

Young Lives 2016-17 School Surveys

Item level analysis

Vietnam

Wave 1

Subject: Mathematics

This booklet contains Maths items administered to students in Grade 10 at Wave 1 of Young Lives' school survey in Vietnam.

This survey took place in 2016-17.

The item-level analyses in this booklet were undertaken by Educational Initiatives, Ahmedabad, India.

Items were selected following extensive piloting. For more details on item sources and the test development process, see Iyer et al, 2017. Young Lives School Survey, 2016–17: Evidence from Vietnam.

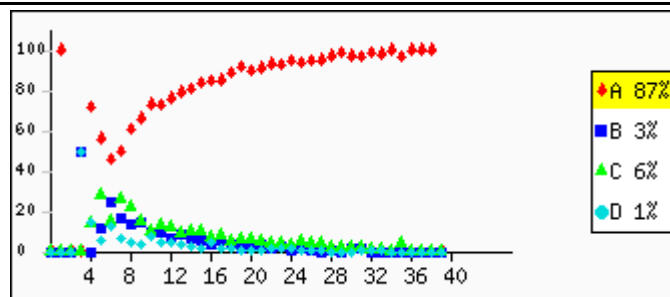
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Question no: 1

Skill: Number sense, related concepts and basic number competency **Paper Set: A, Medium: English**

Which of the following is a prime number?

- A: 5
- B: 15
- C: 25
- D: 35



Overall A: **87.3%** B: **3.9%** C: **6.7%** D: **1.8%** Invalid Answer: **0.3%** Not Attempted: **0.0%**

Question no: 2

Skill: Number sense, related concepts and basic number competency **Paper Set: A, Medium: English**

Δ is a common factor of 3 numbers X, Y and Z.

Shown below are the prime factorisations of X, Y and Z.

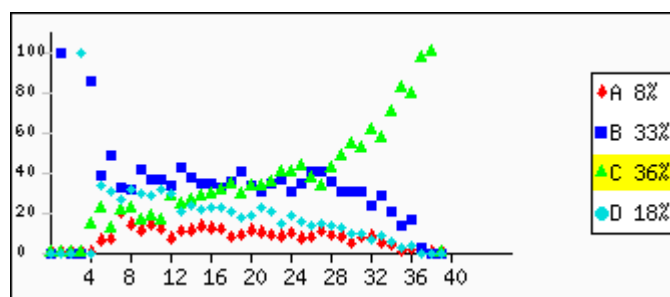
$$X = 2 \times 3 \times 5 \times \Delta$$

$$Y = 2 \times 2 \times 3 \times 3 \times 5 \times \Delta$$

$$Z = 2 \times 2 \times 2 \times 3 \times 3 \times \Delta$$

Which of the following is DEFINITELY a factor of the sum $X + Y + Z$?

- A: 4
- B: 5
- C: 6
- D: 9



Overall A: **9.0%** B: **33.8%** C: **36.2%** D: **18.8%** Invalid Answer: **2.1%** Not Attempted: **0.0%**

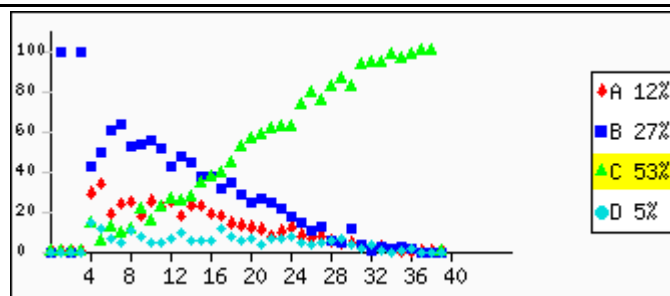
Question no: 3

Skill: Number sense, related concepts and basic number competency **Paper Set: A, Medium: English**

Megha takes tablet A every 4 hours and tablet B every 6 hours.

How often will she take both the medicines at the same time?

- A: every 2 hours
- B: every 10 hours
- C: every 12 hours
- D: every 16 hours



Overall A: **12.9%** B: **27.1%** C: **53.9%** D: **5.7%** Invalid Answer: **0.3%** Not Attempted: **0.0%**

Question no: 4Skill: Integers and Rational numbers, Powers and Bases **Paper Set: A, Medium: English**

Numbers that can be written in the form $\frac{m}{n}$ where m and n are integers and n is not equal to 0 are called rational numbers.

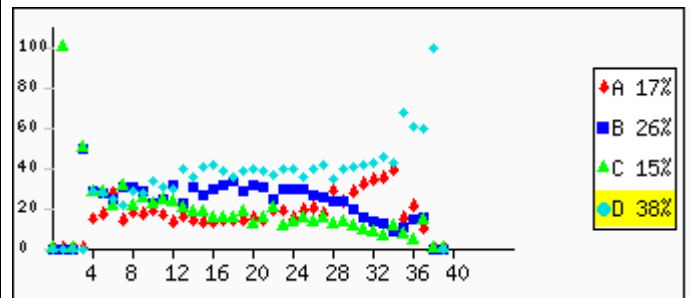
Which of the numbers in the list below are rational numbers?

A: only -252 and 1

B: only -252 and 0.3310

C: only -252, 0.3333.... (recurring) and 1

D: All of them are rational numbers.



Overall A: 17.3% B: 26.0% C: 15.9% D: 39.1% Invalid Answer: 1.8% Not Attempted: 0.0%

Question no: 5Skill: Integers and Rational numbers, Powers and Bases **Paper Set: A, Medium: English**

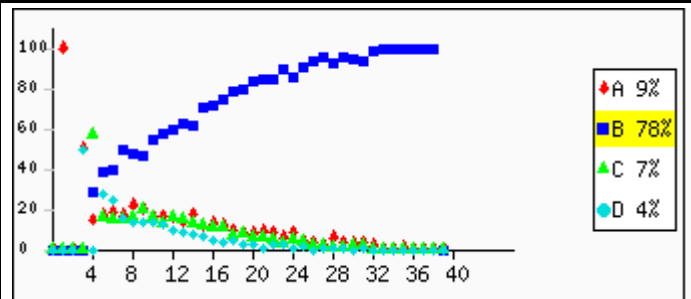
$-4 - (-5) = \underline{\hspace{2cm}}$

A: -1

B: 1

C: -9

D: 9



Overall A: 9.1% B: 78.8% C: 7.8% D: 4.1% Invalid Answer: 0.2% Not Attempted: 0.0%

Question no: 6Skill: Integers and Rational numbers, Powers and Bases **Paper Set: A, Medium: English**

Which of these numbers are equal?

