



# Curriculum Aligned Competency Based Test Items Mathematics Class - 9

Central Board of Secondary Education

# Acknowledgements

## Patrons

- Shri Dharmendra Pradhan, Minister of Education, Government of India.
- Dr. Rajkumar Ranjan Singh, Minister of State for Education, Government of India.
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- Dr. Vineet Joshi, IAS, Chairman, Central Board of Secondary Education.

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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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# 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.

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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.

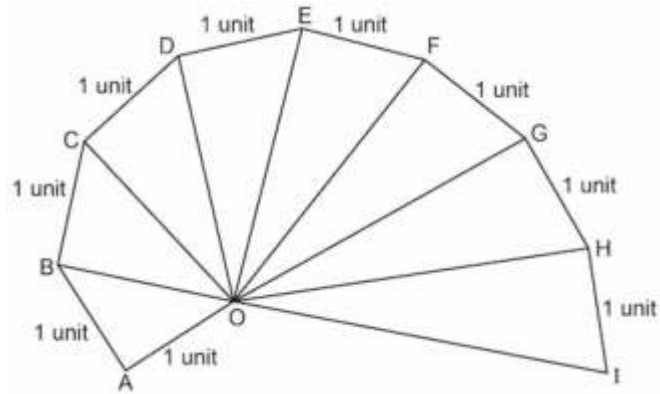
SAS21M09Q0103

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

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



SAS21M09Q0104

4 What is the length of OE in the spiral?

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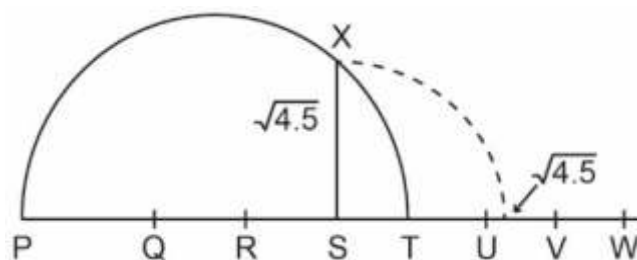
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SAS21M09Q0105

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?

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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  $3\text{ m} \times 3\text{ m}$ . To make the desired screen for the client, what other information is required by the manufacturer?

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# Curriculum Aligned Competency Based Test Items

## Mathematics

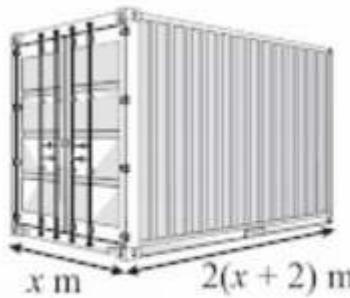
### Class 9 – Chapter 2

### Polynomials

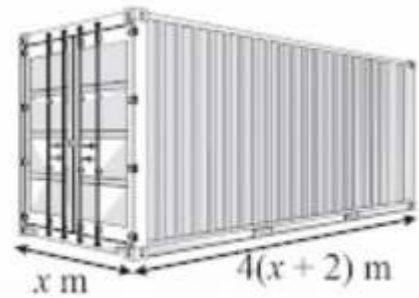
A shipment service provider uses three types of containers for shipping materials. The height and width of the three containers are the same. The containers' height is 0.15 m more than their width, and the volume of the smallest container is  $652 \text{ m}^3$



Container 1



Container 2



Container 3

SAS21M09C0201

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

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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  $2,608 \text{ m}^3$ .
  - D. The length of Container 3 is 4 times the length of Container 2.

SAS21M09C0203

- 3 What is the height of each container?

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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?

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SAS21M09C0205

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

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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?

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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  $p(x) = 0$ ?

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# 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?

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SAS21M09S0303

- 3 How far is Bear 425 from Road  $x$ ?

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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?

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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.

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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

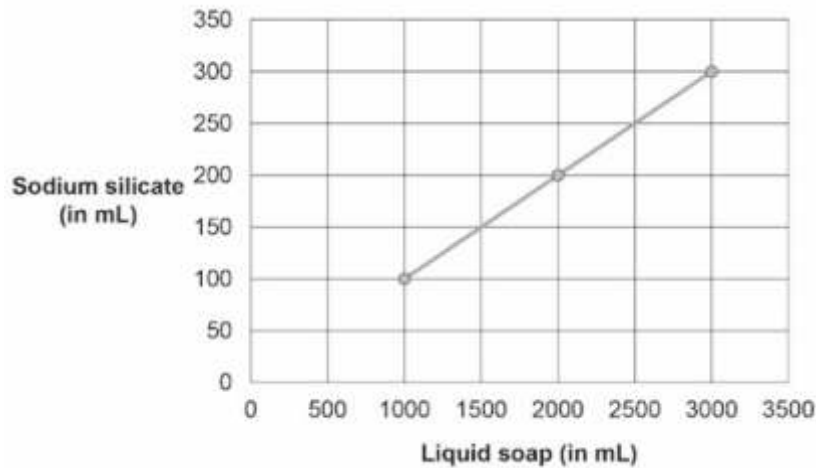
- 4 The soap bottles are available in small and large sizes. A carton with 10 small and 40 large bottles weighs 10.8 kg. What is the mass of the carton with 50 large bottles?

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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.

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# 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  $90^\circ$  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.

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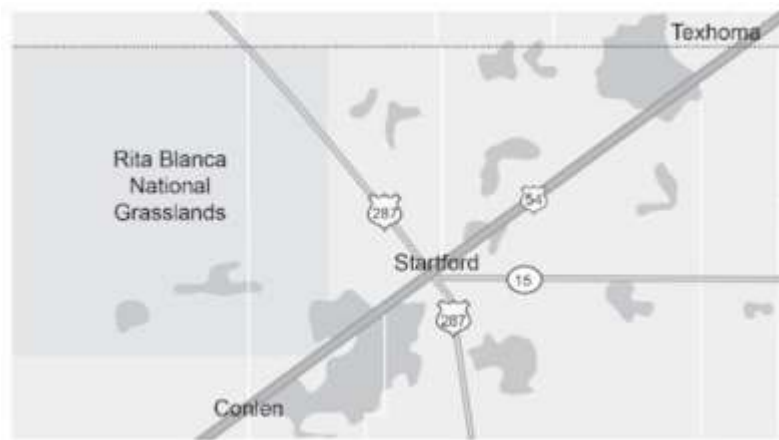
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SAS21M09G0503

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 (C), 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

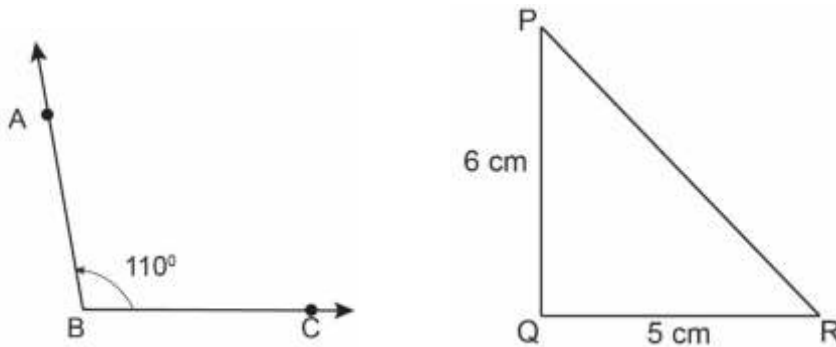
- 6 The area of a triangle is equal to the area of a rectangle.  
The area of the rectangle is equal to the area of a parallelogram.  
What is the relation between the area of the triangle and the area of the parallelogram?

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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?

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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.  $AD = 2DC$

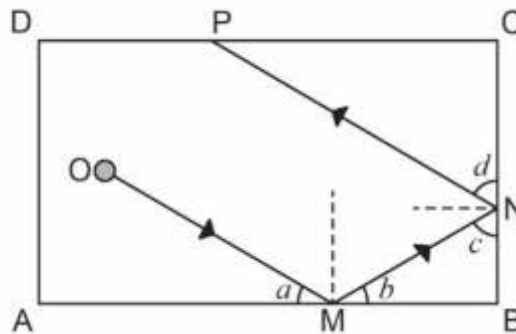
# Curriculum Aligned Competency Based Test Items

## 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  $\angle a + \angle d$ ?

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SAS21M09G0602

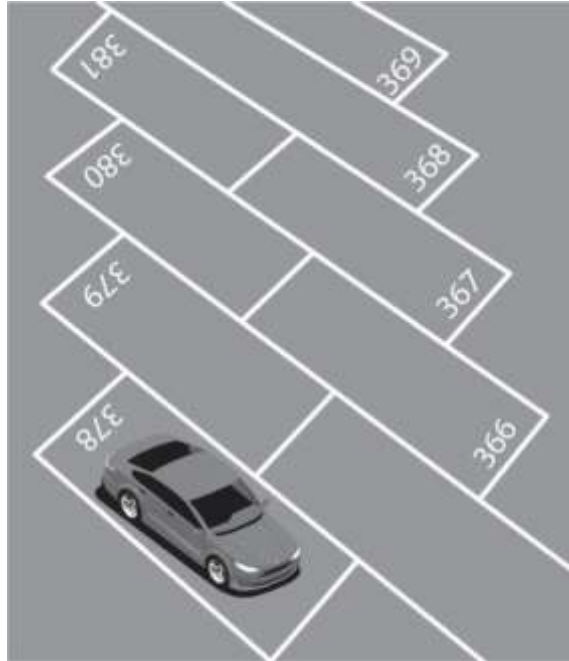
- 2 Why is the line OM parallel to PN?

