



Young Lives 2016-17 School Surveys

Item level analysis

Ethiopia

Wave 2

Subject: Mathematics

This booklet contains Maths items administered to students in Grades 7 and 8, at Wave 2 of Young Lives' school survey in Ethiopia. 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 Rossiter et al., (2017). Young Lives School Survey, 2016–17: Ethiopia Country Report.

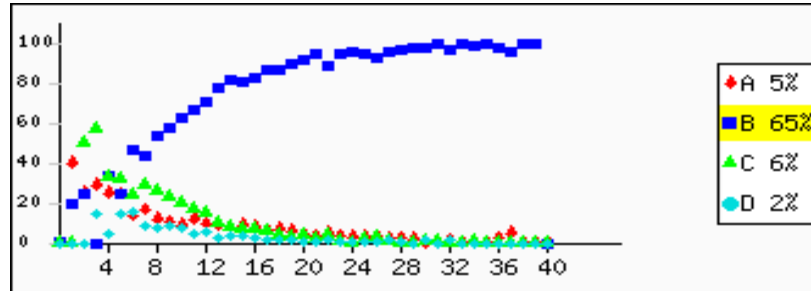
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Question no: 1

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

$$2488 \div 8 =$$

- A: 11
- B: 311
- C: 2480
- D: 2496



Overall A: 5.1% B: 65.6% C: 6.6% D: 2.3% Invalid Answer: 0.1% Not Attempted: 20.3%

Question no: 2

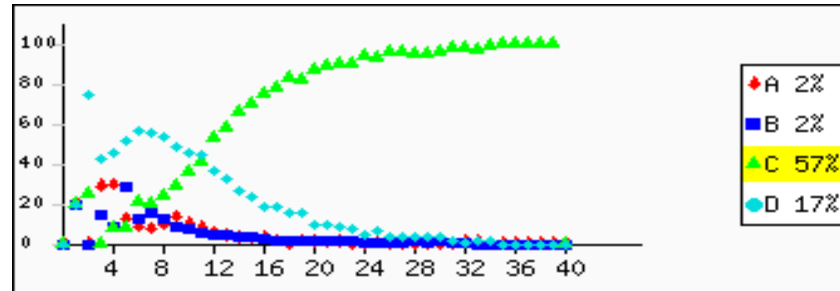
Skill: Number sense, related concepts and basic number competency **Paper Set: A, Medium: English**

A number when added to 35 gives 56.

$$\begin{array}{r} 35 \\ + \boxed{?} \\ \hline 56 \end{array}$$

What is the number?

- A: 12
- B: 20
- C: 21
- D: 91



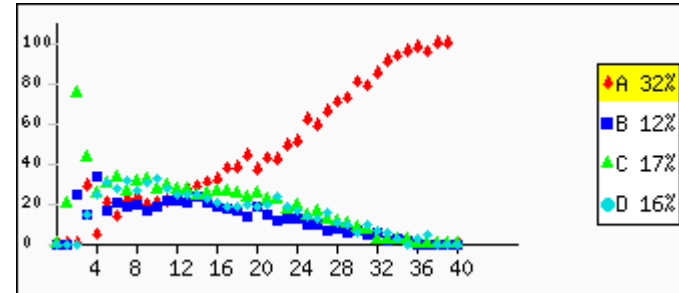
Overall A: 2.4% B: 2.7% C: 57.3% D: 17.0% Invalid Answer: 0.2% Not Attempted: 20.3%

Question no: 3

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

7341 is completely divisible by _____.