1^{119}	119^1	119^0	1^1
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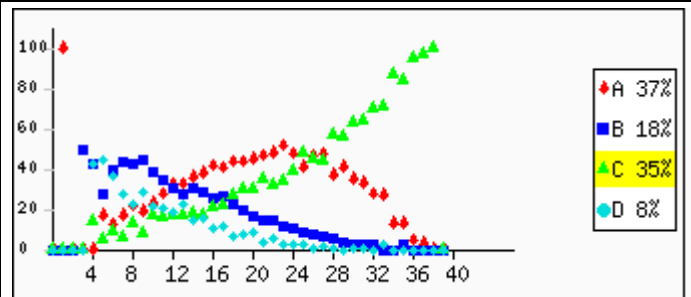
A:

only 1^{119} and 1^1

B: only 1^{119} and 119^1

C: only 1^{119} , 119^0 and 1^1

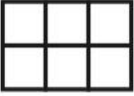
D: None of them are equal.



Overall A: 37.2% B: 18.4% C: 35.0% D: 8.9% Invalid Answer: 0.6% Not Attempted: 0.0%

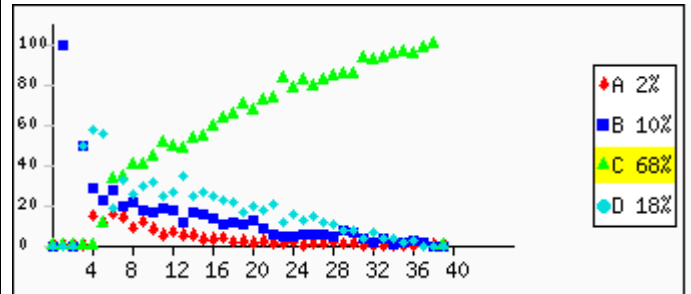
Question no: 7

Skill: Fractions, Decimals, Ratios and Percentages **Paper Set: A, Medium: English**



If represents 75%, which of the following represents 125%?

- A:
- B:
- C:
- D:



Overall A: 2.5% B: 10.0% C: 68.5% D: 18.5% Invalid Answer: 0.4% Not Attempted: 0.0%

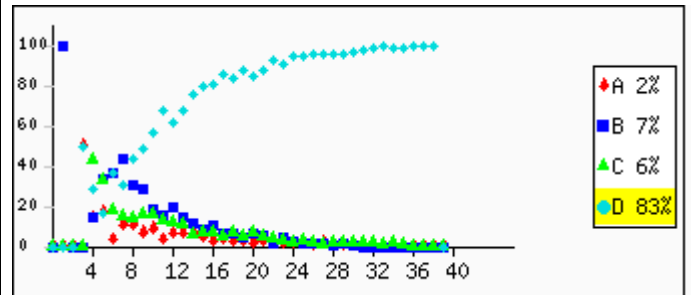
Question no: 8

Skill: Fractions, Decimals, Ratios and Percentages **Paper Set: A, Medium: English**

What fraction of the shape below is shaded?



- A: 1
- B: 1/2
- C: more than 1/2
- D: less than 1/2



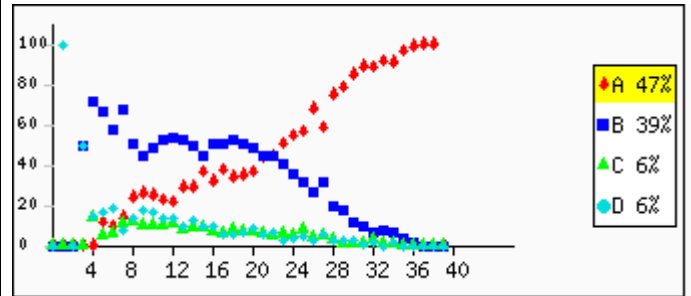
Overall A: 3.0% B: 7.4% C: 6.1% D: 83.4% Invalid Answer: 0.2% Not Attempted: 0.0%

Question no: 9

Skill: Fractions, Decimals, Ratios and Percentages **Paper Set: A, Medium: English**

If the ratio of Ravi's age to John's age is 2:3, which of the following is definitely true about their actual ages?

- A: John's age is 112 times Ravi's age
- B: Ravi is a year younger than John
- C: John is 3 times as old as Ravi
- D: Ravi's age is half of John's age

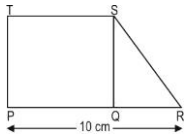


Overall A: **47.4%** B: **38.8%** C: **6.4%** D: **6.8%** Invalid Answer: **0.7%** Not Attempted: **0.0%**

Question no: 10

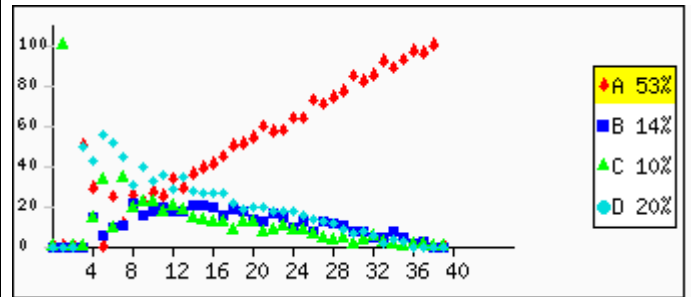
Skill: Mensuration - Area and Perimeter, Volume and Surface Area **Paper Set: A, Medium: English**

A trapezium is divided into a square and a triangle as shown below.



Which of the following lengths, if known, would NOT be sufficient to find out the area of trapezium?

