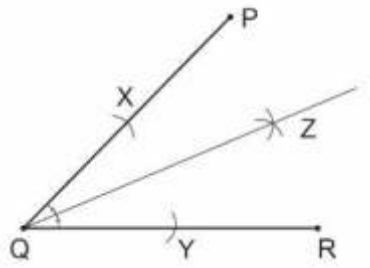
This is the output of Pradeep's work after step 2



Step 1: With the vertex of the angle as centre and any radius he draws two arcs intersecting the arms of the angle.



Step 3: Draw a line from point O to the intersection of the arcs.



SAS21M09S1101

1 Which quadrilateral will be generated when the points Q, X, Y and Z are joined?

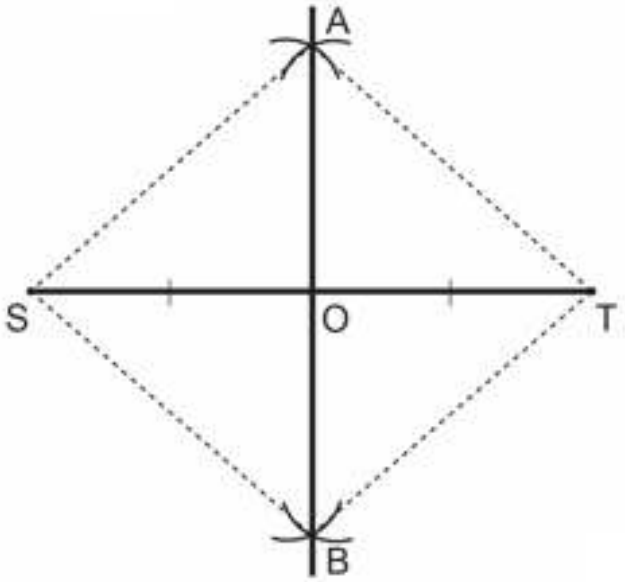
A. Square
B. Rectangle
C. Rhombus
D. Trapezium

SAS21M09S1102

2 Pradeep measures angle YQZ as 30°. He joined point Y with point P.
What is the measure of angle QYZ?

A. 30°
B. 60°
C. 120°
D. 150°

Here is a figure in which AB is a perpendicular bisector of line segment ST.
To construct the perpendicular bisector AB, Aditi marks A and B equidistant from S and T using a compass.

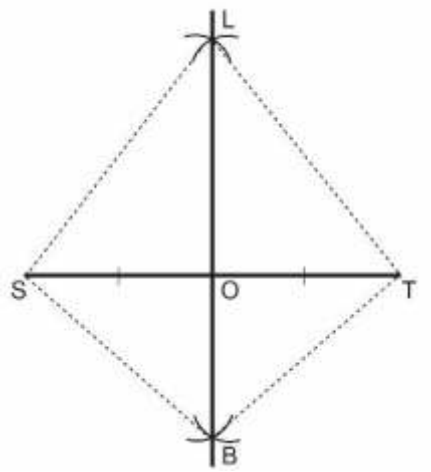


SAS21M09S1103

3 Which of the following is **not true** for the figure shown above?

A. AT is equal to SB.
B. ∠SAO is greater than ∠TBO.
C. ∠AOS and ∠AOT forms a linear pair.
D. O is the mid-point of the line segment ST.

Anu Radha says, 'You can get a perpendicular bisector of ST when the radii of arcs on one side of ST is different from the radii of arcs on the other side of ST.
She draws this diagram to illustrate her point.

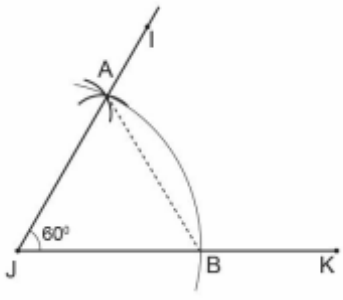


SAS21M09S1104

4 Zoya measures angle TLB =25° and angle LSB = 90°.
What is the measure of angle BTO?

A. 25°
B. 45°
C. 50°
D. 65°

Given below is the output of the construction of a 60 degree angle using a compass and a straight edge.
Here, triangle ABJ is an equilateral triangle.



SAS21M09S1105

5 What is the sum of ∠IAB and ∠KBA?

A. 120°
B. 180°
C. 240°
D. 360°

SAS21M09S1106

6 Pradeep draws a line parallel to AB which joins point I and point K.
What kind of triangle is ABK?

A. Scalene
B. Isosceles
C. Equilateral
D. Right-angled

SAS21M09S1107

7 Jyoti wants to construct a triangle in which the measure of two angles are 45° and 60°, respectively and the sum of all three sides is 15 cm.
He drew a line segment EF of length 15 cm.
Which of the following would be Jyoti's next step to construct the triangle at point E?

A. Construct an angle of 15°.
B. Construct an angle of 30°.
C. Construct an angle of 60°.
D. Construct an angle of 120°.

SAS21M09S1108

8 A triangle whose base angles measure 70° and perimeter is 28 cm is drawn.
Which of the following options shows the side lengths of the triangle formed?

A. 7 cm, 14 cm and 7 cm
B. 8 cm, 12 cm and 8 cm
C. 9 cm, 10 cm and 9 cm
D. 10 cm, 8 cm and 10 cm

SAS21M09S1109

9 Paritosh wants to construct a triangle RST, in which angle S = 45°, ST= 10 cm long and RS-RT = 2 cm. He has completed construction of some steps.
Step 1: Draw the base ST of the triangle
Step 2: At point S, make an angle RST of measure 45°.
What should be Paritosh's next step?

A. Mark a point on RS at a distance of 2 cm from S.
B. Mark a point on RS at a distance of 8 cm from S.
C. Mark a point on RS at a distance of 2 cm from T.
D. Mark a point on RS at a distance of 8 cm from T.

SAS21M09S1110

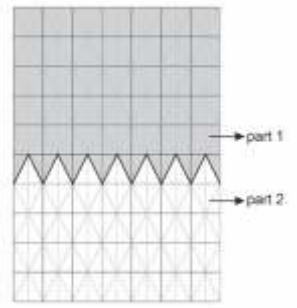
10 Construct a triangle ABC in which BC = 7.5cm, ∠B = 46° and AB + AC = 13 cm.

_____

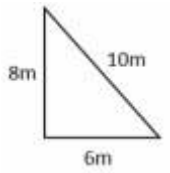
_____

Curriculum Aligned Competency Based Test Items
Mathematics
Class 9 – Chapter 12
Heron's Formula

Glass buildings can be strengthened using iron frames. A glass structure and its iron frame are shown below.



The frame consists of equal triangles. The dimensions of a triangle are shown below.



SAS21M09S1201

1 How much area is enclosed by one triangle?

_____

_____

SAS21M09S1202

2 What is the area of part 1 of the frame?

A. $84\ m^2$
B. $1680\ m^2$
C. $3360\ m^2$
D. $3696\ m^2$

SAS21M09S1203

3 Is the area of part 1 equal to the area of part 2? Why?

_____

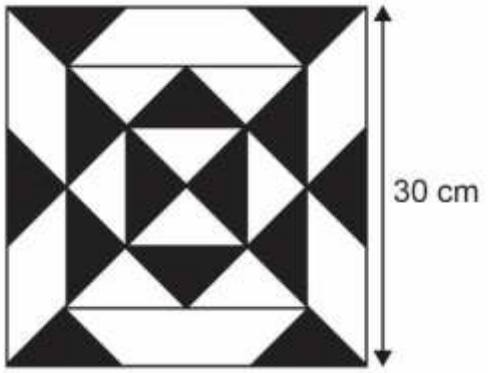
_____

SAS21M09S1204

4 Maintenance of the building's exterior is done by a company. The company charges Rs 750 per square meter per month.
Which of the following calculations represents the monthly maintenance charges?

A. 24×12
B. 750×24
C. 3024×750
D. 6720×750

The design on a tile is made of isosceles triangles.
The side lengths of the triangles are 6 cm, 6 cm and 8 cm.



SAS21M09S1205

5 How much area of the tile is black?

A. $24\ cm^2$
B. $9\sqrt{7}\ cm^2$
C. $90\ cm^2$
D. $112\sqrt{5}\ cm^2$

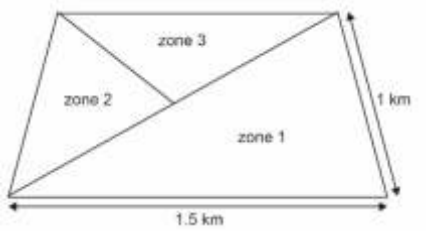
SAS21M09S1206

6 A tile is made by joining the vertices of four equilateral triangles. The side length of the triangles is 15 cm. What is the area of the tile?

_____

_____

A zoo is in the shape of an isosceles trapezium.
It is divided into three zones – Zone 1, Zone 2 and Zone 3.
Animals are kept without cages in Zone 1. Zone 2 is for visitors and Zone 3 is reserved for park authorities.



To avoid the entry of animals in zones 2 and 3, a 1.8 km long wired fencing is installed.

SAS21M09S1207

7 Which of the following calculations shows the area for animals?

A. $\sqrt{1.35 \times 0.65 \times 1.15}$
B. $2.15 \times 0.35 \times 0.65 \times 1.15$
C. $\sqrt{3.15 \times 1.35 \times 1.65 \times 1.15}$
D. $\sqrt{4.30 \times 1.35 \times 0.65 \times 1.15}$

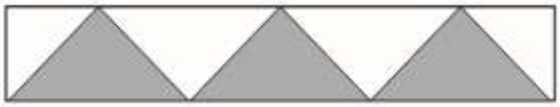
SAS21M09S1208

8 "The area reserved for animals is twice the area reserved for the zoo authorities." Do you have enough information to support this statement? Explain your answer.

_____

_____

The outer boundary of Zone 1 is made of solid structures in the shape of isosceles triangles of the same size and barbed wires.



The wall consists of 15 such solid structures.

SAS21M09S1209

9 Which of the following calculations shows the total area (in square meters) of the solid structures?

A. $\sqrt{50 \times 50 \times 30}$
B. $\sqrt{130 \times 50 \times 50 \times 30}$
C. $15\sqrt{130 \times 50 \times 50 \times 30}$
D. $15\sqrt{260 \times 180 \times 180 \times 16}$

SAS21M09S1210

10 What is the area of a triangle with side lengths 20 cm, 20 cm and 8 cm?

_____

_____

Curriculum Aligned Competency Based Test Items
Mathematics
Class 9 – Chapter 13
Surface Area and Volume

Raju designs a hut for homeless people. The hut is a combination of a cuboid and a right cone. The top of the hut is a cone with radius 4 m and height 1 m. It is made of economical material. The floor of the tent is covered with rugs.
The total height of the tent is 4.5 m. The cuboidal part of the tent is 6 m long and 5 m wide.