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



SAS21M09G0603

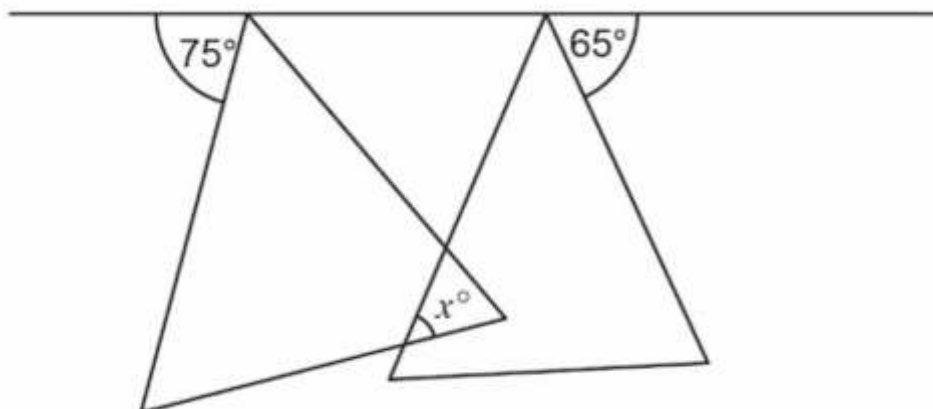
- 3 Parking space number 378 is inclined at  $60^\circ$  to the horizon line. At what angle is parking space 380 inclined to the horizontal line? Why?

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Two equilateral triangles on a straight line are shown below.

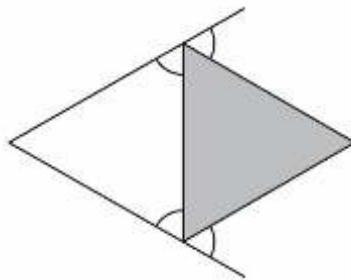


SAS21M09G0604

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.

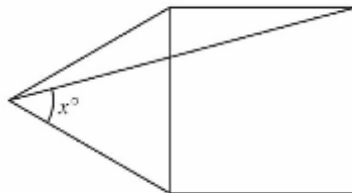


SAS21M09G0605

5 What is the sum of the four marked angles?

- A.  $180^\circ$
- B.  $240^\circ$
- C.  $270^\circ$
- D.  $360^\circ$

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

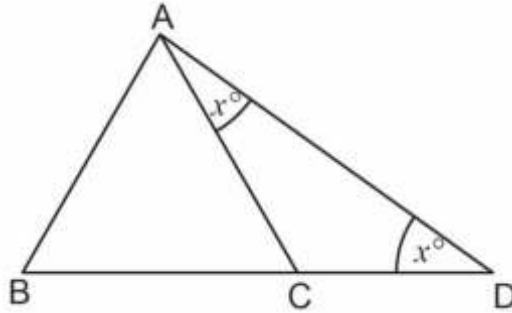


SAS21M09G0606

6 What is the measure of 'x'?

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

In the figure below,  $BC = AC$ .

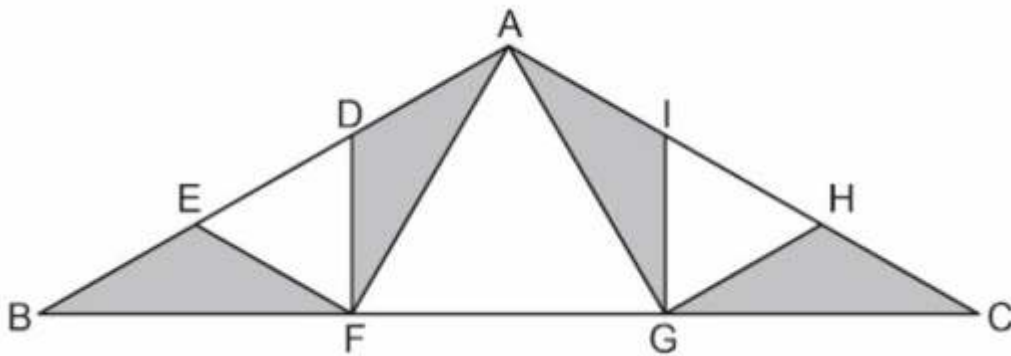


SAS21M09G0607

7 What is the measure of  $\angle BAD$ ?

- A.  $30^\circ$
- B.  $60^\circ$
- C.  $75^\circ$
- D.  $90^\circ$

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  $\angle BAC = 120^\circ$ .

SAS21M09G0608

8 Which type of triangle is  $ABC$ ? Why?

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SAS21M09G0609

**9** The central triangle AFG is equilateral. What is the measure of  $\angle FDA$ ?

- A.  $30^\circ$
- B.  $60^\circ$
- C.  $90^\circ$
- D.  $120^\circ$

SAS21M09G0610

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

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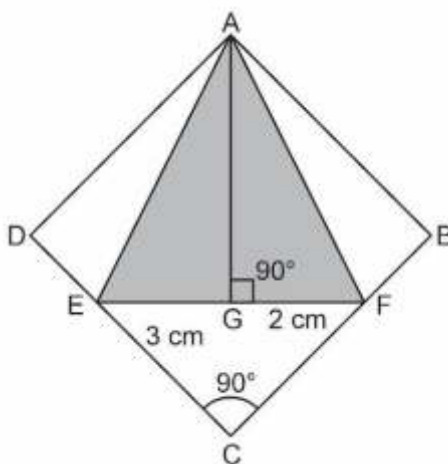
## Curriculum Aligned Assessment Items

### Mathematical Literacy

### Class 9 – Chapter 7

### Triangles

In the given figure,  $\triangle AFB \cong \triangle AFG$ ,  $\triangle ADE \cong \triangle AGE$  and  $\angle EAF = 45^\circ$ .



SAS21M10S0701

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

- A.  $60^\circ$
- B.  $90^\circ$
- C.  $120^\circ$
- D.  $135^\circ$

SAS21M10S0702

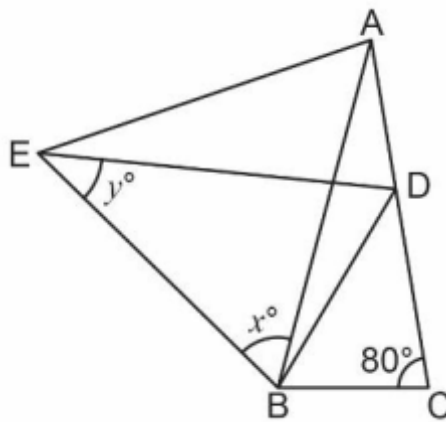
2 What is the length of AD?