- A: RS
- B: PT
- C: PQ
- D: QR

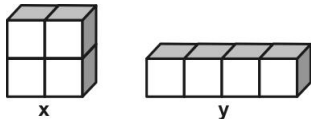


Overall A: **53.6%** B: **14.3%** C: **10.6%** D: **20.5%** Invalid Answer: **1.0%** Not Attempted: **0.0%**

Question no: 11

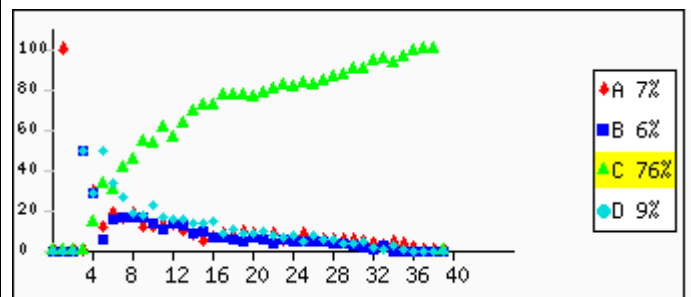
Skill: Mensuration - Area and Perimeter, Volume and Surface Area **Paper Set: A, Medium: English**

Cuboid x and Cuboid y below are both made of 4 identical unit cubes each.



What can be said about volume of x and y?

- A: Volume of x is greater than volume of y.
- B: Volume of x is less than volume of y.
- C: Volume of x is same as volume of y.
- D: Volume of x and volume of y can't be determined.

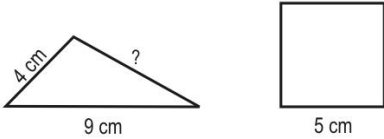


Overall	A: 7.2%	B: 6.6%	C: 76.1%	D: 9.8%	Invalid Answer: 0.4%	Not Attempted: 0.0%
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Question no: 12

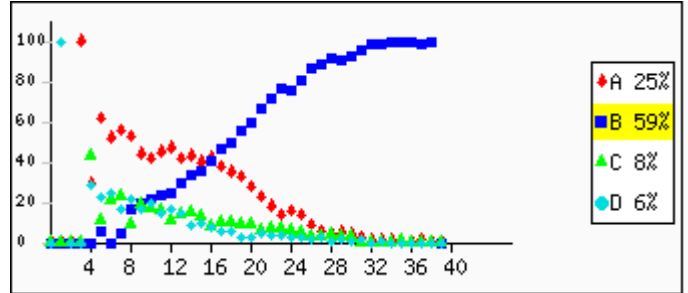
Skill: Mensuration - Area and Perimeter, Volume and Surface Area **Paper Set: A, Medium: English**

Shown here is a triangle with two of its sides as 9 cm and 4 cm and a square of side 5 cm.



Both the figures have the same perimeter. What would be the length of the third side of the triangle?

- A: 5 cm
- B: 7 cm
- C: 8 cm
- D: 13 cm



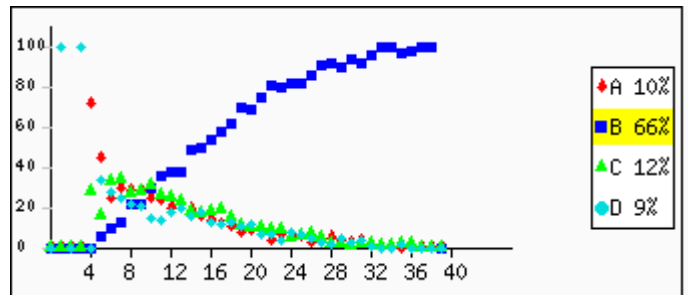
Overall	A: 25.6%	B: 59.2%	C: 8.4%	D: 6.3%	Invalid Answer: 0.5%	Not Attempted: 0.0%
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Question no: 13

Skill: Basic Shapes, Geometry and Visual estimation **Paper Set: A, Medium: English**

Lines l and m are parallel. Which figure shows the correct angle measurement?

- A:
- B:
- C:
- D:



Overall	A: 10.6%	B: 66.3%	C: 13.0%	D: 9.8%	Invalid Answer: 0.3%	Not Attempted: 0.0%
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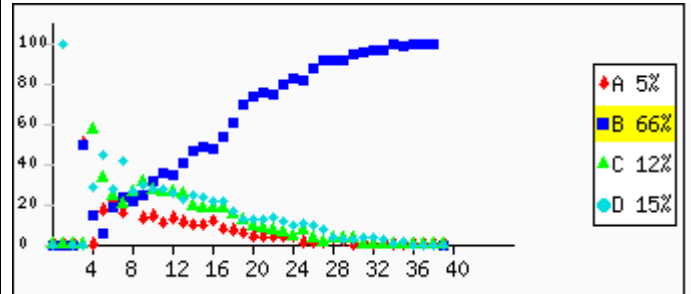
Question no: 14

Skill: Basic Shapes, Geometry and Visual Estimation **Paper Set: A, Medium: English**

Anupam draws a triangle whose three sides are of length 5 cm each. He finds that all the three angles of the triangle measure 60° each.

Now he draws a triangle all of whose sides are 10 cm each. Which of these is true about the three angles of this triangle?

- A: All the three angles will measure 30° each.
- B: All the three angles will measure 60° each.
- C: All the three angles will measure 120° each.
- D: (We cannot say anything without measuring the angles.)

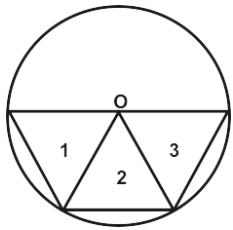


Overall	A: 5.9%	B: 66.2%	C: 12.3%	D: 15.2%	Invalid Answer: 0.5%	Not Attempted: 0.0%
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Question no: 15

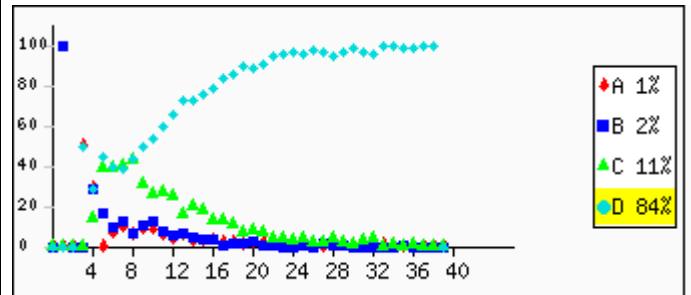
Skill: Basic Shapes, Geometry and Visual estimation **Paper Set: A, Medium: English**

Three equilateral triangles are inscribed in a circle with center O as shown below.