- A: 3
- B: 5
- C: 7
- D: 9



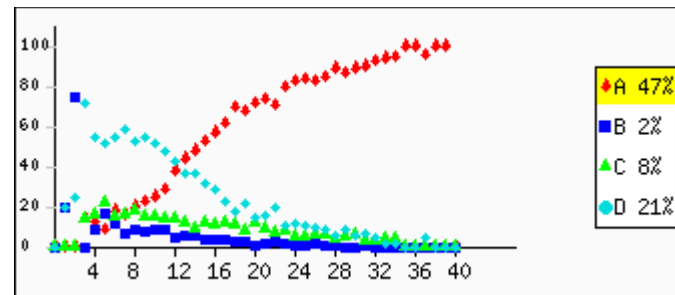
Overall	A: 32.5%	B: 12.4%	C: 17.7%	D: 16.1%	Invalid Answer: 0.1%	Not Attempted: 21.1%
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Question no: 4

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

3 ones + 7 tens = _____.

- A: 73
- B: 40
- C: 37
- D: 10

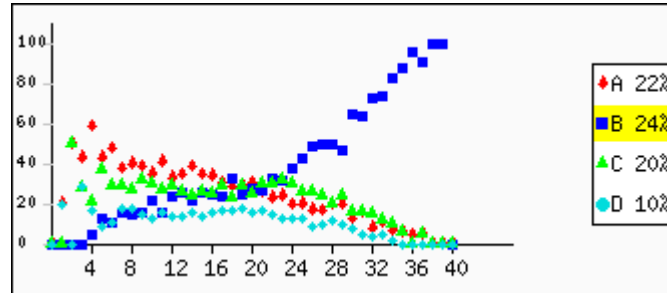


Overall	A: 47.1%	B: 2.9%	C: 8.3%	D: 21.2%	Invalid Answer: 0.2%	Not Attempted: 20.4%
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Question no: 5

Skill: 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

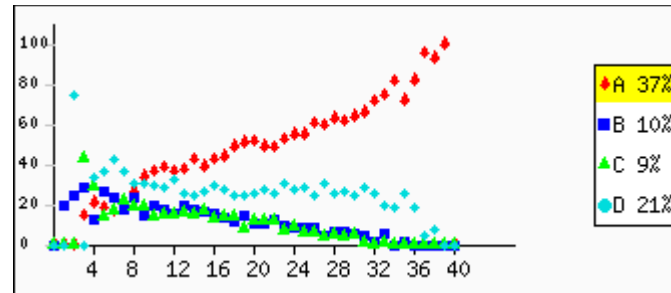


Overall	A: 22.9%	B: 25.0%	C: 20.8%	D: 10.7%	Invalid Answer: 0.2%	Not Attempted: 20.5%
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Question no: 6

Skill: Integers and Rational numbers, Powers and Bases **Paper Set: A, Medium: English**

Which of these is the cube root of 729?
A: 9
B: 13
C: 19
D: 27



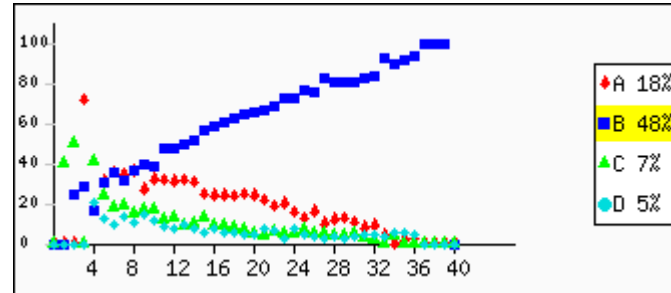
Overall	A: 37.1%	B: 10.4%	C: 9.5%	D: 21.9%	Invalid Answer: 0.1%	Not Attempted: 20.8%
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Question no: 7

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

Which difference is closest to 300,000?