SAS21M10S0703

3 What is the area of the shaded region?

- A.  $12.5 \text{ cm}^2$
- B.  $15 \text{ cm}^2$
- C.  $20 \text{ cm}^2$
- D.  $36 \text{ cm}^2$

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



SAS21M09S0704

4 What is the value of  $x$ ?

- A.  $40^\circ$
- B.  $60^\circ$
- C.  $70^\circ$
- D.  $80^\circ$

SAS21M09S0705

5 What is the value of  $y$ ?

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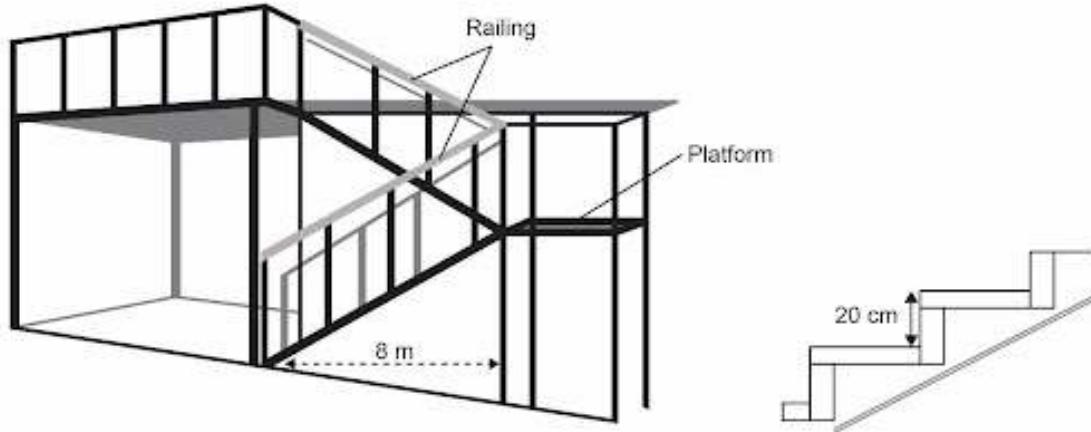
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SAS21M09S0706

6 What is the value of  $\angle BDC$ ?

- A.  $30^\circ$
- B.  $40^\circ$
- C.  $50^\circ$
- D.  $70^\circ$

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

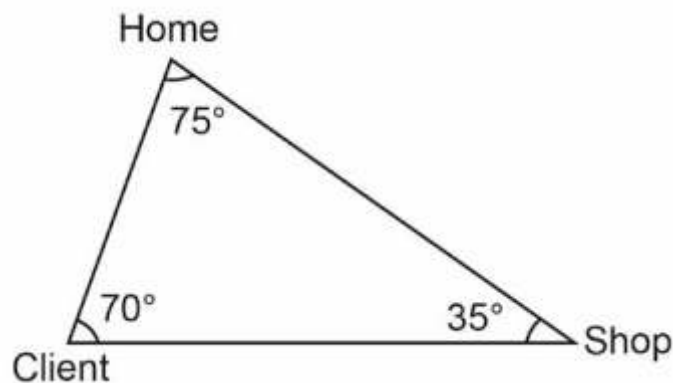
7 What is the length of the staircase railing?

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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.

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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?

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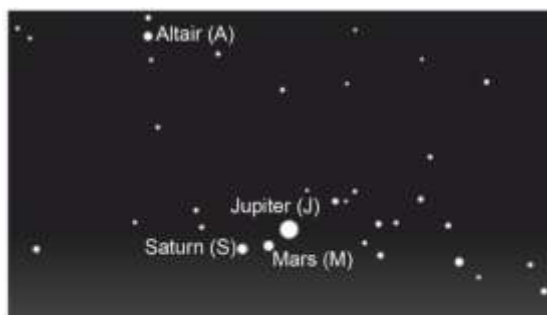
## Curriculum Aligned Assessment Items

### 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  $\angle SMJ = 150^\circ$ .

SAS21M09S0801

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

- A.  $30^\circ$
- B.  $45^\circ$
- C.  $150^\circ$
- D.  $210^\circ$

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  $90^\circ$ . The angles of Quadrilateral B are  $120^\circ$ ,  $60^\circ$ ,  $120^\circ$  and  $60^\circ$  respectively. Which quadrilateral has a greater area? Give reasons.

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SAS21M09S0804

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

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SAS21M09S0805

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

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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?

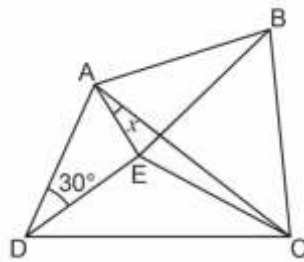
- A. Acute
- B. Obtuse
- C. Right
- D. Reflex

SAS21M09S0807

7 What is the shape of the metal plate?

- A. Square
- B. Rectangle
- C. Rhombus
- D. Parallelogram

In the quadrilateral ABCD given below,  $\angle DAC = 90^\circ$  and  $AB = AC = AD = DE = EB$ .



SAS21M09S0808

8 What is the value of  $\angle EAC$ ?

- A.  $15^\circ$
- B.  $30^\circ$
- C.  $45^\circ$
- D.  $90^\circ$

SAS21M09S0809

9 Which type of quadrilateral is ABCE?

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

SAS21M09S0810

10 What is the value of  $\angle ABE$ ?

- A.  $20^\circ$
- B.  $30^\circ$
- C.  $45^\circ$
- D.  $60^\circ$





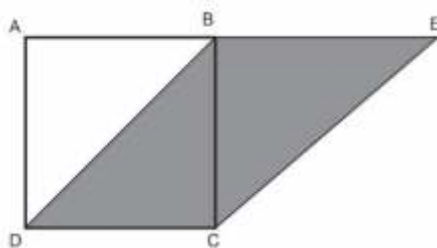
## Curriculum Aligned Assessment Items

### Mathematical Literacy

### Class 9 – Chapter 9

### Areas of Parallelograms and Triangles

In the figure given below, ABCD is a square of area  $144 \text{ cm}^2$  and BECD 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  $\angle DCE$ ?

- A.  $45^\circ$
- B.  $90^\circ$
- C.  $120^\circ$
- D.  $135^\circ$

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

SAS21M09S0905

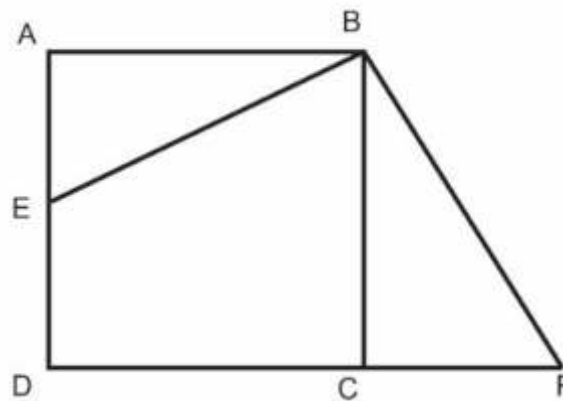
- 5 Preeti wants to divide a scalene triangle into two triangles having equal areas. Suggest one way to do so.

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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  $\angle EBF$ ?

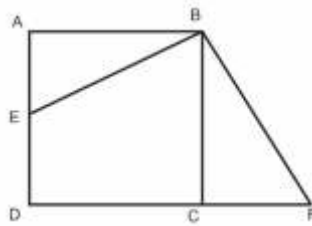
- $60^\circ$
- $75^\circ$
- $90^\circ$
- $135^\circ$

SAS21M09S0907

7 What is the area of  $\triangle BCF$ ?

- A.  $1 \text{ cm}^2$
- B.  $2 \text{ cm}^2$
- C.  $4 \text{ cm}^2$
- D.  $8 \text{ cm}^2$

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



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  $\text{cm}^2$ ) of the trapezium in the given figure?

- A.  $6 \text{ cm}^2$
- B.  $8 \text{ cm}^2$
- C.  $9 \text{ cm}^2$
- D.  $12 \text{ cm}^2$

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



SAS21M09S0910

10 Compare the areas of the two parallelograms.

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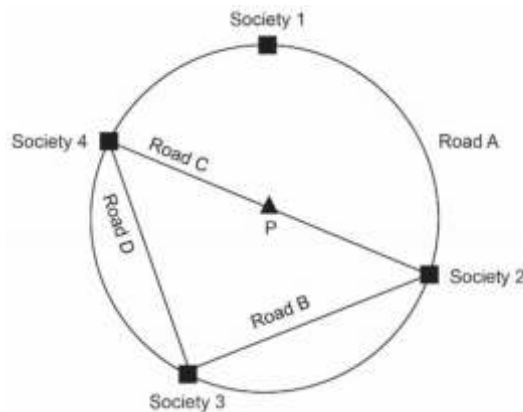
# Curriculum Aligned Competency Based Test Items

## 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

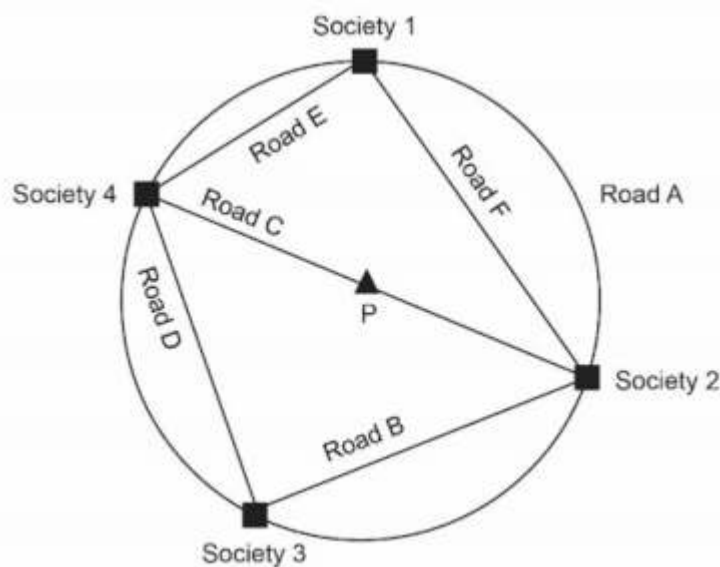
4 Alex says, “The angle made by road B on road D is a right angle.”  
Jai and Angad give different justifications to support Alex’s claim.  
Jai says, “Angles in the same segment of a circle are equal.”  
Angad says, “The angle in a semicircle is a right angle.”  
Who has given the correct justification?