SAS21M09S1301

1 What is the outer surface area (in m^2) of the hut?

A. 77
B. $77+4\pi\sqrt{17}$
C. $137+4\pi\sqrt{17}$
D. $137+4\pi(4+\sqrt{17})$

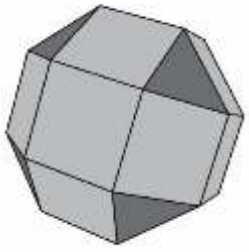
SAS21M09S1302

2 The length and width of a rug used for the floor are 2.6 m and 2 m respectively.
What is the minimum number of rugs required to cover the floor of the tent house?

_____

_____

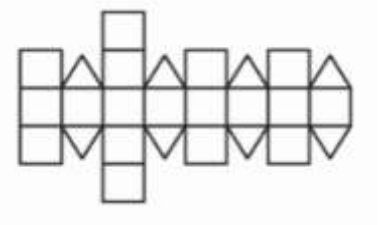
This is the picture of a gas balloon filled with helium gas.

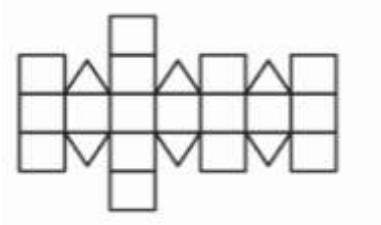


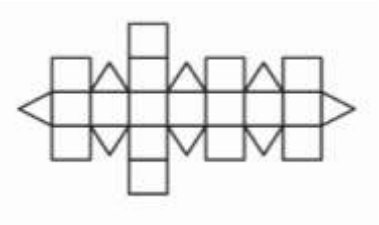
This balloon has 18 faces that are square in shape and 8 equilateral faces that are triangular.

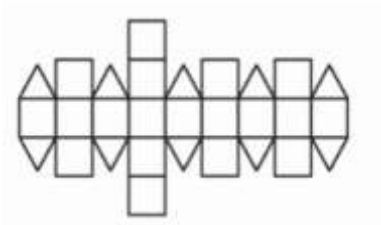
SAS21M09S1303

3 Which of the following is the net of the balloon?

A. 

C. 

B. 

D. 

SAS21M09S1304

4 The side length of the square is 20 cm. What is the total surface area of the balloon?

_____

_____

Raghav bought this planter.

The radius of the rim is 14 cm. The curved surface area of the planter is 1848 cm^2.

SAS21M09S1305

5 What is the height of the planter?

_____

_____

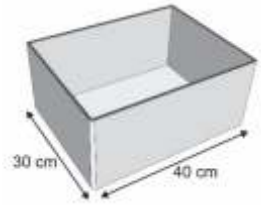
SAS21M09S1306

6 What is the volume of the planter?

_____

_____

A company manufactures wooden boxes. Given below is the picture of an open wooden box.



The height of the box is 25 cm.

SAS21M09S1307

7 What is the surface area (in cm^2) of the box?

A. 3500
B. 4700
C. 5900
D. 30000

SAS21M09S1308

8 A shopkeeper store cubes in it.
The side length of one cube is 9 cm.
What would be the maximum number of cubes the shopkeeper can store in a box? (All cubes should be inside the box.)

_____

_____

SAS21M09S1309

9 Rajan packs a football into a cubical cardboard box. The radius of the football is 11 cm. Rajan keeps a margin of 1 cm from all the sides of the box while packing.
What is the side length of the cardboard box?

A. 11 cm
B. 20 cm
C. 22 cm
D. 24 cm

This is the picture of an ice-cream cone.

The radius of the cone is 4 cm and the height is 15 cm.
An ice-cream seller keeps $1/4^{th}$ of it empty.

SAS21M09S1310

10 What is the volume (in cm^3) of the empty part of the cone?

A. 12π
B. 15π
C. 19π
D. 20π

Curriculum Aligned Competency Based Test Items
Mathematics
Class 9 – Chapter 14
Statistics

Five friends Anchal, Amisha, Mahi, Vaishu and Sahar are living in a hostel.
At the end of every month, they calculate the expenses on food and shopping.
The table given below shows their monthly expenses for the month of November.

Name	Anchal	Amisha	Mahi	Vishu	Sahar
Expenditure (in Rs)	3000	5000	6000	4500	7000

SAS21M09D1401

1 Which graphical representation method would best represent the data given?

_____

_____

SAS21M09D1402

2 What is the average expense of the friends for the month of November?

_____

_____

SAS21M09D1403

3 Anchal says, "The difference between the median expenditures for October and November amounts to 10% of the November expense, and we have been able to reduce our median expense for November." What was their median expense for the month of October?

A. 12π
B. 15π
C. 19π
D. 20π

A charity surveys the people of a village for their haemoglobin counts. 25 out of 100 adult females in the village were tested. The result is given in this table.

Haemoglobin (mg/dl) counts	No. of females
5	3
6	3
7	2
8	5
9	1
10	1
11	3
12	4
13	2
14	1

SAS21M09D1404

4 A haemoglobin counts below 12 is considered deficient.
What proportion of females in the survey can be considered deficient?

A. $\frac{3}{25}$

B. $\frac{4}{25}$

C. $\frac{18}{25}$

D. $\frac{22}{25}$

SAS21M09D1405

5 What is the median haemoglobin counts (mg/dl) of the females in the survey?

A. 8
B. 9
C. 9.5
D. 12.5

SAS21M09D1406

6 Divya said that 8 and 12 are the most observed haemoglobin counts (mg/dl) among 25 females.
Krishna said that 8 and 12 are the most observed haemoglobin counts (mg/dl) among 100 females in the village.
Who is correct? Explain your answer.

_____

_____

In a school camp, 40 students were divided into two groups to play a game.
The table given below shows the scores of team A and team B.

Time(s) in minutes	Cumulative Score of Team A	Cumulative Score of Team A
0-5	14	20
5-10	35	27
10-15	30	31
15-20	35	31
20-25	44	37
25-30	52	50

SAS21M09D1407

7 How many score points did team A get between 10-15 minutes?

A. 6
B. 24
C. 30
D. 68

SAS21M09D1408

8 Which team scored more points during last 5 minutes? Justify your answer.

_____

_____

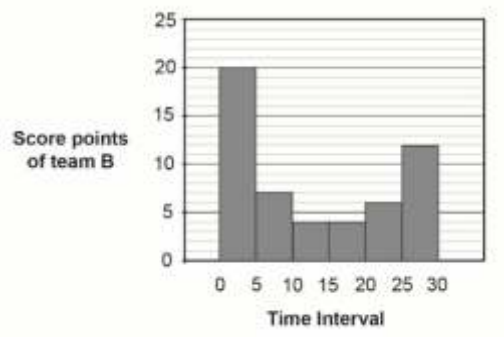
SAS21M09D1409

9 What is the mean number of score points obtained by team A in a 5-minute interval rounded to the nearest whole number?

_____

_____

Draws a graphical representation of the points scored by team B.
His graphical representation is given below.



SAS21M09D1410

10 Suman says, "Arun's graphical representation is not appropriate."
Do you agree with Suman? Mention YES or NO. Give reason to justify your choice.

_____

_____

Curriculum Aligned Competency Based Test Items
Mathematics
Class 9 – Chapter 15
Probability

The table given below shows the number of students in Sun Valley School.

Class	Number of girls	Number of boys
VI	18	22
VII	17	15
VIII	20	19
IX	15	19
X	17	21

SAS21M09D1501

1 Every year, one student is randomly chosen from Class X as the head student. The head student is responsible for representing the school.
What is the probability of a girl being the head student?

A. $\frac{17}{21}$

B. $\frac{17}{38}$

C. $\frac{17}{87}$

D. $\frac{17}{183}$

SAS21M09D1502

2 All students of Class VI took part in a drawing competition. Aditi is a girl studying in Class VI.
The teacher says, "The winner of this year's drawing competition is a boy from Class VI."
What is Aditi's probability of having won the competition?

_____

_____

The school provides facility for after-school activities.
The table given below shows the number of students who take part in after-school activities.

Activity	Number of girls participating	Number of boys participating
Sports (any)	16	30
Classical dance	13	5
Aerobics	15	17
Musical Instruments	17	20
Arts and crafts	20	10

SAS21M09D1503

3 Of all the students participating in classical dance, one is randomly chosen for an annual day performance. What is the probability of a boy being chosen?

A. $\frac{1}{2}$

B. $\frac{1}{5}$

C. $\frac{5}{18}$

D. $\frac{5}{82}$

SAS21M09D1504

4 Of all the students participating in classical dance, one is randomly chosen for an annual day performance. What is the probability of a boy being chosen?

A. $\frac{2}{16}$

B. $\frac{2}{29}$

C. $\frac{3}{10}$

D. $\frac{3}{7}$

SAS21M09D1505

5 Salma is a girl and she has chosen to learn a musical instrument. The school choir wants to randomly select a girl to play for them. What is the probability of Salma joining the choir?

A. $\frac{1}{2}$

B. $\frac{1}{17}$

C. $\frac{1}{37}$

D. $\frac{1}{63}$

SAS21M09D1506

6 Of all the students who have not participated in any after-school activities, one student is randomly chosen to coordinate the annual day function. What is the probability of a boy being chosen?

A. $\frac{1}{14}$

B. $\frac{7}{10}$

C. $\frac{14}{163}$

D. $\frac{14}{183}$

Shyam made a die using a cuboid-shaped eraser.
He painted one face of the die with the number 2, two faces with the number 1 and three faces with the number 4.
Shyam throws the die.

SAS21M09D1507

7 What is the probability of getting a 1?

A. $\frac{1}{2}$

B. $\frac{1}{3}$

C. $\frac{1}{4}$

D. $\frac{1}{6}$

SAS21M09D1508

8 What is the probability of getting a face showing an even number?

A. $\frac{1}{2}$

B. $\frac{1}{3}$

C. $\frac{1}{6}$

D. $\frac{2}{3}$

SAS21M09D1509

9 Find the probability of getting a face of the die showing number less than 5?

_____

_____

SAS21M09D1510

10 Shyam made another die identical to the one he made earlier. He throws both the dice together and adds the number on the face of the two dice. Show the sample space of the experiment.