- A: 100,000 – 50,000
- B: 500,000 – 300,000
- C: 900,000 – 800,000
- D: 800,000 – 100,000



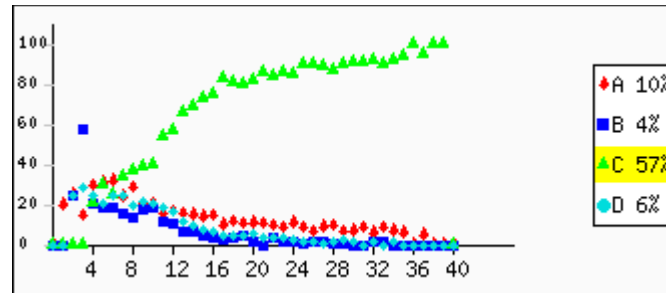
Overall	A: 18.2%	B: 48.4%	C: 7.2%	D: 5.4%	Invalid Answer: 0.1%	Not Attempted: 20.7%
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Question no: 8

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

$2.34 + 7.65 =$

- A: 99.9
- B: 0.99
- C: 9.99
- D: 999



Overall	A: 10.3%	B: 4.6%	C: 57.9%	D: 6.7%	Invalid Answer: 0.1%	Not Attempted: 20.4%
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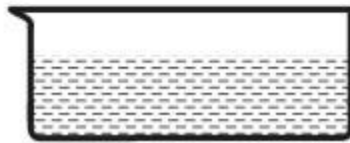
Question no: 9

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

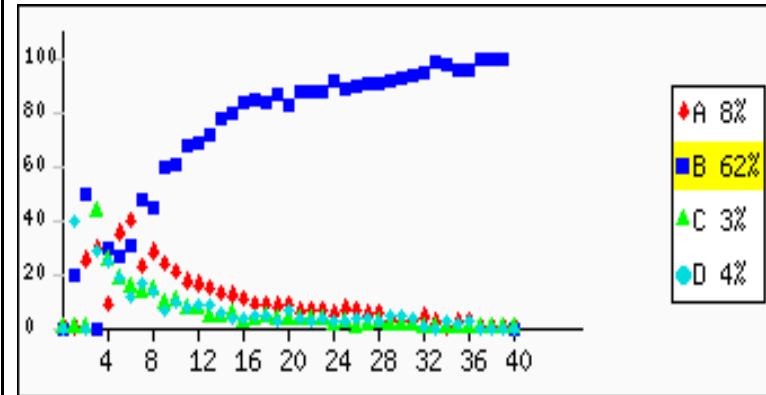
4 jars of different shapes are filled with water upto the same height as shown.

Which of them has the **least** amount of water in it?

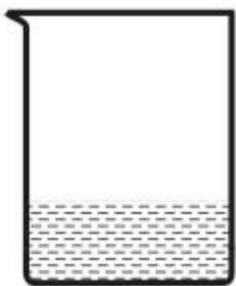
A:



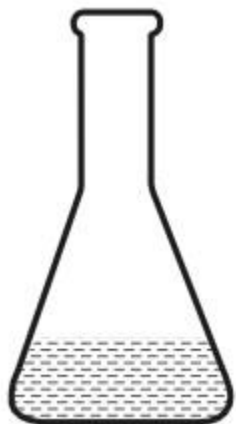
B:



C:



D:



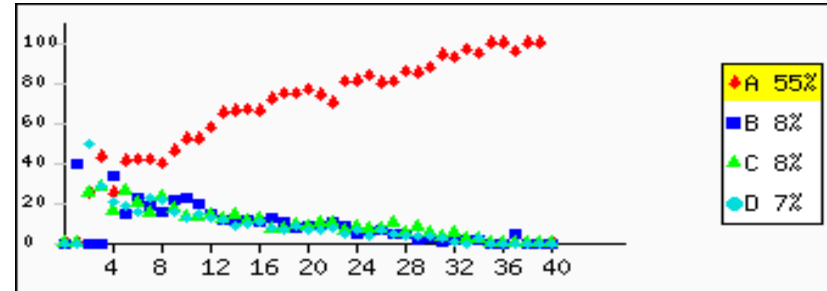
Overall	A: 8.8%	B: 62.8%	C: 3.7%	D: 4.3%	Invalid Answer: 0.1%	Not Attempted: 20.4%
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Question no: 10

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

Which of the following is a prime number?

