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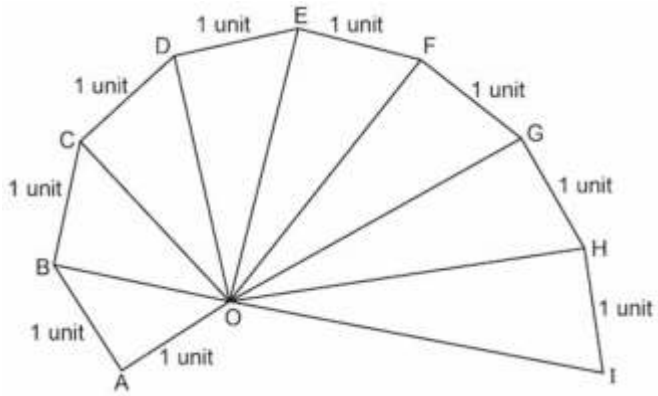
Deep draws the spiral of irrational numbers below on a paper.



SAS21M09Q0104

4 What is the length of OE in the spiral?

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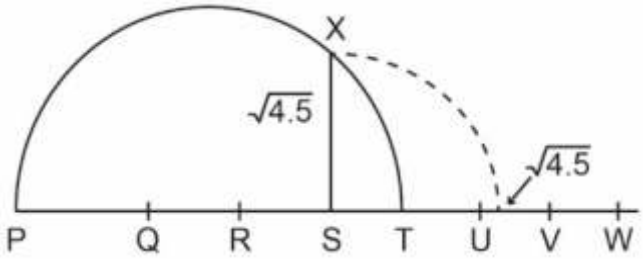
SAS21M09Q0105

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 m × 3 m. To make the desired screen for the client, what other information is required by the manufacturer?

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Answers

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

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

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

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

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

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

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

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

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

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