_____

_____

Item Number	Question 1
Question Code	SAS21M09Q0101
Grade & Chapter Name	Grade 9 | Number System
Concept | Sub-concept	Numbers | Irrational Numbers
Competency	Interpret & Evaluate
Item Type	Open Constructed Response
Full Credit (Full Score)	Names both Khushi and Akash and provides a valid explanation with examples • Khushi is correct as numbers including 1/2, 2/4, 3/6, 4/8 and 0.5 can be represented by the same point on the number line. Akash is correct as each point on the number line represents a unique real number.
Partial Credit (Partial Score)	Names either Khushi or Akash, and supporting examples/arguments are provided
No Credit (No Score)	Any other response or missing response

Item Number	Question 2
Question Code	SAS21M09Q0102
Grade & Chapter Name	Grade 9 | Number System
Concept | Sub-concept	Numbers | Irrational Numbers
Competency	Interpret & Evaluate
Item Type	Multiple Choice Question
Full Credit (Full Score)	B. Every irrational number can be represented with the help of decimals.
No Credit (No Score)	Any other response or missing response

Item Number	Question 3
Question Code	SAS21M09Q0103
Grade & Chapter Name	Grade 9 | Number System
Concept | Sub-concept	Numbers | Irrational Numbers
Competency	Employ
Item Type	Open Constructed Response
Full Credit (Full Score)	Uses the definition of irrational numbers in the explanation and identifies the limitation of their placement on a measuring scale • Irrational numbers are non-terminating with more number of decimals so precision on measuring scale can be more. But they are non-terminating, so fixing their exact location on a measuring scale is not possible.
No Credit (No Score)	Any other response or missing response

Item Number	Question 4
Question Code	SAS21M09Q0104
Grade & Chapter Name	Grade 9 | Number System
Concept | Sub-concept	Numbers | Irrational Numbers
Competency	Employ
Item Type	Closed Constructed Response
Full Credit (Full Score)	Writes $\sqrt{5}$ with or without the word 'units' • $\sqrt{5}$ units • $\sqrt{5}$
No Credit (No Score)	Any other response or missing response

Item Number	Question 5
Question Code	SAS21M09Q0105
Grade & Chapter Name	Grade 9 | Number System
Concept | Sub-concept	Numbers | Irrational Numbers
Competency	Employ
Item Type	Multiple Choice Question
Full Credit (Full Score)	C. $-4+\sqrt{15}$
No Credit (No Score)	Any other response or missing response

Item Number	Question 6
Question Code	SAS21M09Q0106
Grade & Chapter Name	Grade 9 | Number System
Concept | Sub-concept	Numbers | Irrational Numbers
Competency	Interpret & Evaluate
Item Type	Multiple Choice Question
Full Credit (Full Score)	D. S
No Credit (No Score)	Any other response or missing response

Item Number	Question 7
Question Code	SAS21M09Q0107
Grade & Chapter Name	Grade 9 | Number System
Concept | Sub-concept	Numbers | Irrational Numbers
Competency	Employ
Item Type	Multiple Choice Question
Full Credit (Full Score)	A. U and V
No Credit (No Score)	Any other response or missing response

Item Number	Question 8
Question Code	SAS21M09Q0108
Grade & Chapter Name	Grade 9 | Number System
Concept | Sub-concept	Numbers | Irrational Numbers
Competency	Formulate
Item Type	Closed Constructed Response
Full Credit (Full Score)	Writes length and breadth, which are greater than zero and less than 70, with or without the word 'Chapter(s)' • Length 21 and breadth 7 • 21 units and 7 units • 69 units and 1 Chapter
No Credit (No Score)	Any other response or missing response

Item Number	Question 9
Question Code	SAS21M09Q0109
Grade & Chapter Name	Grade 9 | Number System
Concept | Sub-concept	Numbers | Irrational Numbers
Competency	Employ
Item Type	Multiple Choice Question
Full Credit (Full Score)	D. $\sqrt{580}$ units
No Credit (No Score)	Any other response or missing response

Item Number	Question 10
Question Code	SAS21M09Q0110
Grade & Chapter Name	Grade 9 | Number System
Concept | Sub-concept	Numbers | Irrational Numbers
Competency	Employ
Item Type	Open Constructed Response
Full Credit (Full Score)	Due consideration is given to factors including display dimensions and orientation (portrait/landscape) 2 x y z with or without the word 'units' • The manufacturer needs to know the space available for the screen installation along with the screen size. • Length and breadth, along with orientation, is to be considered.
Partial Credit (Partial Score)	Only one factor associated with display dimensions or orientation (portrait/ landscape) is considered. • Length and breadth should be known.
No Credit (No Score)	Any other response or missing response

Item Number	Question 1
Question Code	SAS21M09C0201
Grade & Chapter Name	Grade 9 | Polynomials
Concept | Sub-concept	Algebra | Algebraic Expressions and Identities (Geometrical Representation)
Competency	Formulate
Item Type	Closed Constructed Response
Full Credit (Full Score)	Writes an equation relating length, breadth, height and volume. • $x^3 + 2.15x^2 + 0.3x = 652$ • $x^3 + 2.15x^2 + 0.3x - 652 = 0$ • $x(x + 2)(x + 0.15) = 652$ • $x(x + 2)(x + 0.15) - 652 = 0$
No Credit (No Score)	Any other response or missing response

Item Number	Question 2
Question Code	SAS21M09C0202
Grade & Chapter Name	Grade 9 | Polynomials
Concept | Sub-concept	Algebra | Algebraic Expressions and Identities (Factorisation of Polynomials)
Competency	Interpret & Evaluate
Item Type	Multiple Choice Question
Full Credit (Full Score)	C. The volume of Container 3 is 2608 m^3.
No Credit (No Score)	Any other response or missing response

Item Number	Question 3
Question Code	SAS21M09C0203
Grade & Chapter Name	Grade 9 | Polynomials
Concept | Sub-concept	Algebra | Algebraic Expressions and Identities (Factorisation of Polynomials)
Competency	Employ
Item Type	Closed Constructed Response
Full Credit (Full Score)	Write 8.15 with or without the Chapter • 8.15 m • 8.15
No Credit (No Score)	Any other response or missing response

Item Number	Question 4
Question Code	SAS21M09C0204
Grade & Chapter Name	Grade 9 | Polynomials
Concept | Sub-concept	Algebra | Algebraic Expressions and Identities (Geometrical Representation)
Competency	Formulate
Item Type	Closed Constructed Response
Full Credit (Full Score)	Mentions Choice 1 OR 1
No Credit (No Score)	Any other response or missing response

Item Number	Question 5
Question Code	SAS21M09C0205
Grade & Chapter Name	Grade 9 | Polynomials
Concept | Sub-concept	Algebra | Algebraic Expressions and Identities (Factorisation of Polynomials)
Competency	Employ
Item Type	Closed Constructed Response
Full Credit (Full Score)	Writes 2 $x\ y\ z$ with or without the word 'units' • 2 $x\ y\ z$ • 2 $x\ y\ z$ units
No Credit (No Score)	Any other response or missing response

Item Number	Question 6
Question Code	SAS21M09C0206
Grade & Chapter Name	Grade 9 | Polynomials
Concept | Sub-concept	Algebra | Algebraic Expressions and Identities (Factorisation of Polynomials)
Competency	Interpret & Evaluate
Item Type	Closed Constructed Response
Full Credit (Full Score)	Writes $3x - 2$ with or without the word 'units' • $3x - 2$ units • $3x - 2$
No Credit (No Score)	Any other response or missing response

Item Number	Question 7
Question Code	SAS21M09C0207
Grade & Chapter Name	Grade 9 | Polynomials
Concept | Sub-concept	Algebra | Algebraic Expressions and Identities (Geometrical Representation)
Competency	Formulate
Item Type	Multiple Choice Question
Full Credit (Full Score)	C. $d = p \times q \times r$
No Credit (No Score)	Any other response or missing response

Item Number	Question 8
Question Code	SAS21M09C0208
Grade & Chapter Name	Grade 9 | Polynomials
Concept | Sub-concept	Algebra | Algebraic Expressions and Identities (Factorisation of Polynomials)
Competency	Interpret & Evaluate
Item Type	Multiple Choice Question
Full Credit (Full Score)	D. $3x^4 - 4x^3 - 3x - 1$
No Credit (No Score)	Any other response or missing response

Item Number	Question 9
Question Code	SAS21M09C0209
Grade & Chapter Name	Grade 9 | Polynomials
Concept | Sub-concept	Algebra | Algebraic Expressions and Identities (Factorisation of Polynomials)
Competency	Employ
Item Type	Multiple Choice Question
Full Credit (Full Score)	B. $(x - 1)$
No Credit (No Score)	Any other response or missing response

Item Number	Question 10
Question Code	SAS21M09C0210
Grade & Chapter Name	Grade 9 | Polynomials
Concept | Sub-concept	Algebra | Algebraic Expressions and Identities (Geometrical Representation)
Competency	Employ
Item Type	Closed Constructed Response
Full Credit (Full Score)	Writes 1 and –1
Partial Credit (Partial Score)	Writes either 1 OR – 1
No Credit (No Score)	Any other response or missing response

Item Number	Question 1
Question Code	SAS21M09S0301
Grade & Chapter Name	Grade 9 | Coordinate Geometry
Concept | Sub-concept	Geometry/Coordinate Geometry (Plotting Points in the plane)
Competency	Interpret & Evaluate
Item Type	Multiple Choice Question
Full Credit (Full Score)	B. Bear 415
No Credit (No Score)	Any other response or missing response

Item Number	Question 2
Question Code	SAS21M09S0302
Grade & Chapter Name	Grade 9 | Coordinate Geometry
Concept | Sub-concept	Geometry/Coordinate Geometry (Plotting Points in the plane)
Competency	Interpret & Evaluate
Item Type	Closed Constructed Response
Full Credit (Full Score)	Writes Road *y* OR *y*
No Credit (No Score)	Any other response or missing response

Item Number	Question 3
Question Code	SAS21M09S0303
Grade & Chapter Name	Grade 9 | Coordinate Geometry
Concept | Sub-concept	Geometry/Coordinate Geometry (Plotting Points in the plane)
Competency	Employ
Item Type	Closed Constructed Response
Full Credit (Full Score)	Writes 13 km OR 13
No Credit (No Score)	Any other response or missing response