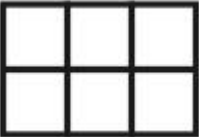
- A: 5
- B: 15
- C: 25
- D: 35

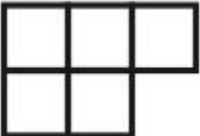
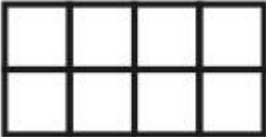


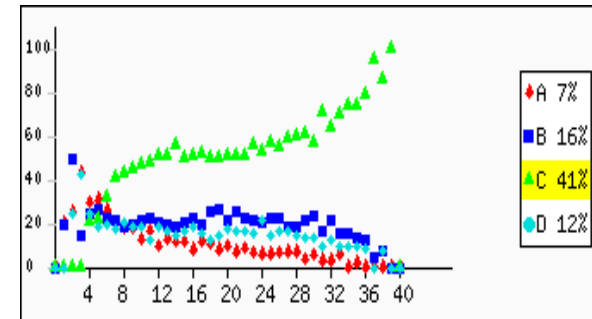
Overall A: **55.1%** B: **8.6%** C: **8.4%** D: **7.2%** Invalid Answer: **0.1%** Not Attempted: **20.7%**

Question no: 11

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

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

- A: 
- B: 



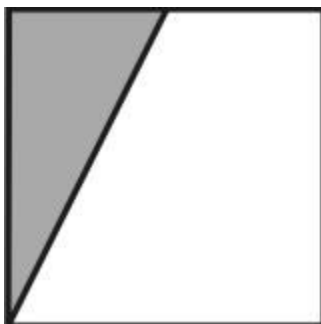


Overall	A: 7.9%	B: 17.0%	C: 41.9%	D: 12.8%	Invalid Answer: 0.1%	Not Attempted: 20.3%
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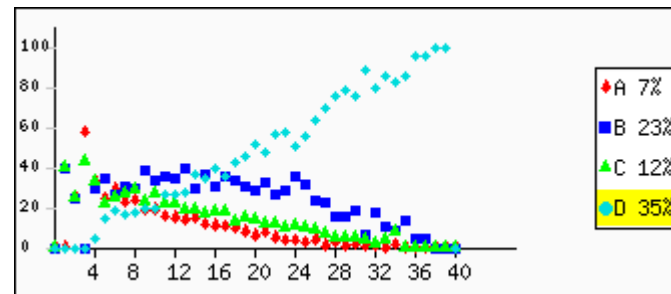
Question no: 12

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

What fraction of the shape below is shaded?



- A: 1
- B: 12
- C: more than 12
- D: less than 12



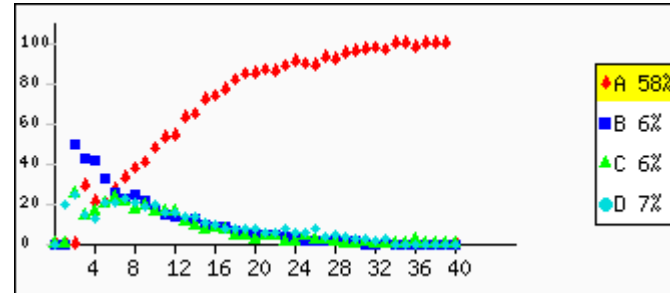
Overall	A: 7.9%	B: 23.9%	C: 12.6%	D: 35.0%	Invalid Answer: 0.2%	Not Attempted: 20.5%
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Question no: 13

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

What is the place value of 5 in 54620?