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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.  $60^\circ$
- B.  $90^\circ$
- C.  $180^\circ$
- D.  $360^\circ$

SAS21M09S1006

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

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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

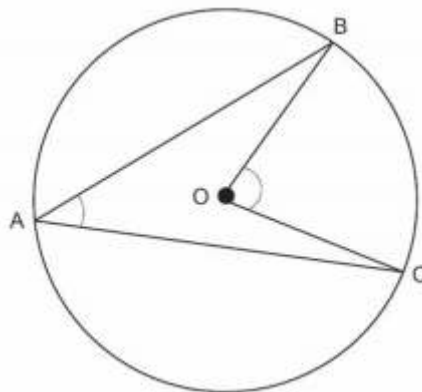
- 8 Priya said, “Minor arc corresponding to Road B is congruent to minor arc corresponding to Road D.”  
Do you agree with Priya? Give reason to support your answer.

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Given below is the figure of a circle with centre O.  
The measure of  $\angle BOC = 88^\circ$ .



SAS21M09S1009

- 9 What is the measure of  $\angle BAC$ ?
- A.  $44^\circ$
  - B.  $60^\circ$
  - C.  $88^\circ$
  - D.  $176^\circ$

- 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  $\angle BOC$ .”

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

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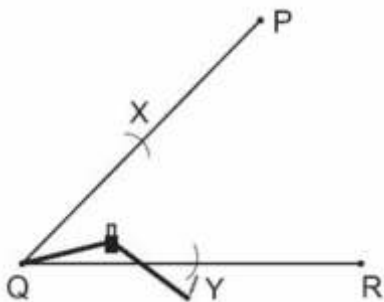
# Curriculum Aligned Competency Based Test Items

## Mathematics

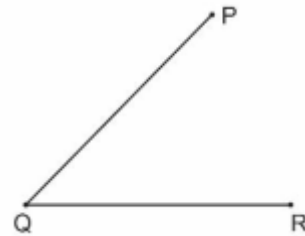
### Class 9 – Chapter 11

### Constructions

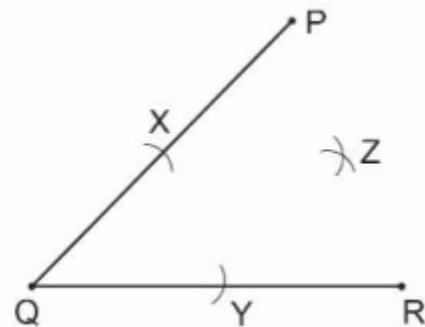
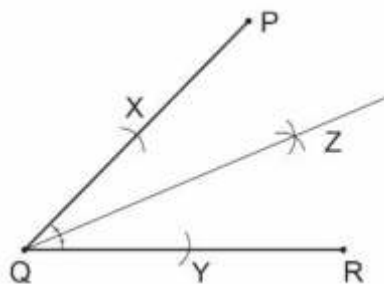
Pradeep bisects a given angle using a compass and a ruler.  
Here are some images of Pradeep's work.



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

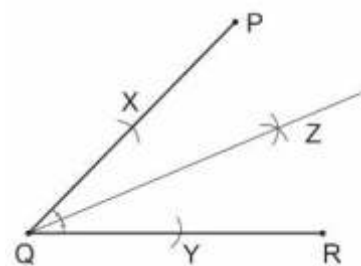


Step 2: Without changing the radius from the intersection of each arc and the leg of the angle, mark arcs off in the angle's interior so that they intersect.



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

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





SAS21M09S1101

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

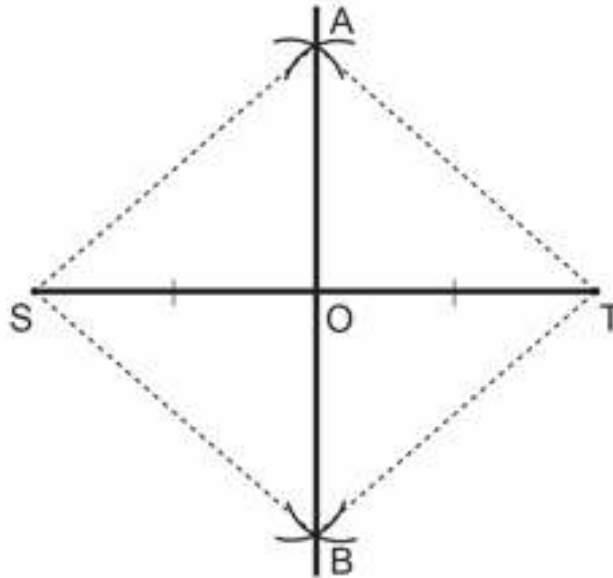
- A. Square
- B. Rectangle
- C. Rhombus
- D. Trapezium

SAS21M09S1102

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

- A.  $30^\circ$
- B.  $60^\circ$
- C.  $120^\circ$
- D.  $150^\circ$

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.

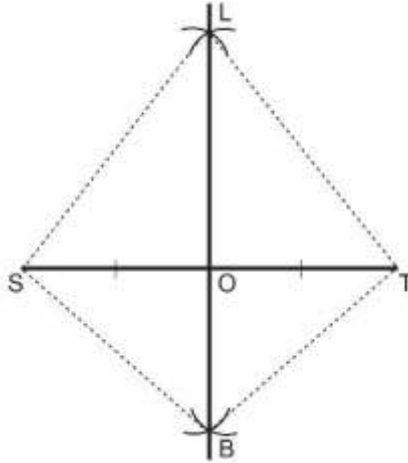


SAS21M09S1103

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

- A. AT is equal to SB.
- B.  $\angle SAO$  is greater than  $\angle TBO$ .
- C.  $\angle AOS$  and  $\angle AOT$  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.

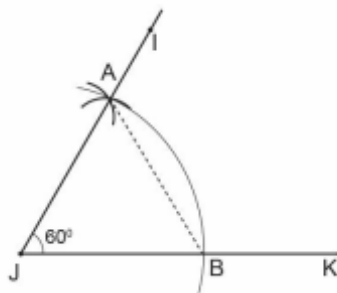


SAS21M09S1104

- 4 Zoya measures angle  $TLB = 25^\circ$  and angle  $LSB = 90^\circ$ . What is the measure of angle  $BTO$ ?

- A.  $25^\circ$
- B.  $45^\circ$
- C.  $50^\circ$
- D.  $65^\circ$

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



SAS21M09S1105

- 5 What is the sum of  $\angle IAB$  and  $\angle KBA$ ?

- A.  $120^\circ$
- B.  $180^\circ$
- C.  $240^\circ$
- D.  $360^\circ$

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  $45^\circ$  and  $60^\circ$ , 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  $15^\circ$ .
  - B. Construct an angle of  $30^\circ$ .
  - C. Construct an angle of  $60^\circ$ .
  - D. Construct an angle of  $120^\circ$ .

SAS21M09S1108

- 8 A triangle whose base angles measure  $70^\circ$  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 =  $45^\circ$ , 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  $45^\circ$ .  
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 = 7.5 cm,  $\angle B = 46^\circ$  and AB + AC = 13 cm.
- 
-

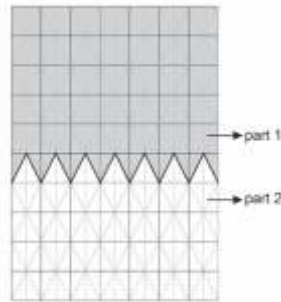
# Curriculum Aligned Competency Based Test Items

## Mathematics

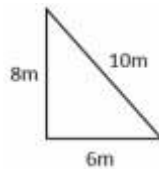
### Class 9 – Chapter 12

### 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?

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SAS21M09S1202

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

- A.  $84 \text{ m}^2$
- B.  $1680 \text{ m}^2$
- C.  $3360 \text{ m}^2$
- D.  $3696 \text{ m}^2$

SAS21M09S1203

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

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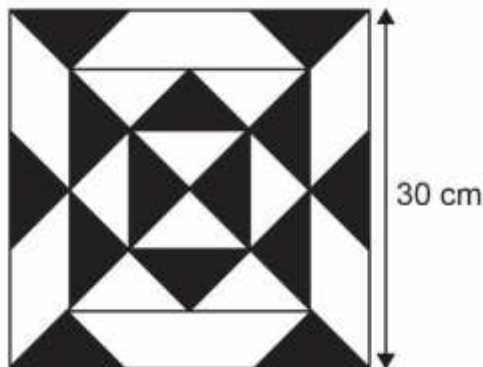
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SAS21M09S1204

- 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.  $24 \times 12$
- B.  $750 \times 24$
- C.  $3024 \times 750$
- D.  $6720 \times 750$

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

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?