Item Number	Question 4
Question Code	SAS21M09S0304
Grade & Chapter Name	Grade 9 | Coordinate Geometry
Concept | Sub-concept	Geometry/Coordinate Geometry (Plotting Points in the plane)
Competency	Employ
Item Type	Multiple Choice Question
Full Credit (Full Score)	A. 2 km
No Credit (No Score)	Any other response or missing response

Item Number	Question 5
Question Code	SAS21M09S0305
Grade & Chapter Name	Grade 9 | Coordinate Geometry
Concept | Sub-concept	Geometry/Coordinate Geometry (Plotting Points in the plane)
Competency	Employ
Item Type	Closed Constructed Response
Full Credit (Full Score)	Gives a point which is at a distance of 2 units from (3, 0) (5, 0) (1, 0)
No Credit (No Score)	Any other response or missing response

Item Number	Question 6
Question Code	SAS21M09S0306
Grade & Chapter Name	Grade 9 | Coordinate Geometry
Concept | Sub-concept	Geometry/Coordinate Geometry (Plotting Points in the plane)
Competency	Formulate
Item Type	Multiple Choice Question
Full Credit (Full Score)	B. (–9, –5)
No Credit (No Score)	Any other response or missing response

Item Number	Question 7
Question Code	SAS21M09S0307
Grade & Chapter Name	Grade 9 | Coordinate Geometry
Concept | Sub-concept	Geometry/Coordinate Geometry (Plotting Points in the plane)
Competency	Employ
Item Type	Open Constructed Response
Full Credit (Full Score)	Writes coordinates which are at a distance of 1 km from either of the jeeps including decimal values (2, –9) (3, –10)
No Credit (No Score)	Any other response or missing response

Item Number	Question 8
Question Code	SAS21M09S0308
Grade & Chapter Name	Grade 9 | Coordinate Geometry
Concept | Sub-concept	Geometry/Coordinate Geometry (Plotting Points in the plane)
Competency	Formulate
Item Type	Closed Constructed Response
Full Credit (Full Score)	(– 7, – 9)
No Credit (No Score)	Any other response or missing response

Item Number	Question 9
Question Code	SAS21M09S0309
Grade & Chapter Name	Grade 9 | Coordinate Geometry
Concept | Sub-concept	Geometry/Coordinate Geometry (Plotting Points in the plane)
Competency	Employ
Item Type	Closed Constructed Response
Full Credit (Full Score)	Writes four coordinates that are at equal distance from the control room and paved roads including decimal values For example: (5, 5), (–5, 5), (–5, –5), (5, –5) (2.5, 2.5), (–2.5, 2.5), (–2.5, –2.5), (2.5, –2.5)
No Credit (No Score)	Any other response or missing response

Item Number	Question 10
Question Code	SAS21M09S0310
Grade & Chapter Name	Grade 9 | Coordinate Geometry
Concept | Sub-concept	Geometry/Coordinate Geometry (Plotting Points in the plane)
Competency	Interpret & Evaluate
Item Type	Closed Constructed Response
Full Credit (Full Score)	$y = x$ and $x = y$
No Credit (No Score)	Any other response or missing response

Item Number	Question 1
Question Code	SAS21M09C0401
Grade & Chapter Name	Grade 9 | Linear Equations in Two Variables
Concept | Sub-concept	Algebra | Linear Equations
Competency	Employ
Item Type	Multiple Choice Question
Full Credit (Full Score)	B. 20
No Credit (No Score)	Any other response or missing response

Item Number	Question 2
Question Code	SAS21M09C0402
Grade & Chapter Name	Grade 9 | Linear Equations in Two Variables
Concept | Sub-concept	Algebra | Equation
Competency	Formulate
Item Type	Closed Constructed Response
Full Credit (Full Score)	Uses two variable with sum 50 $x+y = 50$ $p+q = 50$
No Credit (No Score)	Any other response or missing response

Item Number	Question 3
Question Code	SAS21M09C0403
Grade & Chapter Name	Grade 9 | Linear Equations in Two Variables
Concept | Sub-concept	Algebra | Equation
Competency	Interpret & Evaluate
Item Type	Multiple Choice Question
Full Credit (Full Score)	D. (30, 40)
No Credit (No Score)	Any other response or missing response

Item Number	Question 4
Question Code	SAS21M09C0404
Grade & Chapter Name	Grade 9 | Linear Equations in Two Variables
Concept | Sub-concept	Algebra | Equation
Competency	Interpret & Evaluate
Item Type	Closed Constructed Response
Full Credit (Full Score)	13.5 13.5 kg
No Credit (No Score)	Any other response or missing response

Item Number	Question 5
Question Code	SAS21M09C0405
Grade & Chapter Name	Grade 9 | Linear Equations in Two Variables
Concept | Sub-concept	Algebra | Graphical Representation
Competency	Employ
Item Type	Multiple Choice Question
Full Credit (Full Score)	C. 1000
No Credit (No Score)	Any other response or missing response

Item Number	Question 6
Question Code	SAS21M09C0406
Grade & Chapter Name	Grade 9 | Linear Equations in Two Variables
Concept | Sub-concept	Algebra | Graphical Representation
Competency	Formulate
Item Type	Closed Constructed Response
Full Credit (Full Score)	Use two variables such that one is ten times or one-tenth of the other. $y = \frac{1}{10}x$ $p = 10q$
No Credit (No Score)	Any other response or missing response

Item Number	Question 7
Question Code	SAS21M09C0407
Grade & Chapter Name	Grade 9 | Linear Equations in Two Variables
Concept | Sub-concept	Algebra | Equation
Competency	Employ
Item Type	Closed Constructed Response
Full Credit (Full Score)	Involves growth rate in reasoning •The average growth rate of a red maple tree is 0.27. at this rate 100-year-old tree can reach the height of 0.27 × 100 = 27 m.
No Credit (No Score)	Any other response or missing response

Item Number	Question 8
Question Code	SAS21M09C0408
Grade & Chapter Name	Grade 9 | Linear Equations in Two Variables
Concept | Sub-concept	Algebra | Equation
Competency	Formulate
Item Type	Multiple Choice Question
Full Credit (Full Score)	C. $h = 0.25 + 0.27t$
No Credit (No Score)	Any other response or missing response

Item Number	Question 9
Question Code	SAS21M09C0409
Grade & Chapter Name	Grade 9 | Linear Equations in Two Variables
Concept | Sub-concept	Algebra | Equation
Competency	Interpret & Evaluate
Item Type	Multiple Choice Question
Full Credit (Full Score)	B. The distance of the line from the Y-axis is 4.
No Credit (No Score)	Any other response or missing response

Item Number	Question 10
Question Code	SAS21M09C0410
Grade & Chapter Name	Grade 9 | Linear Equations in Two Variables
Concept | Sub-concept	Algebra | Equation
Competency	Interpret & Evaluate
Item Type	Multiple Choice Question
Full Credit (Full Score)	D. c, $b \neq 0$ and $a = 0$
No Credit (No Score)	Any other response or missing response

Item Number	Question 1
Question Code	SAS21M09G0501
Grade & Chapter Name	Grade 9 | Introduction to Euclid's Geometry
Concept | Sub-concept	Geometry | Postulates and Axioms
Competency	Employ
Item Type	Multiple Choice Question
Full Credit (Full Score)	D. The distance between the two highways remains almost the same in the state.
No Credit (No Score)	Any other response or missing response

Item Number	Question 2
Question Code	SAS21M09G0502
Grade & Chapter Name	Grade 9 | Introduction to Euclid's Geometry
Concept | Sub-concept	Geometry | Postulates and Axioms
Competency	Interpret & Evaluate
Item Type	Closed Constructed Response
Full Credit (Full Score)	Answer demonstrates understanding of geometrical axioms and their relation with real-world. • A dot in the map is for representational purpose. • Dot is used only to show the location of the city, not its area.
No Credit (No Score)	Any other response or missing response

Item Number	Question 3
Question Code	SAS21M09G0503
Grade & Chapter Name	Grade 9 | Introduction to Euclid's Geometry
Concept | Sub-concept	Geometry | Postulates and Axioms
Competency	Employ
Item Type	Multiple Choice Question
Full Credit (Full Score)	D. Two distinct lines can pass through a point in the same direction.
No Credit (No Score)	Any other response or missing response

Item Number	Question 4
Question Code	SAS21M09G0504
Grade & Chapter Name	Grade 9 | Introduction to Euclid's Geometry
Concept | Sub-concept	Geometry | Postulates and Axioms
Competency	Interpret & Evaluate
Item Type	Multiple Choice Question
Full Credit (Full Score)	D. The length of the highway between C and T is the sum of the lengths of the highway between CS and ST.
No Credit (No Score)	Any other response or missing response

Item Number	Question 5
Question Code	SAS21M09G0505
Grade & Chapter Name	Grade 9 | Introduction to Euclid's Geometry
Concept | Sub-concept	Geometry | Postulates and Axioms
Competency	Employ
Item Type	Multiple Choice Question
Full Credit (Full Score)	C. X – Z = Y
No Credit (No Score)	Any other response or missing response

Item Number	Question 6
Question Code	SAS21M09G0506
Grade & Chapter Name	Grade 9 | Introduction to Euclid's Geometry
Concept | Sub-concept	Geometry | Postulates and Axioms
Competency	Formulate
Item Type	Closed Constructed Response
Full Credit (Full Score)	Explanation states equality in the area of the triangle and the parallelogram. • Both have equal area. • The area of the triangle is equal to the area of the parallelogram.
No Credit (No Score)	Any other response or missing response

Item Number	Question 7
Question Code	SAS21M09G0507
Grade & Chapter Name	Grade 9 | Introduction to Euclid's Geometry
Concept | Sub-concept	Geometry | Postulates and Axioms
Competency	Employ
Item Type	Closed Constructed Response
Full Credit (Full Score)	No, with an explanation involving reasoning about magnitudes. No, the measure of an angle cannot be compared to the area of a triangle.
No Credit (No Score)	Any other response or missing response

Item Number	Question 8
Question Code	SAS21M09G0508
Grade & Chapter Name	Grade 9 | Introduction to Euclid's Geometry
Concept | Sub-concept	Geometry | Postulates and Axioms
Competency	Formulate
Item Type	Multiple Choice Question
Full Credit (Full Score)	B. The distance increases continuously.
No Credit (No Score)	Any other response or missing response

Item Number	Question 9
Question Code	SAS21M09G0509
Grade & Chapter Name	Grade 9 | Introduction to Euclid's Geometry
Concept | Sub-concept	Geometry | Postulates and Axioms
Competency	Interpret & Evaluate
Item Type	Multiple Choice Question
Full Credit (Full Score)	D. The measure of an angle depends upon the rotation of one arm with respect to the other.
No Credit (No Score)	Any other response or missing response