- A: ten thousands
- B: hundreds
- C: tens
- D: ones



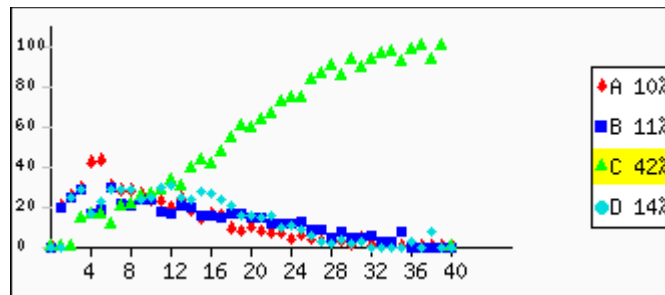
Overall	A: 58.3%	B: 7.0%	C: 6.2%	D: 8.0%	Invalid Answer: 0.2%	Not Attempted: 20.4%
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Question no: 14

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

$4.465 - 1.286 =$

- A: 5.751
- B: 3.189
- C: 3.179
- D: 3.279



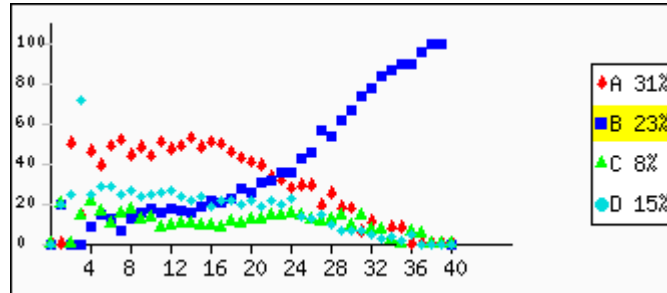
Overall	A: 10.4%	B: 11.9%	C: 42.4%	D: 14.7%	Invalid Answer: 0.1%	Not Attempted: 20.6%
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Question no: 15

Skill: Integers and Rational numbers, Powers and Bases **Paper Set: A, Medium: English**

$(-35) + 27 = \underline{\hspace{2cm}}$.

- A: -62
- B: -8
- C: 8
- D: 62



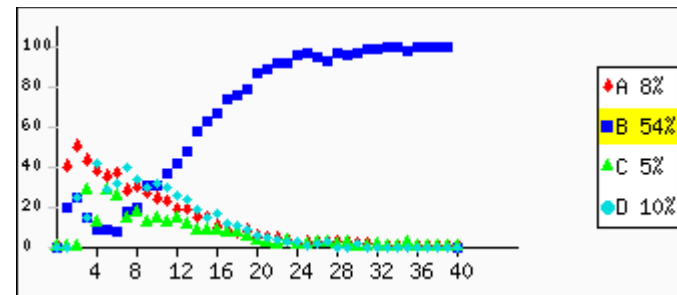
Overall	A: 31.1%	B: 23.8%	C: 8.9%	D: 15.7%	Invalid Answer: 0.2%	Not Attempted: 20.4%
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Question no: 16

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

If $X = 6$ and $Y = 9$ and $Z = 12$ then $X + Y - Z =$

- A: 0
- B: 3
- C: 6
- D: 15



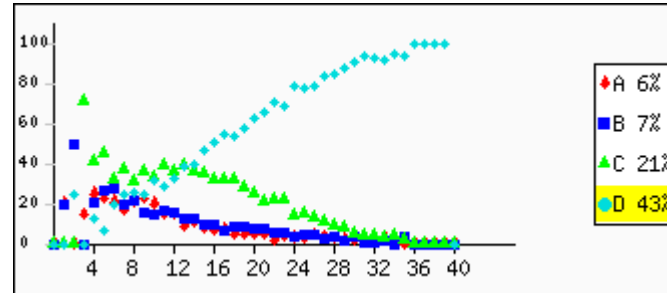
Overall	A: 8.9%	B: 54.1%	C: 5.6%	D: 11.0%	Invalid Answer: 0.1%	Not Attempted: 20.3%
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Question no: 17

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

Which number is the smallest?