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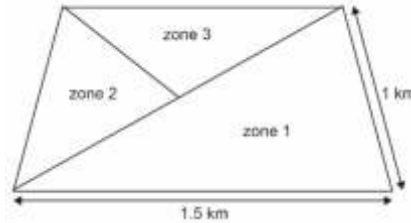


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A zoo is in the shape of an isosceles trapezium.

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.

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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?

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# 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

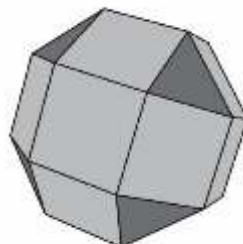
1 What is the outer surface area (in  $m^2$ ) of the hut?

- 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?

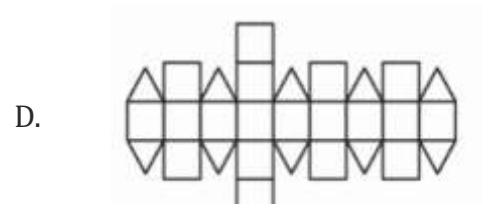
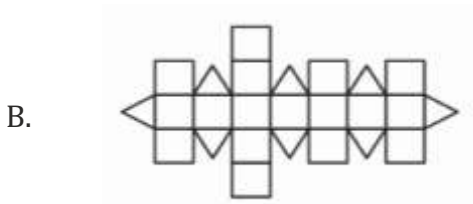
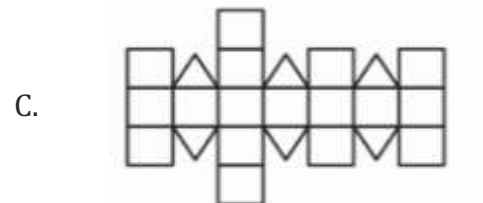
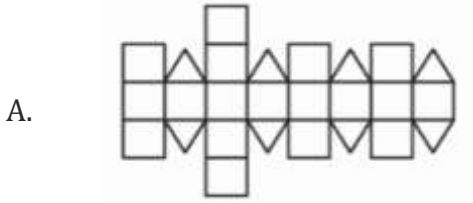
This is the picture of a gas balloon filled with helium gas.



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?



SAS21M09S1304

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

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Raghav bought this planter.



The radius of the rim is 14 cm. The curved surface area of the planter is  $1848 \text{ cm}^2$ .

SAS21M09S1305

5 What is the height of the planter?

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SAS21M09S1306

6 What is the volume of the planter?

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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  $\text{cm}^2$ ) 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.)

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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  $\frac{1}{4}$ <sup>th</sup> of it empty.

**10** What is the volume (in  $\text{cm}^3$ ) of the empty part of the cone?

- A.  $12\pi$
- B.  $15\pi$
- C.  $19\pi$
- D.  $20\pi$

# 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?

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SAS21M09D1402

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

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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.  $12\pi$   
B.  $15\pi$   
C.  $19\pi$   
D.  $20\pi$

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.

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SAS21M09D1409

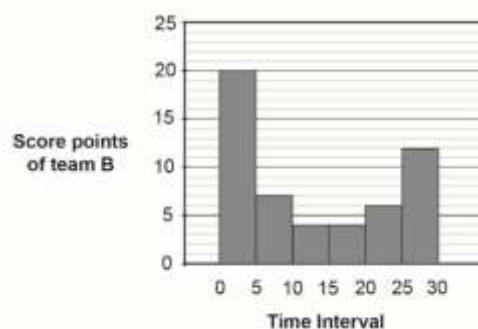
9 What is the mean number of score points obtained by team A in a 5-minute interval rounded to the nearest whole number?

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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.

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# 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?
- 
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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.

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<b>Item Number</b>	Question 1
<b>Question Code</b>	SAS21M09Q0101
<b>Grade &amp; Chapter Name</b>	Grade 9   Number System
<b>Concept   Sub-concept</b>	Numbers   Irrational Numbers
<b>Competency</b>	Interpret & Evaluate
<b>Item Type</b>	Open Constructed Response
<b>Full Credit (Full Score)</b>	Names both Khushi and Akash and provides a valid explanation with examples <ul style="list-style-type: none"> <li>• Khushi is correct as numbers including <math>1/2</math>, <math>2/4</math>, <math>3/6</math>, <math>4/8</math> and <math>0.5</math> 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.</li> </ul>
<b>Partial Credit (Partial Score)</b>	Names either Khushi or Akash, and supporting examples/arguments are provided
<b>No Credit (No Score)</b>	Any other response or missing response

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

<b>Item Number</b>	Question 3
<b>Question Code</b>	SAS21M09Q0103
<b>Grade &amp; Chapter Name</b>	Grade 9   Number System
<b>Concept   Sub-concept</b>	Numbers   Irrational Numbers
<b>Competency</b>	Employ
<b>Item Type</b>	Open Constructed Response
<b>Full Credit (Full Score)</b>	Uses the definition of irrational numbers in the explanation and identifies the limitation of their placement on a measuring scale <ul style="list-style-type: none"> <li>• 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.</li> </ul>
<b>No Credit (No Score)</b>	Any other response or missing response

<b>Item Number</b>	Question 4
<b>Question Code</b>	SAS21M09Q0104
<b>Grade &amp; Chapter Name</b>	Grade 9   Number System
<b>Concept   Sub-concept</b>	Numbers   Irrational Numbers
<b>Competency</b>	Employ
<b>Item Type</b>	Closed Constructed Response
<b>Full Credit (Full Score)</b>	Writes $\sqrt{5}$ with or without the word 'units' <ul style="list-style-type: none"> <li>• <math>\sqrt{5}</math> units</li> <li>• <math>\sqrt{5}</math></li> </ul>
<b>No Credit (No Score)</b>	Any other response or missing response

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

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

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

<b>Item Number</b>	Question 8
<b>Question Code</b>	SAS21M09Q0108
<b>Grade &amp; Chapter Name</b>	Grade 9   Number System
<b>Concept   Sub-concept</b>	Numbers   Irrational Numbers
<b>Competency</b>	Formulate
<b>Item Type</b>	Closed Constructed Response
<b>Full Credit (Full Score)</b>	Writes length and breadth, which are greater than zero and less than 70, with or without the word 'Chapter(s)' <ul style="list-style-type: none"> <li>• Length 21 and breadth 7</li> <li>• 21 units and 7 units</li> <li>• 69 units and 1 Chapter</li> </ul>
<b>No Credit (No Score)</b>	Any other response or missing response

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

<b>Item Number</b>	Question 10
<b>Question Code</b>	SAS21M09Q0110
<b>Grade &amp; Chapter Name</b>	Grade 9   Number System
<b>Concept   Sub-concept</b>	Numbers   Irrational Numbers
<b>Competency</b>	Employ
<b>Item Type</b>	Open Constructed Response
<b>Full Credit (Full Score)</b>	Due consideration is given to factors including display dimensions and orientation (portrait/landscape) 2 x y z with or without the word 'units' <ul style="list-style-type: none"> <li>• The manufacturer needs to know the space available for the screen installation along with the screen size.</li> <li>• Length and breadth, along with orientation, is to be considered.</li> </ul>
<b>Partial Credit (Partial Score)</b>	Only one factor associated with display dimensions or orientation (portrait/ landscape) is considered. <ul style="list-style-type: none"> <li>• Length and breadth should be known.</li> </ul>
<b>No Credit (No Score)</b>	Any other response or missing response

<b>Item Number</b>	Question 1
<b>Question Code</b>	SAS21M09C0201
<b>Grade &amp; Chapter Name</b>	Grade 9   Polynomials
<b>Concept   Sub-concept</b>	Algebra   Algebraic Expressions and Identities (Geometrical Representation)
<b>Competency</b>	Formulate
<b>Item Type</b>	Closed Constructed Response
<b>Full Credit (Full Score)</b>	Writes an equation relating length, breadth, height and volume. <ul style="list-style-type: none"> <li>• <math>x^3 + 2.15x^2 + 0.3x = 652</math></li> <li>• <math>x^3 + 2.15x^2 + 0.3x - 652 = 0</math></li> <li>• <math>x(x + 2)(x + 0.15) = 652</math></li> <li>• <math>x(x + 2)(x + 0.15) - 652 = 0</math></li> </ul>
<b>No Credit (No Score)</b>	Any other response or missing response