Which of the three triangles are congruent?

- A: triangles 1 and 2 only
- B: triangles 2 and 3 only
- C: triangles 1 and 3 only
- D: all the three triangles

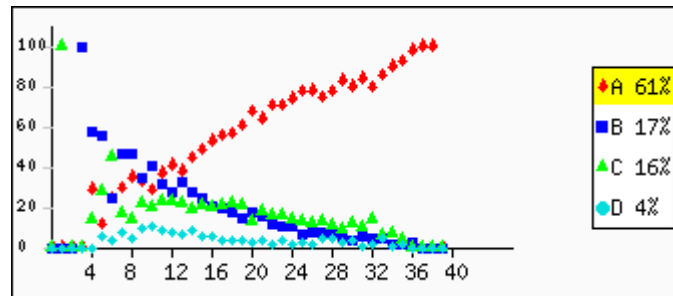


Overall	A: 2.0%	B: 2.6%	C: 11.1%	D: 84.1%	Invalid Answer: 0.3%	Not Attempted: 0.0%
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Question no: 16

Skill: Basic Shapes, Geometry and Visual estimation **Paper Set: A, Medium: English**

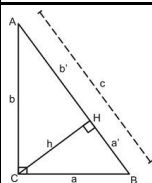
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Overall A: **61.9%** B: **17.2%** C: **16.4%** D: **4.3%** Invalid Answer: **0.3%** Not Attempted: **0.0%**

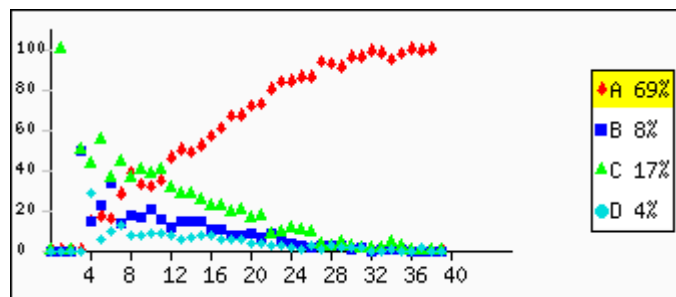
Question no: 17

Skill: Basic Shapes, Geometry and Visual estimation **Paper Set: A, Medium: English**



According to the figure above, which answer is correct?

- A: $h^2 = a'b'$
- B: $b^2 = ca'$
- C: $c^2 = a'b'$
- D: $a^2 = cb'$

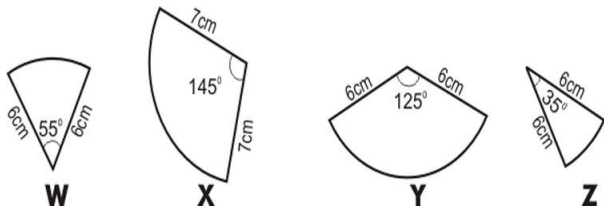


Overall A: **68.9%** B: **8.2%** C: **17.5%** D: **4.2%** Invalid Answer: **1.2%** Not Attempted: **0.0%**

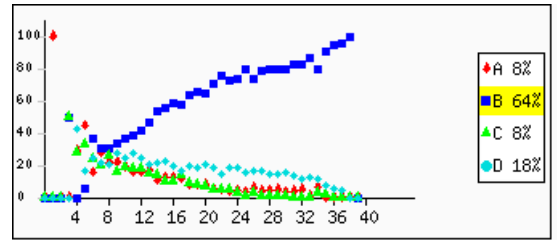
Question no: 18

Skill: Basic Shapes, Geometry and Visual estimation **Paper Set: A, Medium: English**

Of the pieces shown here, which two could form a semicircle when placed next to each other with their edges touching?



- A: Z and W
- B: W and Y
- C: Y and Z
- D: Z and X



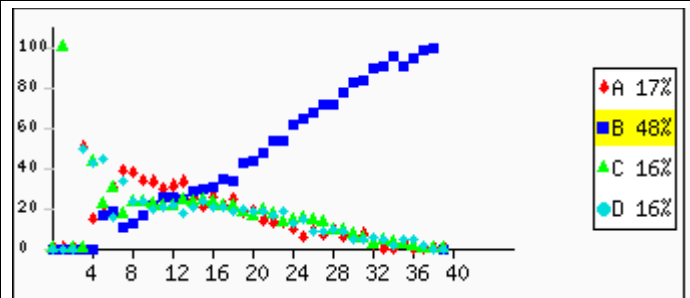
Overall A: 8.7% B: 64.4% C: 8.3% D: 18.3% Invalid Answer: 0.3% Not Attempted: 0.0%

Question no: 19

Skill: Basic Shapes, Geometry and Visual estimation **Paper Set: A, Medium: English**

If MNP is a right-angled triangle with $\angle M = 90^\circ$, which answer is correct?

- A: $MP = NP \sin P$
- B: $MP = NP \sin N$
- C: $MP = NP \cos N$
- D: $MP = MN \cot N$

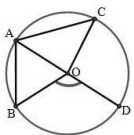


Overall A: 17.2% B: 48.2% C: 16.8% D: 16.2% Invalid Answer: 1.6% Not Attempted: 0.0%

Question no: 20

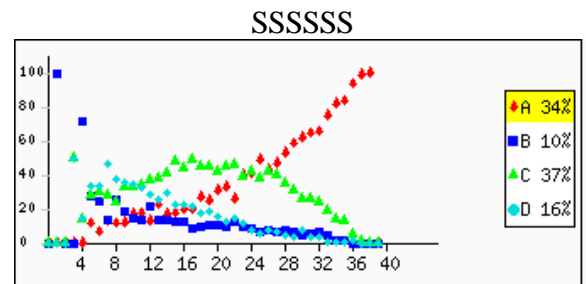
Skill: Basic Shapes, Geometry and Visual estimation **Paper Set: A, Medium: English**

Given is the circle with O as the central point, diameter AD, $AC > AB$.



Which angle equals to one half value of $\angle BOD$?