Item Number	Question 10
Question Code	SAS21M09G0510
Grade & Chapter Name	Grade 9 | Introduction to Euclid's Geometry
Concept | Sub-concept	Geometry | Postulates and Axioms
Competency	Interpret & Evaluate
Item Type	Multiple Choice Question
Full Credit (Full Score)	B. $AD = \frac{1}{10} CB$
No Credit (No Score)	Any other response or missing response

Item Number	Question 1
Question Code	SAS21M09G0601
Grade & Chapter Name	Grade 9 | Lines and Angles
Concept | Sub-concept	Geometry/Parallel Lines | Alternate Exterior Angles
Competency	Employ
Item Type	Closed Constructed Response
Full Credit (Full Score)	90 90°
No Credit (No Score)	Any other response or missing response

Item Number	Question 2
Question Code	SAS21M09G0602
Grade & Chapter Name	Grade 9 | Lines and Angles
Concept | Sub-concept	Geometry/Parallel Lines | Alternate Exterior Angles
Competency	Employ
Item Type	Closed Constructed Response
Full Credit (Full Score)	Mathematically valid proof Let angles on line AMB be a, x and b and angles on line BNC be c, y and d. x = 180 – (a + b) .....1 y = 180 – (c + d) .....2 Adding 1 and 2, x + y = 360 – (a + b + c + d) = 360 – (2a + 2c) = 360 – 2 × 90 = 180 Thus, lines OM and NP are parallel.
No Credit (No Score)	Any other response or missing response

Item Number	Question 3
Question Code	SAS21M09G0603
Grade & Chapter Name	Grade 9 | Lines and Angles
Concept | Sub-concept	Geometry/Parallel lines | Corresponding Angles
Competency	Apply
Item Type	Multiple Choice Question
Full Credit (Full Score)	60°, reasoning includes properties of parallel lines. 60°, as the lines are parallel, thus corresponding angles will be equal.
No Credit (No Score)	Any other response or missing response

Item Number	Question 4
Question Code	SAS21M09G0604
Grade & Chapter Name	Grade 9 | Lines and Angles
Concept | Sub-concept	Geometry | Angle Sum Property of a Triangle
Competency	Interpret & Evaluate
Item Type	Multiple Choice Question
Full Credit (Full Score)	B. 40
No Credit (No Score)	Any other response or missing response

Item Number	Question 5
Question Code	SAS21M09G0605
Grade & Chapter Name	Grade 9 | Lines and Angles
Concept | Sub-concept	Geometry | Angle Sum Property of a Triangle
Competency	Employ
Item Type	Multiple Choice Question
Full Credit (Full Score)	B. 240
No Credit (No Score)	Any other response or missing response

Item Number	Question 6
Question Code	SAS21M09G0606
Grade & Chapter Name	Grade 9 | Lines and Angles
Concept | Sub-concept	Geometry | Angle Sum Property of a Triangle
Competency	Formulate
Item Type	Multiple Choice Question
Full Credit (Full Score)	C. 45
No Credit (No Score)	Any other response or missing response

Item Number	Question 7
Question Code	SAS21M09G0607
Grade & Chapter Name	Grade 9 | Lines and Angles
Concept | Sub-concept	Geometry | Angle Sum Property of a Triangle
Competency	Employ
Item Type	Multiple Choice Question
Full Credit (Full Score)	D. 90°
No Credit (No Score)	Any other response or missing response

Item Number	Question 6
Question Code	SAS21M09G0606
Grade & Chapter Name	Grade 9 | Lines and Angles
Concept | Sub-concept	Geometry | Angle Sum Property of a Triangle
Competency	Formulate
Item Type	Closed Constructed Response
Full Credit (Full Score)	Writes either isosceles or obtuse or both. Reasoning involves symmetry or measure of angle or both. Isosceles, as the design is symmetrical. Obtuse, as one of the angle is greater than 90°.
No Credit (No Score)	Any other response or missing response

Item Number	Question 9
Question Code	SAS21M09G0609
Grade & Chapter Name	Grade 9 | Lines and Angles
Concept | Sub-concept	Geometry | Angle Sum Property of a Triangle
Competency	Interpret & Evaluate
Item Type	Multiple Choice Question
Full Credit (Full Score)	D. 120°
No Credit (No Score)	Any other response or missing response

Item Number	Question 10
Question Code	SAS21M09G0610
Grade & Chapter Name	Grade 9 | Lines and Angles
Concept | Sub-concept	Geometry | Angle Sum Property of a Triangle
Competency	Interpret & Evaluate
Item Type	Closed Constructed Response
Full Credit (Full Score)	Valid mathematical proof involving properties of triangles. IG is perpendicular to BC, thus triangle IGC is a right-angled triangle. Measure of ∠ICG = 30°. Hence, ∠CIG = 60°. The sides of the triangle IGC are in the ratio 2:1.
No Credit (No Score)	Any other response or missing response

Item Number	Question 1
Question Code	SAS21M09S0701
Grade & Chapter Name	Grade 9 | Triangles
Concept | Sub-concept	Geometry/Triangles | Congruence of Triangles
Competency	Employ
Item Type	Multiple Choice Question
Full Credit (Full Score)	B. 90°
No Credit (No Score)	Any other response or missing response

Item Number	Question 2
Question Code	SAS21M09S0702
Grade & Chapter Name	Grade 9 | Triangles
Concept | Sub-concept	Geometry/Triangles | Congruence of Triangles
Competency	Employ
Item Type	Closed Constructed Response
Full Credit (Full Score)	6 6 cm
No Credit (No Score)	Any other response or missing response

Item Number	Question 3
Question Code	SAS21M09S0703
Grade & Chapter Name	Grade 9 | Triangles
Concept | Sub-concept	Geometry/Triangles | Congruence of Triangles
Competency	Interpret & Evaluate
Item Type	Multiple Choice Question
Full Credit (Full Score)	B. 15 cm^2
No Credit (No Score)	Any other response or missing response

Item Number	Question 4
Question Code	SAS21M09S0704
Grade & Chapter Name	Grade 9 | Triangles
Concept | Sub-concept	Geometry/Triangles | Congruence of Triangles
Competency	Interpret & Evaluate
Item Type	Multiple Choice Question
Full Credit (Full Score)	B. 60°
No Credit (No Score)	Any other response or missing response

Item Number	Question 5
Question Code	SAS21M09S0705
Grade & Chapter Name	Grade 9 | Triangles
Concept | Sub-concept	Geometry/Triangles | Congruence of Triangles
Competency	Employ
Item Type	Closed Constructed Response
Full Credit (Full Score)	40 40°
No Credit (No Score)	Any other response or missing response

Item Number	Question 6
Question Code	SAS21M09S0706
Grade & Chapter Name	Grade 9 | Triangles
Concept | Sub-concept	Geometry/Triangles | Congruence of Triangles
Competency	Interpret & Evaluate
Item Type	Multiple Choice Question
Full Credit (Full Score)	A. 30°
No Credit (No Score)	Any other response or missing response

Item Number	Question 7
Question Code	SAS21M09S0707
Grade & Chapter Name	Grade 9 | Triangles
Concept | Sub-concept	Geometry/Triangles | Congruence of Triangles
Competency	Formulate
Item Type	Closed Constructed Response
Full Credit (Full Score)	$2\sqrt{89}$ m
No Credit (No Score)	Any other response or missing response

Item Number	Question 8
Question Code	SAS21M09S0708
Grade & Chapter Name	Grade 9 | Triangles
Concept | Sub-concept	Geometry/Triangles | Congruence of Triangles
Competency	Employ
Item Type	Closed Constructed Response
Full Credit (Full Score)	Shop, Client Client, Shop
No Credit (No Score)	Any other response or missing response

Item Number	Question 9
Question Code	SAS21M09S0709
Grade & Chapter Name	Grade 9 | Triangles
Concept | Sub-concept	Geometry/Triangles | Congruence of Triangles
Competency	Interpret & Evaluate
Item Type	Closed Constructed Response
Full Credit (Full Score)	Valid mathematical argument including criteria of congruent triangles. • Example in favour: Side-Side-Side and Angle-Side-Angle criteria • Example against: Side-Angle-Angle and Angle-Angle-Angle criteria
No Credit (No Score)	Any other response or missing response

Item Number	Question 10
Question Code	SAS21M09S0710
Grade & Chapter Name	Grade 9 | Triangles
Concept | Sub-concept	Geometry/Triangles | Congruence of Triangles
Competency	Employ
Item Type	Closed Constructed Response
Full Credit (Full Score)	Valid mathematical argument including the construction of triangles and a counter example showing that only angles are not sufficient criteria for determining congruence of triangles. • When specified angles are drawn at two endpoints of a line segment, they meet at a unique point. If side length and end angles are provided, they will make unique triangles. • All equilateral triangles are not congruent but have equal angles.
No Credit (No Score)	Any other response or missing response

Item Number	Question 1
Question Code	SAS21M09S0801
Grade & Chapter Name	Grade 9 | Quadrilaterals
Concept | Sub-concept	Geometry | Angles of Quadrilaterals
Competency	Employ
Item Type	Multiple Choice Question
Full Credit (Full Score)	A. 30°
No Credit (No Score)	Any other response or missing response

Item Number	Question 2
Question Code	SAS21M09S0802
Grade & Chapter Name	Grade 9 | Quadrilaterals
Concept | Sub-concept	Geometry | Angles of Quadrilaterals
Competency	Interpret & Evaluate
Item Type	Multiple Choice Question
Full Credit (Full Score)	D. Distance between Altair and Saturn is equal to the distance between Altair and Jupiter.
No Credit (No Score)	Any other response or missing response

Item Number	Question 3
Question Code	SAS21M09S0803
Grade & Chapter Name	Grade 9 | Quadrilaterals
Concept | Sub-concept	Geometry | Angles of Quadrilaterals
Competency	Interpret & Evaluate
Item Type	Closed Constructed Response
Full Credit (Full Score)	Mention Quadrilateral A along with a valid mathematical reason. • Quadrilateral A, both the quadrilaterals have an equal base but the altitude of Quadrilateral A is greater.
No Credit (No Score)	Any other response or missing response