- A: 3,124,300
- B: 3,214,243
- C: 3,124,030
- D: 3,102,430



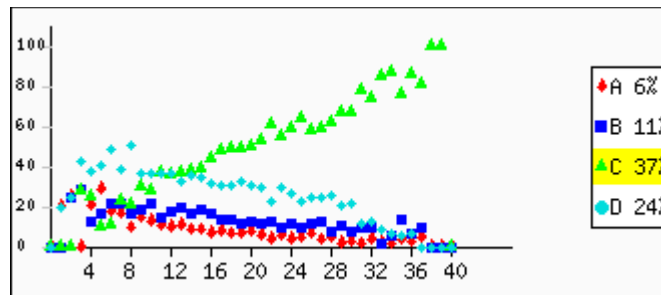
Overall	A: 6.5%	B: 7.7%	C: 21.4%	D: 43.9%	Invalid Answer: 0.2%	Not Attempted: 20.4%
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Question no: 18

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

How many hundreds make 70000?

- A: 1
- B: 100
- C: 700
- D: 70000



Overall	A: 6.0%	B: 11.2%	C: 37.9%	D: 24.2%	Invalid Answer: 0.2%	Not Attempted: 20.5%
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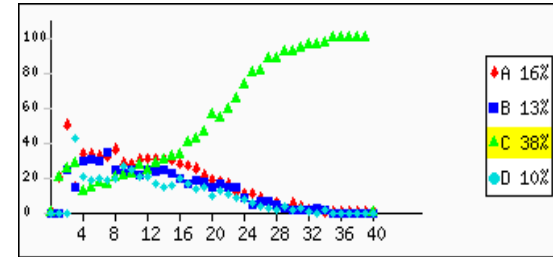
Question no: 19

Skill: Integers and Rational numbers, Powers and Bases **Paper Set: A, Medium: English**

Where can you place 315 on the number line?



- A: At point A
- B: At point B
- C: At point C
- D: At point D



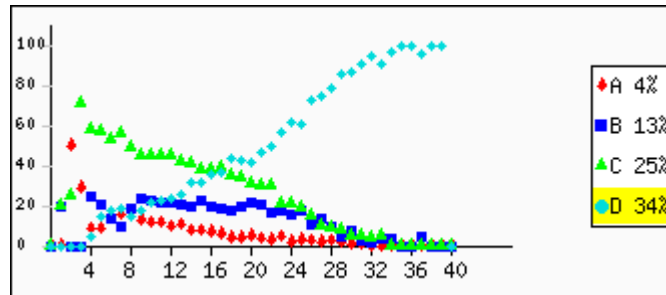
Overall	A: 16.6%	B: 13.5%	C: 38.6%	D: 10.7%	Invalid Answer: 0.2%	Not Attempted: 20.5%
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Question no: 20

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

If $A = 2$ what is $3A$ equal to?

- A: 2
- B: 3
- C: 5
- D: 6

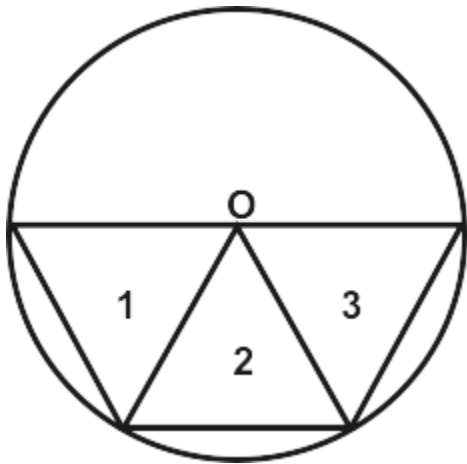


Overall	A: 5.0%	B: 13.8%	C: 25.9%	D: 35.0%	Invalid Answer: 0.1%	Not Attempted: 20.3%
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Question no: 21