- A: $\angle BAO$
- B: $\angle OAC$
- C: $\angle AOB$
- D: $\angle COD$



Overall A: 34.7% B: 10.4% C: 37.8% D: 16.5% Invalid Answer: 0.6% Not Attempted: 0.0%

Question no: 21

Skill: Basic Shapes, Geometry and Visual estimation **Paper Set: A, Medium: English**

Given are 3 random points M, N, P . Which following

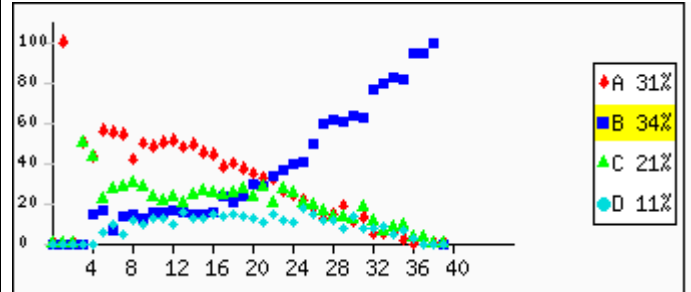
answer equals to \overrightarrow{MN} ?

A: $\overrightarrow{MP} + \overrightarrow{NP}$

B: $\overrightarrow{PN} - \overrightarrow{PM}$

C: $\overrightarrow{MP} - \overrightarrow{PN}$

D: $\overrightarrow{PM} - \overrightarrow{PN}$



Overall	A: 31.5%	B: 34.6%	C: 21.6%	D: 11.8%	Invalid Answer: 0.6%	Not Attempted: 0.0%
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Question no: 22

Skill: Algebra: concepts and applications **Paper Set: A, Medium: English**

If $a + 2b = 5$ and $c = 3$,

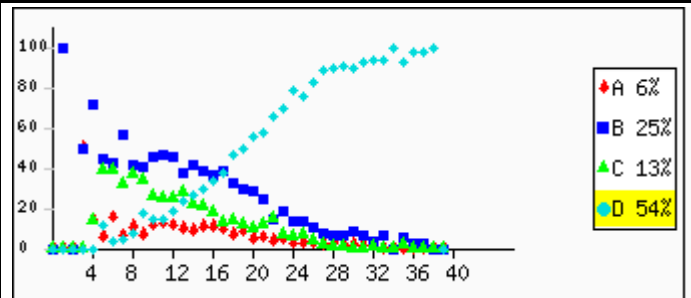
calculate: $a + 2(b + c)$

A: 14

B: 8

C: 12

D: 11



Overall	A: 6.1%	B: 25.6%	C: 13.0%	D: 54.6%	Invalid Answer: 0.7%	Not Attempted: 0.0%
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Question no: 23

Skill: Algebra: concepts and applications **Paper Set: A, Medium: English**

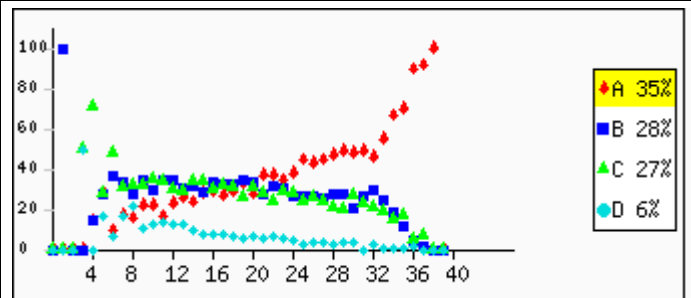
Class 5A has 45 pupils, 27 of whom are female. Male pupils are in charge of sweeping the leaves off the school yard. It takes them 1 hour to finish the task. If the whole class did it together, how long would it take to finish the task?

A: 24 minutes

B: 27 minutes

C: 45 minutes

D: 60 minutes

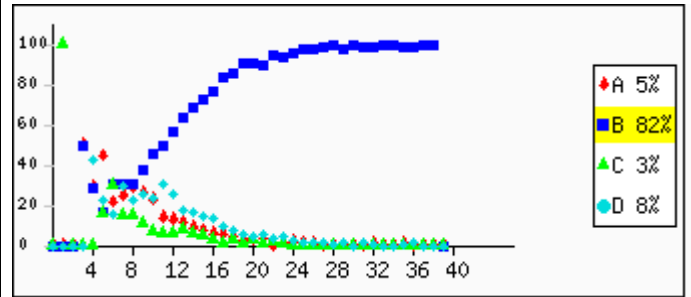


Overall	A: 35.5%	B: 29.1%	C: 27.5%	D: 6.6%	Invalid Answer: 1.4%	Not Attempted: 0.0%
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Question no: 24

Skill: Algebra: concepts and applications **Paper Set: A, Medium: English**

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Overall A: 5.5% B: 82.3% C: 3.0% D: 9.0% Invalid Answer: 0.2% Not Attempted: 0.0%

Question no: 25 [Dropped]

Skill: Algebra: concepts and applications **Paper Set: A, Medium: English**

Which figure expresses the root set of inequality $2x > 6$?

- A:
- B:
- C:
- D:

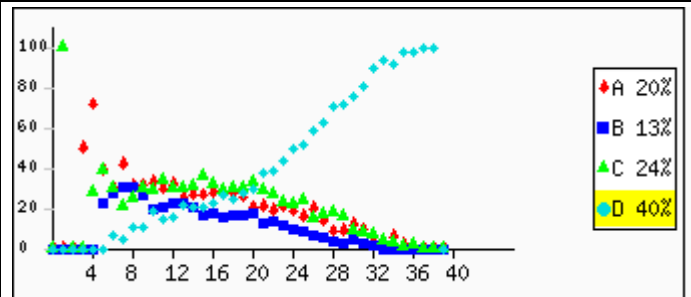
Overall A: 11.0% B: 15.4% C: 31.0% D: 42.1% Invalid Answer: 0.6% Not Attempted: 0.0%

Question no: 26

Skill: Algebra: concepts and applications **Paper Set: A, Medium: English**

The polynomial $A = 12x^3y^2 + 8x^2y^3 + 6y^2$ is divisible by:

- A: $2x^2y^2$
 B: $2x^2y$
 C: $2xy$
 D: $2y^2$

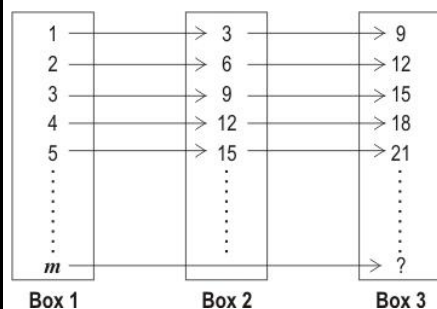


Overall A: 21.1% B: 13.0% C: 24.8% D: 40.4% Invalid Answer: 0.8% Not Attempted: 0.0%

Question no: 27

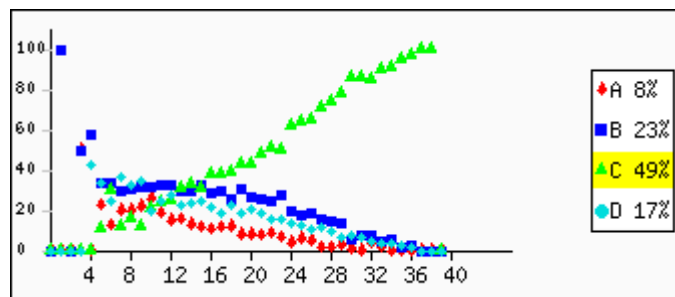
Skill: Algebra: concepts and applications **Paper Set: A, Medium: English**

A certain common formula converts the numbers in Box 1 to the corresponding ones in Box 2. Another formula then converts the numbers in Box 2 to the corresponding ones in Box 3:



If we wanted to convert a number m in Box 1 directly to the corresponding number in Box 3, we could use the formula

- A: $3m + 2$
- B: $3m \times 3$
- C: $3(m+2)$
- D: $m + 2 \times 3$



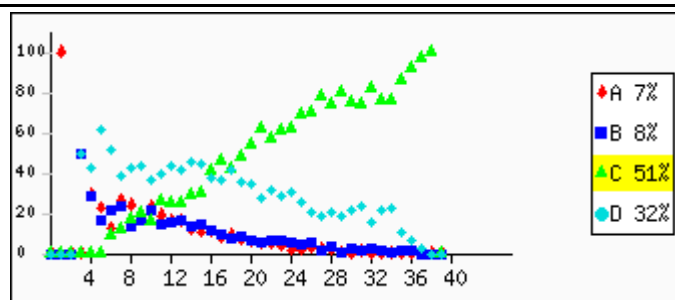
Overall A: 8.8% B: 23.2% C: 49.7% D: 17.3% Invalid Answer: 1.0% Not Attempted: 0.0%

Question no: 28

Skill: Algebra: concepts and applications **Paper Set: A, Medium: English**

For any numbers x and y such that $x = 70 + y$, what can be said about x and y ?

- A: $x = y$
- B: $x < y$
- C: $x > y$
- D: None of the above can be said as the exact values of x or y are NOT known.



Overall A: 7.4% B: 8.5% C: 51.4% D: 32.2% Invalid Answer: 0.6% Not Attempted: 0.0%

Question no: 29

Skill: Algebra: concepts and applications **Paper Set: A, Medium: English**

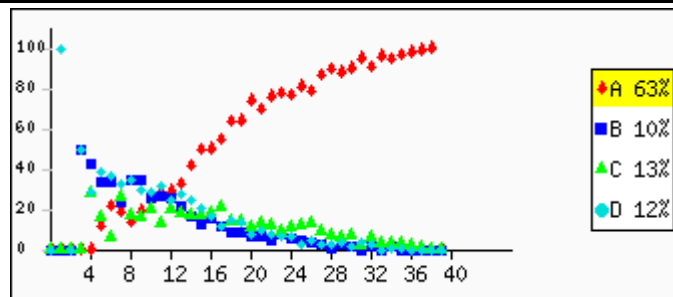
$y + 10 < 10$. Which of this is DEFINITELY true?

A: y is any negative number.

B: y is a positive number less than 10.

C: y has to be a negative number less than -10.

D: $y + 10$ cannot be less than 10 for any value of y .

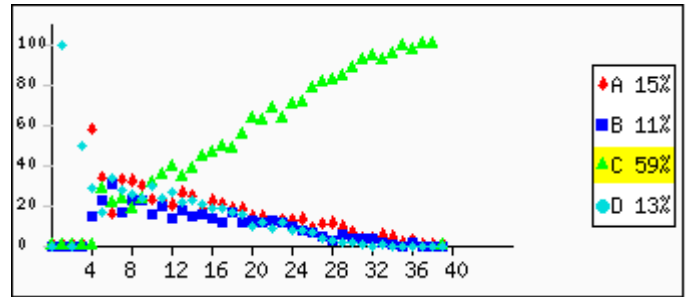
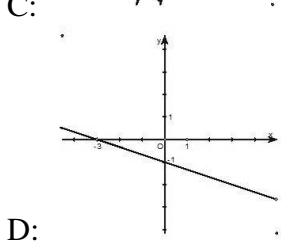
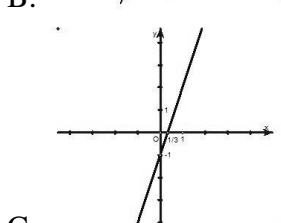
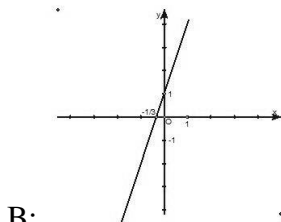
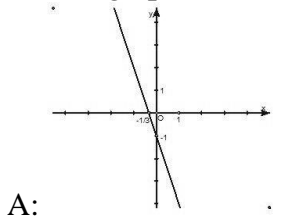


Overall	A: 63.1%	B: 10.5%	C: 13.2%	D: 12.8%	Invalid Answer: 0.4%	Not Attempted: 0.0%
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Question no: 30

Skill: Algebra: concepts and applications **Paper Set: A, Medium: English**

Which graph of the line represents the equation $y = 3x - 1$?