Item Number	Question 4
Question Code	SAS21M09S0801
Grade & Chapter Name	Grade 9 | Quadrilaterals
Concept | Sub-concept	Geometry | Angles of Quadrilaterals
Competency	Employ
Item Type	Closed Constructed Response
Full Credit (Full Score)	Accept a valid mathematical division. • Sanya can find mid-points of the sides of the triangular region and create a smaller triangular region by connecting them. In this way, the triangular region can be divided into four triangles of equal area. • Sanya can divide one side into four equal parts and connect each point on the base to the vertex (this may be a more practical way if all the land owners need some part touching the road for access).
No Credit (No Score)	Any other response or missing response

Item Number	Question 5
Question Code	SAS21M09S0805
Grade & Chapter Name	Grade 9 | Quadrilaterals
Concept | Sub-concept	Geometry | Angles of Quadrilaterals
Competency	Interpret & Evaluate
Item Type	Closed Constructed Response
Full Credit (Full Score)	No, with valid justification. No, there can be three cases. • When all the points are collinear, the resulting figure is a line. • When three points are collinear out of four, the resulting figure is a triangle. • When no three points out of four are collinear, the resulting figure is a quadrilateral.
No Credit (No Score)	Any other response or missing response

Item Number	Question 6
Question Code	SAS21M09S0806
Grade & Chapter Name	Grade 9 | Quadrilaterals
Concept | Sub-concept	Geometry | Types of Angles
Competency	Employ
Item Type	Multiple Choice Question
Full Credit (Full Score)	A. Acute
No Credit (No Score)	Any other response or missing response

Item Number	Question 7
Question Code	SAS21M09S0807
Grade & Chapter Name	Grade 9 | Quadrilaterals
Concept | Sub-concept	Geometry | Types of Quadrilateral
Competency	Interpret & Evaluate
Item Type	Multiple Choice Question
Full Credit (Full Score)	D. Parallelogram
No Credit (No Score)	Any other response or missing response

Item Number	Question 8
Question Code	SAS21M09S0808
Grade & Chapter Name	Grade 9 | Quadrilaterals
Concept | Sub-concept	Geometry | Angles of Quadrilaterals
Competency	Employ
Item Type	Multiple Choice Question
Full Credit (Full Score)	A. 15°
No Credit (No Score)	Any other response or missing response

Item Number	Question 9
Question Code	SAS21M09S0809
Grade & Chapter Name	Grade 9 | Quadrilaterals
Concept | Sub-concept	Geometry | Types of Quadrilaterals
Competency	Employ
Item Type	Multiple Choice Question
Full Credit (Full Score)	B. Kite
No Credit (No Score)	Any other response or missing response

Item Number	Question 10
Question Code	SAS21M09S0810
Grade & Chapter Name	Grade 9 | Quadrilaterals
Concept | Sub-concept	Geometry | Angles of Angles
Competency	Interpret & Evaluate
Item Type	Multiple Choice Question
Full Credit (Full Score)	B. 30°
No Credit (No Score)	Any other response or missing response

Item Number	Question 1
Question Code	SAS21M09S0901
Grade & Chapter Name	Grade 9 | Areas of Parallelograms and Triangles
Concept | Sub-concept	Geometry | Parallelograms on the same Base and Between the same Parallels
Competency	Employ
Item Type	Multiple Choice Question
Full Credit (Full Score)	C. $12\sqrt{2}$ cm
No Credit (No Score)	Any other response or missing response

Item Number	Question 2
Question Code	SAS21M09S0902
Grade & Chapter Name	Grade 9 | Areas of Parallelograms and Triangles
Concept | Sub-concept	Geometry | Parallelograms on the same Base and Between the same Parallels
Competency	Employ
Item Type	Multiple Choice Question
Full Credit (Full Score)	D. 135°
No Credit (No Score)	Any other response or missing response

Item Number	Question 3
Question Code	SAS21M09S0903
Grade & Chapter Name	Grade 9 | Areas of Parallelograms and Triangles
Concept | Sub-concept	Geometry | Parallelograms on the same Base and Between the same Parallels
Competency	Interpret & Evaluate
Item Type	Closed Constructed Response
Full Credit (Full Score)	No, justification may involve, equal areas does not ensure congruency or drawing of parallelograms between the two parallel lines with the same base but different side lengths. •Parallelograms between two parallel lines have equal areas but their side lengths may be different.
No Credit (No Score)	Any other response or missing response

Item Number	Question 4
Question Code	SAS21M09S0904
Grade & Chapter Name	Grade 9 | Areas of Parallelograms and Triangles
Concept | Sub-concept	Geometry | Parallelograms on the same Base and Between the same Parallels
Competency	Employ
Item Type	Multiple Choice Question
Full Credit (Full Score)	D. Either the corresponding base length or the corresponding altitude of the triangle is the double of the parallelogram's base length or altitude.
No Credit (No Score)	Any other response or missing response

Item Number	Question 5
Question Code	SAS21M09S0905
Grade & Chapter Name	Grade 9 | Areas of Parallelograms and Triangles
Concept | Sub-concept	Geometry | Triangles on the same Base and between the same Parallels
Competency	Employ
Item Type	Open Constructed Response
Full Credit (Full Score)	Accept a valid mathematical division of the triangle area. • Preeti can draw a median of the triangle as it divides the triangle into two triangles of equal area. • Preeti can make a triangle using any side as base and mid-point of the corresponding altitude.
No Credit (No Score)	Any other response or missing response

Item Number	Question 6
Question Code	SAS21M09S0906
Grade & Chapter Name	Grade 9 | Areas of Parallelograms and Triangles
Concept | Sub-concept	Geometry | Triangles on the same Base and Between the same Parallels
Competency	Interpret & Evaluate
Item Type	Multiple Choice Question
Full Credit (Full Score)	C. 90°
No Credit (No Score)	Any other response or missing response

Item Number	Question 7
Question Code	SAS21M09S0907
Grade & Chapter Name	Grade 9 | Areas of Parallelograms and Triangles
Concept | Sub-concept	Geometry | Triangles on the same Base and between the same Parallels
Competency	Employ
Item Type	Multiple Choice Question
Full Credit (Full Score)	A. 1 cm^2
No Credit (No Score)	Any other response or missing response

Item Number	Question 8
Question Code	SAS21M09S0908
Grade & Chapter Name	Grade 9 | Areas of Parallelograms and Triangles
Concept | Sub-concept	Geometry | Figures on the Same Base and Between the Same Parallels
Competency	Employ
Item Type	Multiple Choice Question
Full Credit (Full Score)	C. 3:1
No Credit (No Score)	Any other response or missing response

Item Number	Question 9
Question Code	SAS21M09S0909
Grade & Chapter Name	Grade 9 | Areas of Parallelograms and Triangles
Concept | Sub-concept	Geometry | Figures on the Same Base and Between the Same Parallels
Competency	Interpret & Evaluate
Item Type	Multiple Choice Question
Full Credit (Full Score)	C. 9 cm^2
No Credit (No Score)	Any other response or missing response

Item Number	Question 10
Question Code	SAS21M09S0910
Grade & Chapter Name	Grade 9 | Areas of Parallelograms and Triangles
Concept | Sub-concept	Geometry | Figures on the Same Base and Between the Same Parallels
Competency	Interpret & Evaluate
Item Type	Open Constructed Response
Full Credit (Full Score)	Mentions that the areas of the two parallelograms are the same. The base and height of both the parallelograms are the same, thus areas will be the same.
No Credit (No Score)	Any other response or missing response

Item Number	Question 1
Question Code	SAS21M09S1001
Grade & Chapter Name	Grade 9 | Circles
Concept | Sub-concept	Geometry | Circles (Circle through Three Points)
Competency	Interpret and Evaluate
Item Type	Multiple Choice Question
Full Credit (Full Score)	C. There is a unique circle passing through three non-collinear points.
No Credit (No Score)	Any other response or missing response

Item Number	Question 2
Question Code	SAS21M09S1002
Grade & Chapter Name	Grade 9 | Circles
Concept | Sub-concept	Geometry | Circles (Circles and Its Related Terms)
Competency	Formulate
Item Type	Multiple Choice Question
Full Credit (Full Score)	B. Centre
No Credit (No Score)	Any other response or missing response

Item Number	Question 3
Question Code	SAS21M09S1003
Grade & Chapter Name	Grade 9 | Circles
Concept | Sub-concept	Geometry | Circles (Perpendicular from the Centre to a Chord)
Competency	Interpret and Evaluate
Item Type	Multiple Choice Question
Full Credit (Full Score)	D. Road B and Road D subtend equal angles at society 1.
No Credit (No Score)	Any other response or missing response

Item Number	Question 4
Question Code	SAS21M09S1004
Grade & Chapter Name	Grade 9 | Circles
Concept | Sub-concept	Geometry | Circles (Perpendicular from the Centre to a Chord)
Competency	Interpret and Evaluate
Item Type	Closed Constructed Response
Full Credit (Full Score)	Angad is correct.
No Credit (No Score)	Any other response or missing response

Item Number	Question 5
Question Code	SAS21M09S1005
Grade & Chapter Name	Grade 9 | Circles
Concept | Sub-concept	Geometry | Circles (Cyclic Quadrilateral)
Competency	Employ
Item Type	Multiple Choice Question
Full Credit (Full Score)	C. 180°
No Credit (No Score)	Any other response or missing response

Item Number	Question 6
Question Code	SAS21M09S1006
Grade & Chapter Name	Grade 9 | Circles
Concept | Sub-concept	Geometry | Circles (Cyclic Quadrilateral)
Competency	Interpret & Evaluate
Item Type	Closed Constructed Response
Full Credit (Full Score)	Examples to show that in a right triangle the sum of legs is longest for an isosceles right triangle when hypotenuse remains same. • Take for example the length of diameter (hypotenuse) = 5 units. Road D and Road B are equal hence (Road D = 3.53 units). Let Road E be = 1 Chapter, Road F = 4.89 units. Therefore, length of Road B + Road D is greater than Road E + Road F.
No Credit (No Score)	Any other response or missing response

Item Number	Question 7
Question Code	SAS21M09S1007
Grade & Chapter Name	Grade 9 | Circles
Concept | Sub-concept	Geometry | Circles (Cyclic Quadrilateral)
Competency	Interpret & Evaluate
Item Type	Multiple Choice Question
Full Credit (Full Score)	C. Road G divides Road F into two equal parts.
No Credit (No Score)	Any other response or missing response

Item Number	Question 8
Question Code	SAS21M09S1008
Grade & Chapter Name	Grade 9 | Circles
Concept | Sub-concept	Geometry | Circles (Cyclic Quadrilateral)
Competency	Interpret & Evaluate
Item Type	Closed Constructed Response
Full Credit (Full Score)	Yes, Priya is correct with valid reasoning. • Yes, Priya is correct because arc corresponding to two equal roads (chords) are congruent.
No Credit (No Score)	Any other response or missing response