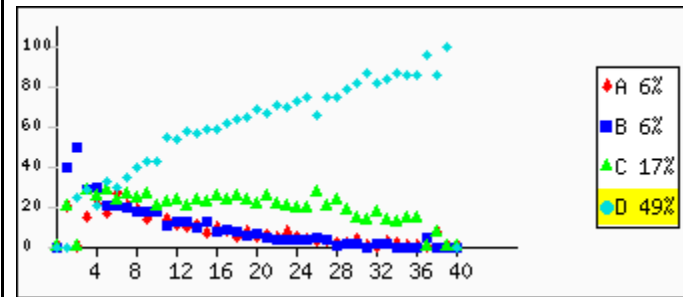
Skill: Basic Shapes, Geometry and Visual estimation **Paper Set: A, Medium: English**

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



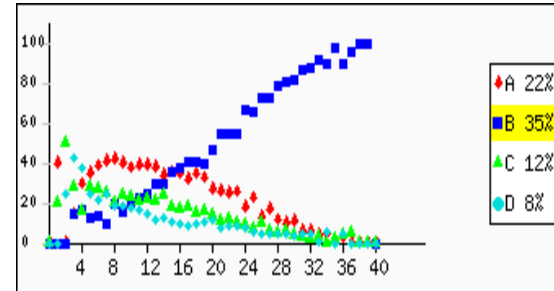
Overall	A: 6.3%	B: 6.7%	C: 17.4%	D: 49.4%	Invalid Answer: 0.1%	Not Attempted: 20.2%
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Question no: 22

Skill: Integers and Rational numbers, Powers and Bases **Paper Set: A, Medium: English**

A class has 40 boys and 35 girls. What is the ratio of boys to girls?

- A: 7:8
- B: 8:7
- C: 15:7
- D: 15:8

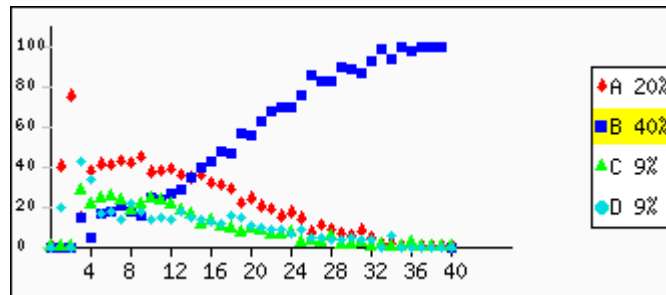


Overall	A: 22.9%	B: 35.6%	C: 12.4%	D: 8.6%	Invalid Answer: 0.1%	Not Attempted: 20.5%
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Question no: 23

Skill: Integers and Rational numbers, Powers and Bases **Paper Set: A, Medium: English**

- $81^{1/2}$
- A: 8.1
- B: 9
- C: 18
- D: 40.5



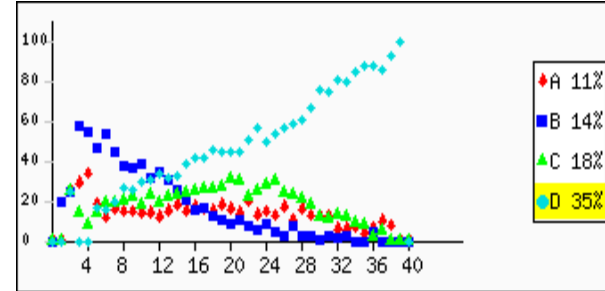
Overall	A: 20.6%	B: 40.2%	C: 9.4%	D: 9.2%	Invalid Answer: 0.2%	Not Attempted: 20.3%
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Question no: 24

Skill: Integers and Rational numbers, Powers and Bases **Paper Set: A, Medium: English**

Which of the following is another way of writing $5 \times 5 \times 5$?