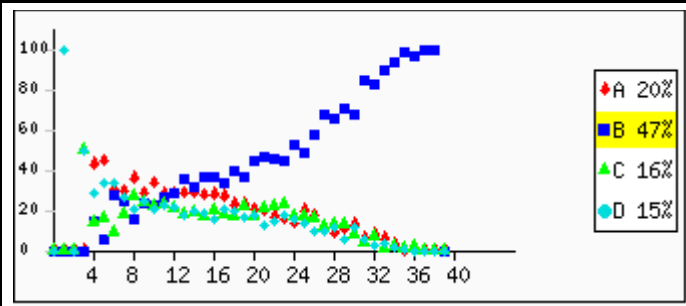
Overall	A: 15.4%	B: 10.8%	C: 59.7%	D: 13.4%	Invalid Answer: 0.7%	Not Attempted: 0.0%
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Question no: 31

Skill: Algebra: concepts and applications **Paper Set: A, Medium: English**

The line representing $y = 3x + 2$ will intersect with the line representing which equation?

- A: $y = 3x$
- B: $y = -3x + 4$
- C: $y = 3x + 5$
- D: $y = 3x - 1$



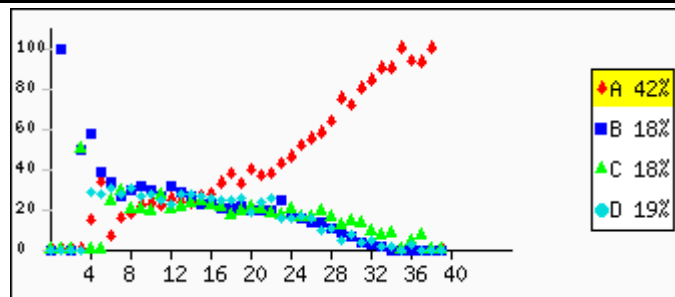
Overall	A: 20.2%	B: 47.5%	C: 16.7%	D: 15.2%	Invalid Answer: 0.6%	Not Attempted: 0.0%
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Question no: 32

Skill: Algebra: concepts and applications **Paper Set: A, Medium: English**

The distance from A to B is 270 km. A car travels from A to B at a speed of 60 km per hour. On the way, it stops to take a break at C at 3 pm. C is 90 km distance away from B. What time did the car start from A?

- A: 12 o'clock
- B: 12: 30
- C: 1 pm
- D: 1 : 30 pm



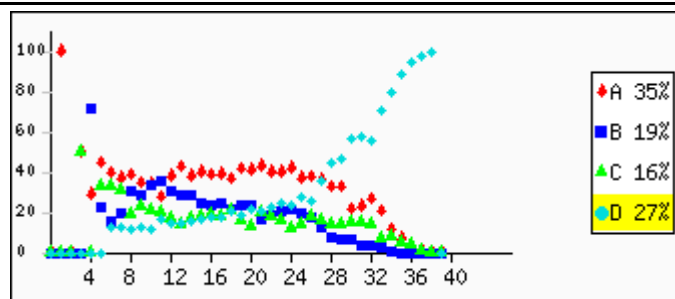
Overall A: **42.9%** B: **19.0%** C: **18.5%** D: **18.9%** Invalid Answer: **0.8%** Not Attempted: **0.0%**

Question no: 33

Skill: Algebra: concepts and applications **Paper Set: A, Medium: English**

Equation $x^2 - 2x + m - 1 = 0$ has roots when and only when:

- A: $m \geq 2$
- B: $m > 2$
- C: $m < 2$
- D: $m \leq 2$



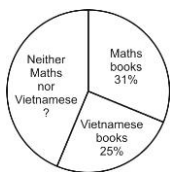
Overall A: **34.8%** B: **19.9%** C: **16.5%** D: **28.0%** Invalid Answer: **0.8%** Not Attempted: **0.0%**

Question no: 34

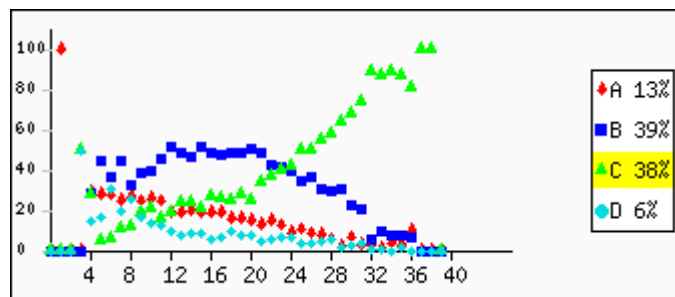
Skill: Measurement, Data Interpretation, analysis and graphs **Paper Set: A, Medium: English**

The pie chart shows the proportions of books in the library. Of these books, 31% are maths books, 25% are Vietnamese books. There are 132 books in the library that are neither maths nor Vietnamese books.

How many maths books are there in the library?



- A: 31
- B: 44
- C: 93
- D: 132



Overall A: **14.0%** B: **39.3%** C: **38.8%** D: **6.8%** Invalid Answer: **1.1%** Not Attempted: **0.0%**

Question no: 35

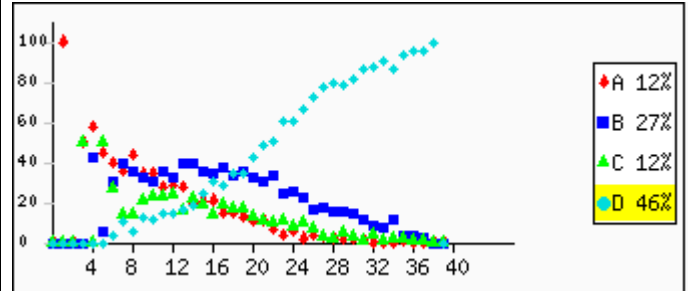
Skill: Applications in daily life, commercial Maths, word and visual problems **Paper Set: A, Medium: English**

A group of 10 friends have some marbles with them.

If they had 3 more marbles, they would be able to distribute the marbles equally amongst themselves.

Which of these could be the number of marbles they had?