Item Number	Question 9
Question Code	SAS21M09S1009
Grade & Chapter Name	Grade 9 | Circles
Concept | Sub-concept	Geometry | Circles (Angle Subtended at the Center)
Competency	Employ
Item Type	Multiple Choice Question
Full Credit (Full Score)	A. 44°
No Credit (No Score)	Any other response or missing response

Item Number	Question 10
Question Code	SAS21M09S1010
Grade & Chapter Name	Grade 9 | Circles
Concept | Sub-concept	Geometry | Circles (Angle Subtended at the Center)
Competency	Interpret & Evaluate
Item Type	Closed Constructed Response
Full Credit (Full Score)	Siya is correct with valid reasoning • Siya is correct as the length of OB and OC is equal because they are two radii of the same circle.
No Credit (No Score)	Any other response or missing response

Item Number	Question 1
Question Code	SAS21M09S1101
Grade & Chapter Name	Grade 9 | Constructions
Concept | Sub-concept	Geometry | Construction (Basic Construction)
Competency	Interpret & Evaluate
Item Type	Multiple Choice Question
Full Credit (Full Score)	C. Rhombus
No Credit (No Score)	Any other response or missing response

Item Number	Question 2
Question Code	SAS21M09S1102
Grade & Chapter Name	Grade 9 | Constructions
Concept | Sub-concept	Geometry | Construction (Basic Construction)
Competency	Employ
Item Type	Multiple Choice Question
Full Credit (Full Score)	C. 120°
No Credit (No Score)	Any other response or missing response

Item Number	Question 3
Question Code	SAS21M09S1103
Grade & Chapter Name	Grade 9 | Constructions
Concept | Sub-concept	Geometry | Construction of Perpendicular Bisector
Competency	Interpret & Evaluate
Item Type	Multiple Choice Question
Full Credit (Full Score)	B. ∠SAO is greater than ∠TBO.
No Credit (No Score)	Any other response or missing response

Item Number	Question 4
Question Code	SAS21M09S1104
Grade & Chapter Name	Grade 9 | Constructions
Concept | Sub-concept	Geometry | Construction of Perpendicular Bisector
Competency	Interpret & Evaluate
Item Type	Multiple Choice Question
Full Credit (Full Score)	A. 25°
No Credit (No Score)	Any other response or missing response

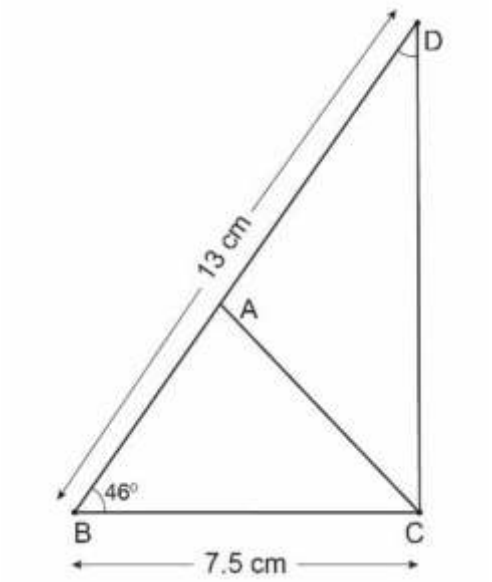
Item Number	Question 5
Question Code	SAS21M09S1105
Grade & Chapter Name	Grade 9 | Constructions
Concept | Sub-concept	Geometry | Construction (Construction of a Triangle)
Competency	Employ
Item Type	Multiple Choice Question
Full Credit (Full Score)	C. 240°
No Credit (No Score)	Any other response or missing response

Item Number	Question 6
Question Code	SAS21M09S1106
Grade & Chapter Name	Grade 9 | Constructions
Concept | Sub-concept	Geometry | Construction (Construction of a Triangle)
Competency	Interpret & Evaluate
Item Type	Multiple Choice Question
Full Credit (Full Score)	C. Equilateral
No Credit (No Score)	Any other response or missing response

Item Number	Question 7
Question Code	SAS21M09S1107
Grade & Chapter Name	Grade 9 | Constructions
Concept | Sub-concept	Geometry | Construction (Construction of a Triangle)
Competency	Interpret & Evaluate
Item Type	Multiple Choice Question
Full Credit (Full Score)	B. Construct an angle of 30°.
No Credit (No Score)	Any other response or missing response

Item Number	Question 8
Question Code	SAS21M09S1108
Grade & Chapter Name	Grade 9 | Constructions
Concept | Sub-concept	Geometry | Construction (Construction of a Triangle)
Competency	Interpret & Evaluate
Item Type	Multiple Choice Question
Full Credit (Full Score)	D. 10 cm, 8 cm and 10 cm
No Credit (No Score)	Any other response or missing response

Item Number	Question 9
Question Code	SAS21M09S1109
Grade & Chapter Name	Grade 9 | Constructions
Concept | Sub-concept	Geometry | Construction (Construction of a Triangle)
Competency	Employ
Item Type	Multiple Choice Question
Full Credit (Full Score)	A. Mark a point on RS at a distance of 2 cm from S.
No Credit (No Score)	Any other response or missing response

Item Number	Question 10
Question Code	SAS21M09S1110
Grade & Chapter Name	Grade 9 | Constructions
Concept | Sub-concept	Geometry | Construction (Construction of a Triangle)
Competency	
Item Type	Closed Constructed Response
Full Credit (Full Score)	Accept all constructions with appropriate measurement. 
No Credit (No Score)	Any other response or missing response

Item Number	Question 1
Question Code	SAS21M09S1201
Grade & Chapter Name	Grade 9 | Heron's Formula
Concept | Sub-concept	Mensuration | Finding Area of a Triangle using Heron's Formula
Competency	Employ
Item Type	Closed Constructed Response
Full Credit (Full Score)	24 m^2
No Credit (No Score)	Any other response or missing response

Item Number	Question 2
Question Code	SAS21M09S1202
Grade & Chapter Name	Grade 9 | Heron's Formula
Concept | Sub-concept	Mensuration | Finding Area of a Triangle using Heron's Formula
Competency	Employ
Item Type	Multiple Choice Question
Full Credit (Full Score)	D. 3696 m^2
No Credit (No Score)	Any other response or missing response

Item Number	Question 3
Question Code	SAS21M09S1203
Grade & Chapter Name	Grade 9 | Heron's Formula
Concept | Sub-concept	Mensuration | Finding Area of a Triangle using Heron's Formula
Competency	Interpret & Evaluate
Item Type	Closed Constructed Response
Full Credit (Full Score)	No, with valid reasoning • No, the area reserved under part 1 is not equal to the area reserved under part 2. Area under part 1 is 3696 m^2 whereas the area under part 2 is 3024 m^2
No Credit (No Score)	Any other response or missing response

Item Number	Question 4
Question Code	SAS21M09S1204
Grade & Chapter Name	Grade 9 | Heron's Formula
Concept | Sub-concept	Mensuration | Finding Area of a Triangle using Heron's Formula
Competency	Interpret & Evaluate
Item Type	Multiple Choice Question
Full Credit (Full Score)	D. 6720×750
No Credit (No Score)	Any other response or missing response

Item Number	Question 5
Question Code	SAS21M09S1205
Grade & Chapter Name	Grade 9 | Heron's Formula
Concept | Sub-concept	Mensuration | Finding Area of a Triangle using Heron's Formula
Competency	Employ
Item Type	Multiple Choice Question
Full Credit (Full Score)	D. $112\sqrt{5}$ cm^2
No Credit (No Score)	Any other response or missing response

Item Number	Question 6
Question Code	SAS21M09S1206
Grade & Chapter Name	Grade 9 | Heron's Formula
Concept | Sub-concept	Mensuration | Finding Area of a Triangle using Heron's Formula
Competency	Interpret & Evaluate
Item Type	Closed Constructed Response
Full Credit (Full Score)	$225\sqrt{3}$ square centimetres $225\sqrt{3}$ sq cm
No Credit (No Score)	Any other response or missing response

Item Number	Question 7
Question Code	SAS21M09S1207
Grade & Chapter Name	Grade 9 | Heron's Formula
Concept | Sub-concept	Mensuration | Finding Area of a Triangle using Heron's Formula
Competency	Employ
Item Type	Multiple Choice Question
Full Credit (Full Score)	B. 2.15×0.35×0.65×1.15
No Credit (No Score)	Any other response or missing response

Item Number	Question 8
Question Code	SAS21M09S1208
Grade & Chapter Name	Grade 9 | Heron's Formula
Concept | Sub-concept	Mensuration | Finding Area of a Triangle using Heron's Formula
Competency	Interpret & Evaluate
Item Type	Closed Constructed Response
Full Credit (Full Score)	No, with a valid explanation No, we don't have enough information to say that the area reserved for animals is double the area reserved for the zoo authorities. The area reserved under zone 1 = area reserved under zone 2 + 3, but we cannot say the area reserved under zone 2 and 3 are equal.
No Credit (No Score)	Any other response or missing response

Item Number	Question 9
Question Code	SAS21M09S1209
Grade & Chapter Name	Grade 9 | Heron's Formula
Concept | Sub-concept	Mensuration | Finding Area of a Triangle using Heron's Formula
Competency	Interpret & Evaluate
Item Type	Multiple Choice Question
Full Credit (Full Score)	C.$15\sqrt{130\times50\times50\times30}$
No Credit (No Score)	Any other response or missing response

Item Number	Question 10
Question Code	SAS21M09S1210
Grade & Chapter Name	Grade 9 | Heron's Formula
Concept | Sub-concept	Mensuration | Finding Area of a Triangle using Heron's Formula
Competency	Employ
Item Type	
Full Credit (Full Score)	$32\sqrt{6}cm^2$
No Credit (No Score)	Any other response or missing response

Item Number	Question 1
Question Code	SAS21M09S1301
Grade & Chapter Name	Grade 9 | Surface Area and Volume
Concept | Sub-concept	Mensuration | Surface Area of Combination of Solids
Competency	Interpret & Evaluate
Item Type	Multiple Choice Question
Full Credit (Full Score)	B. $77+4\pi\sqrt{17}$
No Credit (No Score)	Any other response or missing response

Item Number	Question 2
Question Code	SAS21M09S1302
Grade & Chapter Name	Grade 9 | Surface Area and Volume
Concept | Sub-concept	Mensuration | Surface Area of Combination of Solids
Competency	Employ
Item Type	Closed Constructed Response
Full Credit (Full Score)	5 5 rugs 6 6 rugs
No Credit (No Score)	Any other response or missing response