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

<b>Item Number</b>	Question 3
<b>Question Code</b>	SAS21M09C0203
<b>Grade &amp; Chapter Name</b>	Grade 9   Polynomials
<b>Concept   Sub-concept</b>	Algebra   Algebraic Expressions and Identities (Factorisation of Polynomials)
<b>Competency</b>	Employ
<b>Item Type</b>	Closed Constructed Response
<b>Full Credit (Full Score)</b>	Write 8.15 with or without the Chapter <ul style="list-style-type: none"> <li>• 8.15 m</li> <li>• 8.15</li> </ul>
<b>No Credit (No Score)</b>	Any other response or missing response

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

<b>Item Number</b>	Question 5
<b>Question Code</b>	SAS21M09C0205
<b>Grade &amp; Chapter Name</b>	Grade 9   Polynomials
<b>Concept   Sub-concept</b>	Algebra   Algebraic Expressions and Identities (Factorisation of Polynomials)
<b>Competency</b>	Employ
<b>Item Type</b>	Closed Constructed Response
<b>Full Credit (Full Score)</b>	Writes $2x y z$ with or without the word 'units' <ul style="list-style-type: none"> <li>• <math>2x y z</math></li> <li>• <math>2x y z</math> units</li> </ul>
<b>No Credit (No Score)</b>	Any other response or missing response

<b>Item Number</b>	Question 6
<b>Question Code</b>	SAS21M09C0206
<b>Grade &amp; Chapter Name</b>	Grade 9   Polynomials
<b>Concept   Sub-concept</b>	Algebra   Algebraic Expressions and Identities (Factorisation of Polynomials)
<b>Competency</b>	Interpret & Evaluate
<b>Item Type</b>	Closed Constructed Response
<b>Full Credit (Full Score)</b>	Writes $3x - 2$ with or without the word 'units' <ul style="list-style-type: none"> <li>• <math>3x - 2</math> units</li> <li>• <math>3x - 2</math></li> </ul>
<b>No Credit (No Score)</b>	Any other response or missing response

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

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

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



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

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

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

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

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

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

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

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

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

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

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

<b>Item Number</b>	Question 1
<b>Question Code</b>	SAS21M09C0401
<b>Grade &amp; Chapter Name</b>	Grade 9   Linear Equations in Two Variables
<b>Concept   Sub-concept</b>	Algebra   Linear Equations
<b>Competency</b>	Employ
<b>Item Type</b>	Multiple Choice Question
<b>Full Credit (Full Score)</b>	B. 20
<b>No Credit (No Score)</b>	Any other response or missing response
<b>Item Number</b>	Question 2
<b>Question Code</b>	SAS21M09C0402
<b>Grade &amp; Chapter Name</b>	Grade 9   Linear Equations in Two Variables
<b>Concept   Sub-concept</b>	Algebra   Equation
<b>Competency</b>	Formulate
<b>Item Type</b>	Closed Constructed Response
<b>Full Credit (Full Score)</b>	Uses two variable with sum 50 $x+y = 50$ $p+q = 50$
<b>No Credit (No Score)</b>	Any other response or missing response
<b>Item Number</b>	Question 3
<b>Question Code</b>	SAS21M09C0403
<b>Grade &amp; Chapter Name</b>	Grade 9   Linear Equations in Two Variables
<b>Concept   Sub-concept</b>	Algebra   Equation
<b>Competency</b>	Interpret & Evaluate
<b>Item Type</b>	Multiple Choice Question
<b>Full Credit (Full Score)</b>	D. (30, 40)
<b>No Credit (No Score)</b>	Any other response or missing response
<b>Item Number</b>	Question 4
<b>Question Code</b>	SAS21M09C0404
<b>Grade &amp; Chapter Name</b>	Grade 9   Linear Equations in Two Variables
<b>Concept   Sub-concept</b>	Algebra   Equation
<b>Competency</b>	Interpret & Evaluate
<b>Item Type</b>	Closed Constructed Response
<b>Full Credit (Full Score)</b>	13.5 13.5 kg
<b>No Credit (No Score)</b>	Any other response or missing response

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

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

<b>Item Number</b>	Question 7
<b>Question Code</b>	SAS21M09C0407
<b>Grade &amp; Chapter Name</b>	Grade 9   Linear Equations in Two Variables
<b>Concept   Sub-concept</b>	Algebra   Equation
<b>Competency</b>	Employ
<b>Item Type</b>	Closed Constructed Response
<b>Full Credit (Full Score)</b>	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 $0.27 \times 100 = 27$ m.
<b>No Credit (No Score)</b>	Any other response or missing response

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

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

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

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

<b>Item Number</b>	Question 2
<b>Question Code</b>	SAS21M09G0502
<b>Grade &amp; Chapter Name</b>	Grade 9   Introduction to Euclid's Geometry
<b>Concept   Sub-concept</b>	Geometry   Postulates and Axioms
<b>Competency</b>	Interpret & Evaluate
<b>Item Type</b>	Closed Constructed Response
<b>Full Credit (Full Score)</b>	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.
<b>No Credit (No Score)</b>	Any other response or missing response

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



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

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

<b>Item Number</b>	Question 6
<b>Question Code</b>	SAS21M09G0506
<b>Grade &amp; Chapter Name</b>	Grade 9   Introduction to Euclid's Geometry
<b>Concept   Sub-concept</b>	Geometry   Postulates and Axioms
<b>Competency</b>	Formulate
<b>Item Type</b>	Closed Constructed Response
<b>Full Credit (Full Score)</b>	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.
<b>No Credit (No Score)</b>	Any other response or missing response

<b>Item Number</b>	Question 7
<b>Question Code</b>	SAS21M09G0507
<b>Grade &amp; Chapter Name</b>	Grade 9   Introduction to Euclid's Geometry
<b>Concept   Sub-concept</b>	Geometry   Postulates and Axioms
<b>Competency</b>	Employ
<b>Item Type</b>	Closed Constructed Response
<b>Full Credit (Full Score)</b>	No, with an explanation involving reasoning about magnitudes. No, the measure of an angle cannot be compared to the area of a triangle.
<b>No Credit (No Score)</b>	Any other response or missing response
<b>Item Number</b>	Question 8
<b>Question Code</b>	SAS21M09G0508
<b>Grade &amp; Chapter Name</b>	Grade 9   Introduction to Euclid's Geometry
<b>Concept   Sub-concept</b>	Geometry   Postulates and Axioms
<b>Competency</b>	Formulate
<b>Item Type</b>	Multiple Choice Question
<b>Full Credit (Full Score)</b>	B. The distance increases continuously.
<b>No Credit (No Score)</b>	Any other response or missing response
<b>Item Number</b>	Question 9
<b>Question Code</b>	SAS21M09G0509
<b>Grade &amp; Chapter Name</b>	Grade 9   Introduction to Euclid's Geometry
<b>Concept   Sub-concept</b>	Geometry   Postulates and Axioms
<b>Competency</b>	Interpret & Evaluate
<b>Item Type</b>	Multiple Choice Question
<b>Full Credit (Full Score)</b>	D. The measure of an angle depends upon the rotation of one arm with respect to the other.
<b>No Credit (No Score)</b>	Any other response or missing response
<b>Item Number</b>	Question 10
<b>Question Code</b>	SAS21M09G0510
<b>Grade &amp; Chapter Name</b>	Grade 9   Introduction to Euclid's Geometry
<b>Concept   Sub-concept</b>	Geometry   Postulates and Axioms
<b>Competency</b>	Interpret & Evaluate
<b>Item Type</b>	Multiple Choice Question
<b>Full Credit (Full Score)</b>	B. $AD = \frac{1}{10} CB$
<b>No Credit (No Score)</b>	Any other response or missing response

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

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

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

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

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

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

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

<b>Item Number</b>	Question 6
<b>Question Code</b>	SAS21M09G0606
<b>Grade &amp; Chapter Name</b>	Grade 9   Lines and Angles
<b>Concept   Sub-concept</b>	Geometry   Angle Sum Property of a Triangle
<b>Competency</b>	Formulate
<b>Item Type</b>	Closed Constructed Response
<b>Full Credit (Full Score)</b>	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 $90^\circ$ .
<b>No Credit (No Score)</b>	Any other response or missing response