- A: 13
- B: 20
- C: 33
- D: 47



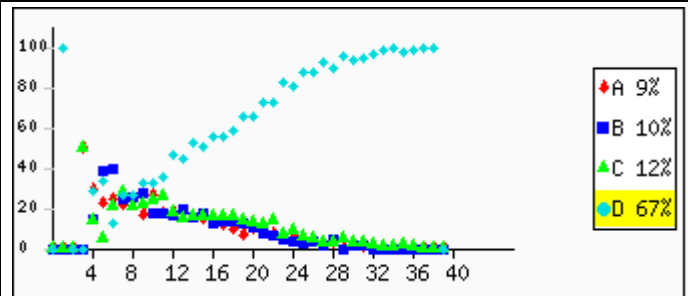
Overall	A: 13.0%	B: 27.8%	C: 13.0%	D: 45.9%	Invalid Answer: 0.3%	Not Attempted: 0.0%
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Question no: 36

Skill: Applications in daily life, commercial Maths, word and visual problems **Paper Set: A, Medium: English**

Rahul's father is 6 times as old as Rahul. Rahul's mother is 25 years old. The average age of this family of three is 20 years. How old is Rahul?

- A: 15 years
- B: 10 years
- C: 7 years
- D: 5 years



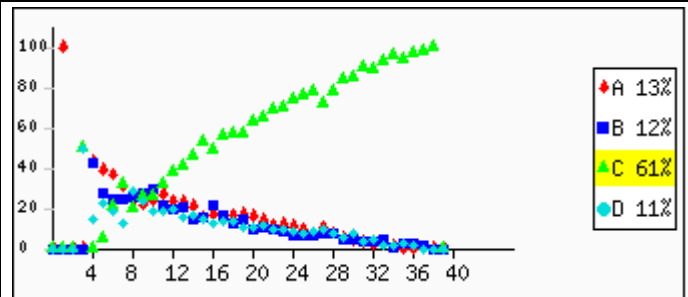
Overall	A: 9.4%	B: 10.1%	C: 12.2%	D: 67.5%	Invalid Answer: 0.8%	Not Attempted: 0.0%
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Question no: 37

Skill: Applications in daily life, commercial Maths, word and visual problems **Paper Set: A, Medium: English**

A sheet of paper is 0.012 cm thick. What would be the height of a stack of 400 sheets of this paper?

- A: 0.048 cm
- B: 0.48 cm
- C: 4.8 cm
- D: 48 cm



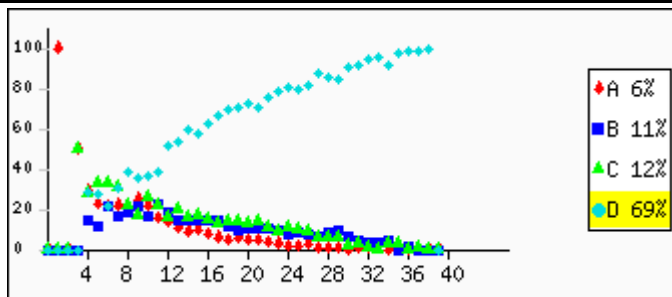
Overall	A: 13.8%	B: 12.6%	C: 61.5%	D: 11.6%	Invalid Answer: 0.5%	Not Attempted: 0.0%
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Question no: 38

Skill: Reasoning and Problem Solving (Advanced or challenging problems) **Paper Set: A, Medium: English**

Observe the number pattern in the number triangle above. If it is extended, what will be the last number (on the right) in the 9th row?

- A: 25
- B: 36
- C: 61
- D: 81

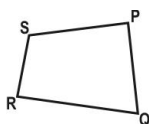


Overall	A: 6.1%	B: 11.2%	C: 12.6%	D: 69.7%	Invalid Answer: 0.4%	Not Attempted: 0.0%
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Question no: 39

Skill: Reasoning and Problem Solving (Advanced or challenging problems) **Paper Set: A, Medium: English**

A field PQRS is in the shape of a quadrilateral.

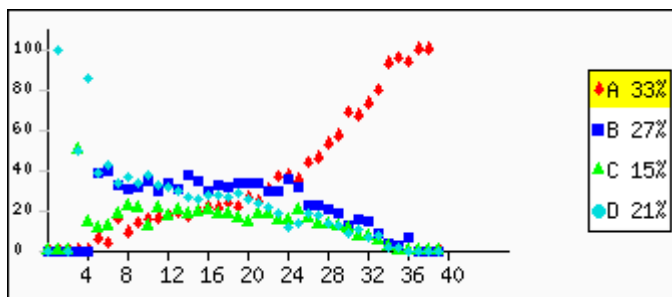


(Note: Figure not to scale.)

If you walked from Q to P to S to R along the boundary of the field, you would have covered 140 metres. If you walked from P to S to R to Q along the boundary of the field, you would have covered 135 metres.

Based on this, which of the following can you conclude?

- A: PQ is 5 m longer than QR
- B: QR is 5 m longer than SR
- C: PS is 5 m longer than PQ
- D: the perimeter of the field is 275 m



Overall	A: 33.8%	B: 27.7%	C: 15.7%	D: 22.0%	Invalid Answer: 0.9%	Not Attempted: 0.0%
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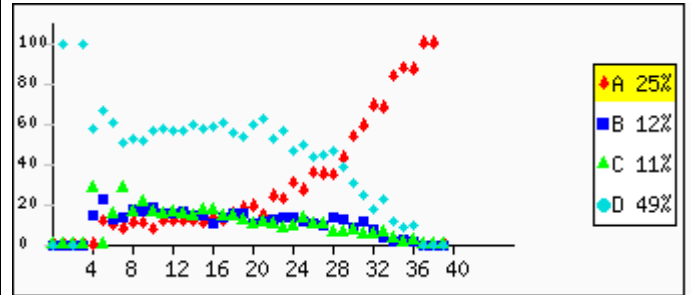
Question no: 40

Skill: Applications in daily life, commercial Maths, word and visual problems **Paper Set: A, Medium: English**

80 girls and 100 boys appeared for the class 10 board exam from Pratibha School. 25% of the girls and 10% of the boys who appeared got A grades.

What percentage of the total number of students who appeared got A grades?

- A: 16.70%
- B: 17.50%
- C: 25%
- D: 35%



Overall	A: 26.0%	B: 12.5%	C: 11.9%	D: 49.2%	Invalid Answer: 0.4%	Not Attempted: 0.0%
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Note: For each question, options marked with **RED** letters shows % of students who gave wrong answers, options marked with **GREEN** letters shows % of students who gave correct answers.