Item Number	Question 3
Question Code	SAS21M09S1303
Grade & Chapter Name	Grade 9 | Surface Area and Volume
Concept | Sub-concept	Mensuration | Surface Area of Combination of Solids
Competency	Formulate
Item Type	Multiple Choice Question
Full Credit (Full Score)	A. Image
No Credit (No Score)	Any other response or missing response

Item Number	Question 4
Question Code	SAS21M09S1304
Grade & Chapter Name	Grade 9 | Surface Area and Volume
Concept | Sub-concept	Mensuration | Surface Area of Combination of Solids
Competency	Employ
Item Type	Closed Constructed Response
Full Credit (Full Score)	$(7200 + 800\sqrt{3})$ $(7200 + 800\sqrt{3})$ cm^2 8585.6 cm^2
No Credit (No Score)	Any other response or missing response

Item Number	Question 5
Question Code	SAS21M09S1305
Grade & Chapter Name	Grade 9 | Surface Area and Volume
Concept | Sub-concept	Mensuration | Surface Area of Cylinder
Competency	Employ
Item Type	Closed Constructed Response
Full Credit (Full Score)	21 cm
No Credit (No Score)	Any other response or missing response

Item Number	Question 6
Question Code	SAS21M09S1306
Grade & Chapter Name	Grade 9 | Surface Area and Volume
Concept | Sub-concept	Mensuration | Volume of Cylinder
Competency	Employ
Item Type	Closed Constructed Response
Full Credit (Full Score)	$4116\pi cm^3$
No Credit (No Score)	Any other response or missing response

Item Number	Question 7
Question Code	SAS21M09S1307
Grade & Chapter Name	Grade 9 | Surface Area and Volume
Concept | Sub-concept	Mensuration | Surface Area of Cuboid
Competency	Employ
Item Type	Multiple Choice Question
Full Credit (Full Score)	B. 4700
No Credit (No Score)	Any other response or missing response

Item Number	Question 8
Question Code	SAS21M09S1308
Grade & Chapter Name	Grade 9 | Surface Area and Volume
Concept | Sub-concept	Mensuration | Volume of Cuboid
Competency	Interpret & Evaluate
Item Type	Closed Constructed Response
Full Credit (Full Score)	41 (30x40x25)/(9x9x9)= 41.15 . Exact answer = 41 as all cubes should fit in it)
No Credit (No Score)	Any other response or missing response

Item Number	Question 9
Question Code	SAS21M09S1309
Grade & Chapter Name	Grade 9 | Surface Area and Volume
Concept | Sub-concept	Mensuration | Surface Area of Combination of Solids
Competency	Employ
Item Type	Multiple Choice Question
Full Credit (Full Score)	D. 24 cm
No Credit (No Score)	Any other response or missing response

Item Number	Question 10
Question Code	SAS21M09S1310
Grade & Chapter Name	Grade 9 | Surface Area and Volume
Concept | Sub-concept	Mensuration|Volume of Cone
Competency	Employ
Item Type	Multiple Choice Question
Full Credit (Full Score)	D. 20π
No Credit (No Score)	Any other response or missing response

Item Number	Question 1
Question Code	SAS21M09S1401
Grade & Chapter Name	Grade 9 | Statistics
Concept | Sub-concept	Statistics | Graphical Representation of Data
Competency	Interpret & Evaluate
Item Type	Closed Constructed Response
Full Credit (Full Score)	Bar graph
No Credit (No Score)	Any other response or missing response

Item Number	Question 2
Question Code	SAS21M09S1402
Grade & Chapter Name	Grade 9 | Statistics
Concept | Sub-concept	Statistics | Graphical Representation of Data
Competency	Employ
Item Type	Closed Constructed Response
Full Credit (Full Score)	5100 Rs 5100
No Credit (No Score)	Any other response or missing response

Item Number	Question 3
Question Code	SAS21M09S1403
Grade & Chapter Name	Grade 9 | Statistics
Concept | Sub-concept	Statistics | Graphical Representation of Data
Competency	Interpret & Evaluate
Item Type	Multiple Choice Question
Full Credit (Full Score)	C. Rs 5500
No Credit (No Score)	Any other response or missing response

Item Number	Question 4
Question Code	SAS21M09S1404
Grade & Chapter Name	Grade 9 | Statistics
Concept | Sub-concept	Statistics | Graphical Representation of Data
Competency	Employ
Item Type	Multiple Choice Question
Full Credit (Full Score)	C. $\frac{18}{25}$
No Credit (No Score)	Any other response or missing response

Item Number	Question 5
Question Code	SAS21M09S1405
Grade & Chapter Name	Grade 9 | Statistics
Concept | Sub-concept	Statistics | Graphical Representation of Data
Competency	Employ
Item Type	Multiple Choice Question
Full Credit (Full Score)	B. 9
No Credit (No Score)	Any other response or missing response

Item Number	Question 6
Question Code	SAS21M09S1406
Grade & Chapter Name	Grade 9 | Statistics
Concept | Sub-concept	Statistics | Graphical Representation of Data
Competency	Interpret & Evaluate
Item Type	Closed Constructed Response
Full Credit (Full Score)	Divya with valid explanation •Divya, since only 25 females were tested.
No Credit (No Score)	Any other response or missing response

Item Number	Question 7
Question Code	SAS21M09S1407
Grade & Chapter Name	Grade 9 | Statistics
Concept | Sub-concept	Statistics | Graphical Representation of Data
Competency	Employ
Item Type	Multiple Choice Question
Full Credit (Full Score)	A. 6
No Credit (No Score)	Any other response or missing response

Item Number	Question 8
Question Code	SAS21M09S1408
Grade & Chapter Name	Grade 9 | Statistics
Concept | Sub-concept	Statistics | Graphical Representation of Data
Competency	Interpret & Evaluate
Item Type	Closed Constructed Response
Full Credit (Full Score)	Team B with valid reasoning •Team B scored more than team A as during the last 5 minutes, the score of team B is 13 and the score of team A is 8 in the last five minutes.
No Credit (No Score)	Any other response or missing response

Item Number	Question 9
Question Code	SAS21M09S1409
Grade & Chapter Name	Grade 9 | Statistics
Concept | Sub-concept	Statistics | Graphical Representation of Data
Competency	Employ
Item Type	Closed Constructed Response
Full Credit (Full Score)	9 9 points
No Credit (No Score)	Any other response or missing response

Item Number	Question 10
Question Code	SAS21M09S1410
Grade & Chapter Name	Grade 9 | Statistics
Concept | Sub-concept	Statistics | Graphical Representation of Data
Competency	Interpret and evaluate
Item Type	Closed Constructed Response
Full Credit (Full Score)	No, with at least one of the two aspects focussed •Inappropriate scale for horizontal axis. •Incorrect data representation for interval 15 – 20. No, The time scale is should be continuous No, the data for the interval needs to be 0
No Credit (No Score)	Any other response or missing response

Item Number	Question 1
Question Code	SAS21M09S1501
Grade & Chapter Name	Grade 9 | Probability
Concept | Sub-concept	Probability | An Experimental Approach
Competency	Employ
Item Type	Multiple Choice Question
Full Credit (Full Score)	B. $\frac{17}{38}$
No Credit (No Score)	Any other response or missing response

Item Number	Question 2
Question Code	SAS21M09S1502
Grade & Chapter Name	Grade 9 | Probability
Concept | Sub-concept	Probability | An Experimental Approach
Competency	Employ
Item Type	Closed Constructed Response
Full Credit (Full Score)	0 Zero
No Credit (No Score)	Any other response or missing response

Item Number	Question 3
Question Code	SAS21M09S1503
Grade & Chapter Name	Grade 9 | Probability
Concept | Sub-concept	Probability | An Experimental Approach
Competency	Employ
Item Type	Multiple Choice Question
Full Credit (Full Score)	C. $\frac{5}{18}$
No Credit (No Score)	Any other response or missing response

Item Number	Question 4
Question Code	SAS21M09S1504
Grade & Chapter Name	Grade 9 | Probability
Concept | Sub-concept	Probability | An Experimental Approach
Competency	Interpret & Evaluate
Item Type	Multiple Choice Question
Full Credit (Full Score)	A. $\frac{2}{61}$
No Credit (No Score)	Any other response or missing response

Item Number	Question 5
Question Code	SAS21M09S1505
Grade & Chapter Name	Grade 9 | Probability
Concept | Sub-concept	Probability | An Experimental Approach
Competency	Employ
Item Type	Multiple Choice Question
Full Credit (Full Score)	B. $\frac{1}{17}$
No Credit (No Score)	Any other response or missing response

Item Number	Question 6
Question Code	SAS21M09S1506
Grade & Chapter Name	Grade 9 | Probability
Concept | Sub-concept	Probability | An Experimental Approach
Competency	Interpret & Evaluate
Item Type	Multiple Choice Question
Full Credit (Full Score)	B. $\frac{7}{10}$
No Credit (No Score)	Any other response or missing response

Item Number	Question 7
Question Code	SAS21M09S1507
Grade & Chapter Name	Grade 9 | Probability
Concept | Sub-concept	Probability | Probability of an Event
Competency	Employ
Item Type	Multiple Choice Question
Full Credit (Full Score)	B. $\frac{1}{3}$
No Credit (No Score)	Any other response or missing response

Item Number	Question 8
Question Code	SAS21M09S1508
Grade & Chapter Name	Grade 9 | Probability
Concept | Sub-concept	Probability | Probability of an Event
Competency	Employ
Item Type	Multiple Choice Question
Full Credit (Full Score)	D. $\frac{2}{3}$
No Credit (No Score)	Any other response or missing response

Item Number	Question 9
Question Code	SAS21M09S1509
Grade & Chapter Name	Grade 9 | Probability
Concept | Sub-concept	Probability | Probability of an Event
Competency	Employ
Item Type	Closed Constructed Response
Full Credit (Full Score)	1
No Credit (No Score)	Any other response or missing response

Item Number	Question 10
Question Code	SAS21M09S1510
Grade & Chapter Name	Grade 9 | Probability
Concept | Sub-concept	Probability | Probability of an Event
Competency	Interpret & Evaluate
Item Type	Closed Constructed Response
Full Credit (Full Score)	{2,3,4,5,6,8} Allow responses even if shown without brackets However, only the shown numbers are permitted
No Credit (No Score)	Any other response or missing response

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