<b>Item Number</b>	Question 9
<b>Question Code</b>	SAS21M09G0609
<b>Grade &amp; Chapter Name</b>	Grade 9   Lines and Angles
<b>Concept   Sub-concept</b>	Geometry   Angle Sum Property of a Triangle
<b>Competency</b>	Interpret & Evaluate
<b>Item Type</b>	Multiple Choice Question
<b>Full Credit (Full Score)</b>	D. $120^\circ$
<b>No Credit (No Score)</b>	Any other response or missing response

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

<b>Item Number</b>	Question 1
<b>Question Code</b>	SAS21M09S0701
<b>Grade &amp; Chapter Name</b>	Grade 9   Triangles
<b>Concept   Sub-concept</b>	Geometry/Triangles   Congruence of Triangles
<b>Competency</b>	Employ
<b>Item Type</b>	Multiple Choice Question
<b>Full Credit (Full Score)</b>	B. $90^\circ$
<b>No Credit (No Score)</b>	Any other response or missing response

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

<b>Item Number</b>	Question 3
<b>Question Code</b>	SAS21M09S0703
<b>Grade &amp; Chapter Name</b>	Grade 9   Triangles
<b>Concept   Sub-concept</b>	Geometry/Triangles   Congruence of Triangles
<b>Competency</b>	Interpret & Evaluate
<b>Item Type</b>	Multiple Choice Question
<b>Full Credit (Full Score)</b>	B. $15 \text{ cm}^2$
<b>No Credit (No Score)</b>	Any other response or missing response

<b>Item Number</b>	Question 4
<b>Question Code</b>	SAS21M09S0704
<b>Grade &amp; Chapter Name</b>	Grade 9   Triangles
<b>Concept   Sub-concept</b>	Geometry/Triangles   Congruence of Triangles
<b>Competency</b>	Interpret & Evaluate
<b>Item Type</b>	Multiple Choice Question
<b>Full Credit (Full Score)</b>	B. $60^\circ$
<b>No Credit (No Score)</b>	Any other response or missing response

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

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

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

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

<b>Item Number</b>	Question 9
<b>Question Code</b>	SAS21M09S0709
<b>Grade &amp; Chapter Name</b>	Grade 9   Triangles
<b>Concept   Sub-concept</b>	Geometry/Triangles   Congruence of Triangles
<b>Competency</b>	Interpret & Evaluate
<b>Item Type</b>	Closed Constructed Response
<b>Full Credit (Full Score)</b>	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
<b>No Credit (No Score)</b>	Any other response or missing response

<b>Item Number</b>	Question 10
<b>Question Code</b>	SAS21M09S0710
<b>Grade &amp; Chapter Name</b>	Grade 9   Triangles
<b>Concept   Sub-concept</b>	Geometry/Triangles   Congruence of Triangles
<b>Competency</b>	Employ
<b>Item Type</b>	Closed Constructed Response
<b>Full Credit (Full Score)</b>	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.
<b>No Credit (No Score)</b>	Any other response or missing response



<b>Item Number</b>	Question 1
<b>Question Code</b>	SAS21M09S0801
<b>Grade &amp; Chapter Name</b>	Grade 9   Quadrilaterals
<b>Concept   Sub-concept</b>	Geometry   Angles of Quadrilaterals
<b>Competency</b>	Employ
<b>Item Type</b>	Multiple Choice Question
<b>Full Credit (Full Score)</b>	A. $30^\circ$
<b>No Credit (No Score)</b>	Any other response or missing response

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

<b>Item Number</b>	Question 3
<b>Question Code</b>	SAS21M09S0803
<b>Grade &amp; Chapter Name</b>	Grade 9   Quadrilaterals
<b>Concept   Sub-concept</b>	Geometry   Angles of Quadrilaterals
<b>Competency</b>	Interpret & Evaluate
<b>Item Type</b>	Closed Constructed Response
<b>Full Credit (Full Score)</b>	Mention Quadrilateral A along with a valid mathematical reason.  <ul style="list-style-type: none"> <li>Quadrilateral A, both the quadrilaterals have an equal base but the altitude of Quadrilateral A is greater.</li> </ul>
<b>No Credit (No Score)</b>	Any other response or missing response

<b>Item Number</b>	Question 4
<b>Question Code</b>	SAS21M09S0801
<b>Grade &amp; Chapter Name</b>	Grade 9   Quadrilaterals
<b>Concept   Sub-concept</b>	Geometry   Angles of Quadrilaterals
<b>Competency</b>	Employ
<b>Item Type</b>	Closed Constructed Response
<b>Full Credit (Full Score)</b>	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).
<b>No Credit (No Score)</b>	Any other response or missing response

<b>Item Number</b>	Question 5
<b>Question Code</b>	SAS21M09S0805
<b>Grade &amp; Chapter Name</b>	Grade 9   Quadrilaterals
<b>Concept   Sub-concept</b>	Geometry   Angles of Quadrilaterals
<b>Competency</b>	Interpret & Evaluate
<b>Item Type</b>	Closed Constructed Response
<b>Full Credit (Full Score)</b>	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.
<b>No Credit (No Score)</b>	Any other response or missing response

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

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

<b>Item Number</b>	Question 8
<b>Question Code</b>	SAS21M09S0808
<b>Grade &amp; Chapter Name</b>	Grade 9   Quadrilaterals
<b>Concept   Sub-concept</b>	Geometry   Angles of Quadrilaterals
<b>Competency</b>	Employ
<b>Item Type</b>	Multiple Choice Question
<b>Full Credit (Full Score)</b>	A. $15^\circ$
<b>No Credit (No Score)</b>	Any other response or missing response

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

<b>Item Number</b>	Question 10
<b>Question Code</b>	SAS21M09S0810
<b>Grade &amp; Chapter Name</b>	Grade 9   Quadrilaterals
<b>Concept   Sub-concept</b>	Geometry   Angles of Angles
<b>Competency</b>	Interpret & Evaluate
<b>Item Type</b>	Multiple Choice Question
<b>Full Credit (Full Score)</b>	B. $30^\circ$
<b>No Credit (No Score)</b>	Any other response or missing response

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

<b>Item Number</b>	Question 2
<b>Question Code</b>	SAS21M09S0902
<b>Grade &amp; Chapter Name</b>	Grade 9   Areas of Parallelograms and Triangles
<b>Concept   Sub-concept</b>	Geometry   Parallelograms on the same Base and Between the same Parallels
<b>Competency</b>	Employ
<b>Item Type</b>	Multiple Choice Question
<b>Full Credit (Full Score)</b>	D. $135^\circ$
<b>No Credit (No Score)</b>	Any other response or missing response

<b>Item Number</b>	Question 3
<b>Question Code</b>	SAS21M09S0903
<b>Grade &amp; Chapter Name</b>	Grade 9   Areas of Parallelograms and Triangles
<b>Concept   Sub-concept</b>	Geometry   Parallelograms on the same Base and Between the same Parallels
<b>Competency</b>	Interpret & Evaluate
<b>Item Type</b>	Closed Constructed Response
<b>Full Credit (Full Score)</b>	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.
<b>No Credit (No Score)</b>	Any other response or missing response

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

<b>Item Number</b>	Question 5
<b>Question Code</b>	SAS21M09S0905
<b>Grade &amp; Chapter Name</b>	Grade 9   Areas of Parallelograms and Triangles
<b>Concept   Sub-concept</b>	Geometry   Triangles on the same Base and between the same Parallels
<b>Competency</b>	Employ
<b>Item Type</b>	Open Constructed Response
<b>Full Credit (Full Score)</b>	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.
<b>No Credit (No Score)</b>	Any other response or missing response

<b>Item Number</b>	Question 6
<b>Question Code</b>	SAS21M09S0906
<b>Grade &amp; Chapter Name</b>	Grade 9   Areas of Parallelograms and Triangles
<b>Concept   Sub-concept</b>	Geometry   Triangles on the same Base and Between the same Parallels
<b>Competency</b>	Interpret & Evaluate
<b>Item Type</b>	Multiple Choice Question
<b>Full Credit (Full Score)</b>	C. $90^\circ$
<b>No Credit (No Score)</b>	Any other response or missing response

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

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

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

<b>Item Number</b>	Question 10
<b>Question Code</b>	SAS21M09S0910
<b>Grade &amp; Chapter Name</b>	Grade 9   Areas of Parallelograms and Triangles
<b>Concept   Sub-concept</b>	Geometry   Figures on the Same Base and Between the Same Parallels
<b>Competency</b>	Interpret & Evaluate
<b>Item Type</b>	Open Constructed Response
<b>Full Credit (Full Score)</b>	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.
<b>No Credit (No Score)</b>	Any other response or missing response

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

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

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

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



<b>Item Number</b>	Question 5
<b>Question Code</b>	SAS21M09S1005
<b>Grade &amp; Chapter Name</b>	Grade 9   Circles
<b>Concept   Sub-concept</b>	Geometry   Circles (Cyclic Quadrilateral)
<b>Competency</b>	Employ
<b>Item Type</b>	Multiple Choice Question
<b>Full Credit (Full Score)</b>	C. $180^\circ$
<b>No Credit (No Score)</b>	Any other response or missing response

<b>Item Number</b>	Question 6
<b>Question Code</b>	SAS21M09S1006
<b>Grade &amp; Chapter Name</b>	Grade 9   Circles
<b>Concept   Sub-concept</b>	Geometry   Circles (Cyclic Quadrilateral)
<b>Competency</b>	Interpret & Evaluate
<b>Item Type</b>	Closed Constructed Response
<b>Full Credit (Full Score)</b>	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.
<b>No Credit (No Score)</b>	Any other response or missing response

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



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

<b>Item Number</b>	Question 9
<b>Question Code</b>	SAS21M09S1009
<b>Grade &amp; Chapter Name</b>	Grade 9   Circles
<b>Concept   Sub-concept</b>	Geometry   Circles (Angle Subtended at the Center)
<b>Competency</b>	Employ
<b>Item Type</b>	Multiple Choice Question
<b>Full Credit (Full Score)</b>	A. $44^\circ$
<b>No Credit (No Score)</b>	Any other response or missing response

<b>Item Number</b>	Question 10
<b>Question Code</b>	SAS21M09S1010
<b>Grade &amp; Chapter Name</b>	Grade 9   Circles
<b>Concept   Sub-concept</b>	Geometry   Circles (Angle Subtended at the Center)
<b>Competency</b>	Interpret & Evaluate
<b>Item Type</b>	Closed Constructed Response
<b>Full Credit (Full Score)</b>	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.
<b>No Credit (No Score)</b>	Any other response or missing response

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

<b>Item Number</b>	Question 2
<b>Question Code</b>	SAS21M09S1102
<b>Grade &amp; Chapter Name</b>	Grade 9   Constructions
<b>Concept   Sub-concept</b>	Geometry   Construction (Basic Construction)
<b>Competency</b>	Employ
<b>Item Type</b>	Multiple Choice Question
<b>Full Credit (Full Score)</b>	C. $120^\circ$
<b>No Credit (No Score)</b>	Any other response or missing response

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

<b>Item Number</b>	Question 4
<b>Question Code</b>	SAS21M09S1104
<b>Grade &amp; Chapter Name</b>	Grade 9   Constructions
<b>Concept   Sub-concept</b>	Geometry   Construction of Perpendicular Bisector
<b>Competency</b>	Interpret & Evaluate
<b>Item Type</b>	Multiple Choice Question
<b>Full Credit (Full Score)</b>	A. $25^\circ$
<b>No Credit (No Score)</b>	Any other response or missing response

<b>Item Number</b>	Question 5
<b>Question Code</b>	SAS21M09S1105
<b>Grade &amp; Chapter Name</b>	Grade 9   Constructions
<b>Concept   Sub-concept</b>	Geometry   Construction (Construction of a Triangle)
<b>Competency</b>	Employ
<b>Item Type</b>	Multiple Choice Question
<b>Full Credit (Full Score)</b>	C. $240^\circ$
<b>No Credit (No Score)</b>	Any other response or missing response

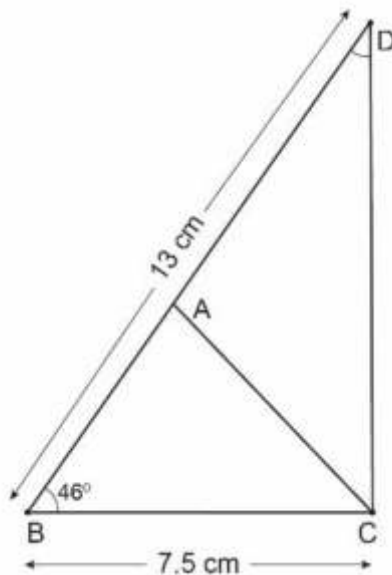
<b>Item Number</b>	Question 6
<b>Question Code</b>	SAS21M09S1106
<b>Grade &amp; Chapter Name</b>	Grade 9   Constructions
<b>Concept   Sub-concept</b>	Geometry   Construction (Construction of a Triangle)
<b>Competency</b>	Interpret & Evaluate
<b>Item Type</b>	Multiple Choice Question
<b>Full Credit (Full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

<b>Item Number</b>	Question 7
<b>Question Code</b>	SAS21M09S1107
<b>Grade &amp; Chapter Name</b>	Grade 9   Constructions
<b>Concept   Sub-concept</b>	Geometry   Construction (Construction of a Triangle)
<b>Competency</b>	Interpret & Evaluate
<b>Item Type</b>	Multiple Choice Question
<b>Full Credit (Full Score)</b>	B. Construct an angle of $30^\circ$ .
<b>No Credit (No Score)</b>	Any other response or missing response

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

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

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



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

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

<b>Item Number</b>	Question 3
<b>Question Code</b>	SAS21M09S1203
<b>Grade &amp; Chapter Name</b>	Grade 9   Heron's Formula
<b>Concept   Sub-concept</b>	Mensuration   Finding Area of a Triangle using Heron's Formula
<b>Competency</b>	Interpret & Evaluate
<b>Item Type</b>	Closed Constructed Response
<b>Full Credit (Full Score)</b>	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 <sup>2</sup> whereas the area under part 2 is 3024 m <sup>2</sup>
<b>No Credit (No Score)</b>	Any other response or missing response

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

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

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

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

<b>Item Number</b>	Question 8
<b>Question Code</b>	SAS21M09S1208
<b>Grade &amp; Chapter Name</b>	Grade 9   Heron's Formula
<b>Concept   Sub-concept</b>	Mensuration   Finding Area of a Triangle using Heron's Formula
<b>Competency</b>	Interpret & Evaluate
<b>Item Type</b>	Closed Constructed Response
<b>Full Credit (Full Score)</b>	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.
<b>No Credit (No Score)</b>	Any other response or missing response

<b>Item Number</b>	Question 9
<b>Question Code</b>	SAS21M09S1209
<b>Grade &amp; Chapter Name</b>	Grade 9   Heron's Formula
<b>Concept   Sub-concept</b>	Mensuration   Finding Area of a Triangle using Heron's Formula
<b>Competency</b>	Interpret & Evaluate
<b>Item Type</b>	Multiple Choice Question
<b>Full Credit (Full Score)</b>	C. $15\sqrt{130 \times 50 \times 50 \times 30}$
<b>No Credit (No Score)</b>	Any other response or missing response

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

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

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

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



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

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

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

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

<b>Item Number</b>	Question 8
<b>Question Code</b>	SAS21M09S1308
<b>Grade &amp; Chapter Name</b>	Grade 9   Surface Area and Volume
<b>Concept   Sub-concept</b>	Mensuration   Volume of Cuboid
<b>Competency</b>	Interpret & Evaluate
<b>Item Type</b>	Closed Constructed Response
<b>Full Credit (Full Score)</b>	41 $(30 \times 40 \times 25) / (9 \times 9 \times 9) = 41.15$ . Exact answer = 41 as all cubes should fit in it)
<b>No Credit (No Score)</b>	Any other response or missing response

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

<b>Item Number</b>	Question 10
<b>Question Code</b>	SAS21M09S1310
<b>Grade &amp; Chapter Name</b>	Grade 9   Surface Area and Volume
<b>Concept   Sub-concept</b>	Mensuration   Volume of Cone
<b>Competency</b>	Employ
<b>Item Type</b>	Multiple Choice Question
<b>Full Credit (Full Score)</b>	D. $20\pi$
<b>No Credit (No Score)</b>	Any other response or missing response

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

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

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

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

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

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

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

<b>Item Number</b>	Question 8
<b>Question Code</b>	SAS21M09S1408
<b>Grade &amp; Chapter Name</b>	Grade 9   Statistics
<b>Concept   Sub-concept</b>	Statistics   Graphical Representation of Data
<b>Competency</b>	Interpret & Evaluate
<b>Item Type</b>	Closed Constructed Response
<b>Full Credit (Full Score)</b>	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.
<b>No Credit (No Score)</b>	Any other response or missing response

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

<b>Item Number</b>	Question 10
<b>Question Code</b>	SAS21M09S1410
<b>Grade &amp; Chapter Name</b>	Grade 9   Statistics
<b>Concept   Sub-concept</b>	Statistics   Graphical Representation of Data
<b>Competency</b>	Interpret and evaluate
<b>Item Type</b>	Closed Constructed Response
<b>Full Credit (Full Score)</b>	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
<b>No Credit (No Score)</b>	Any other response or missing response

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

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

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

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

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

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

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

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

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

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