- A: $3(5)$
- B: $3(5+5+5)$
- C: 3^5
- D: $5^2 \times 5$



Overall A: 11.5% B: 14.6% C: 18.2% D: 35.1% Invalid Answer: 0.3% Not Attempted: 20.3%

Question no: 25

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

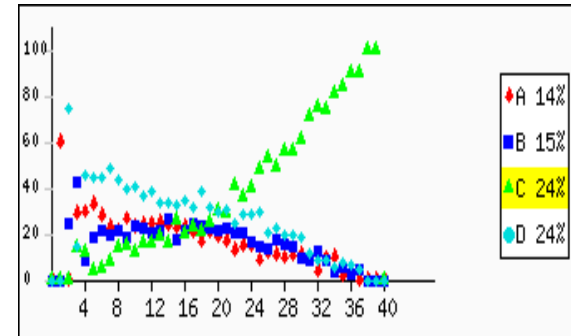
Farida has made a pattern with pieces of chart paper.





What will come next in the pattern?



A:



<p>B: </p> <p>C: </p> <p>D: </p>	
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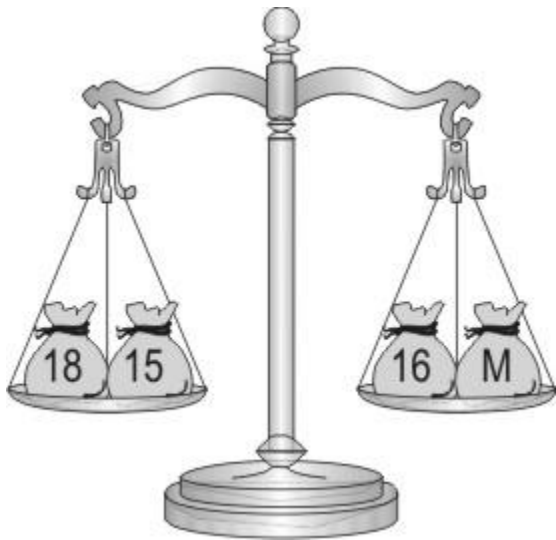
Overall	A: 14.7%	B: 15.7%	C: 24.2%	D: 24.7%	Invalid Answer: 0.2%	Not Attempted: 20.4%
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Question no: 26

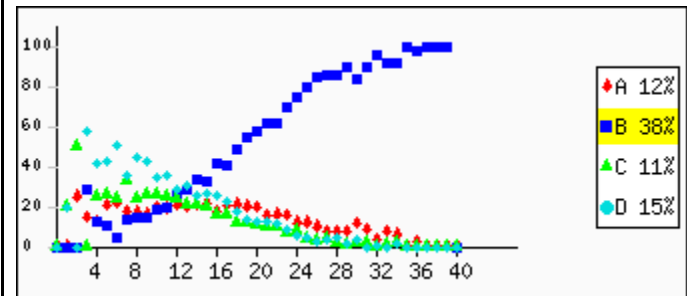
Skill: Algebra: concepts and applications Paper Set: A, Medium: English

Jim has balanced some bags of marbles. All the marbles are of the same weight. The number of marbles in each bag is written on it.



How many marbles are there in the bag marked M?

- A: 13
- B: 17
- C: 33
- D: 49

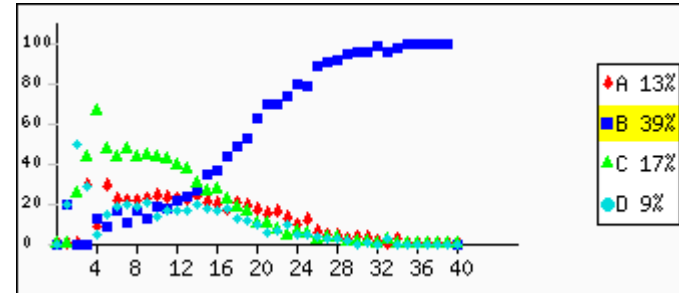


Overall	A: 13.0%	B: 39.0%	C: 11.8%	D: 15.9%	Invalid Answer: 0.1%	Not Attempted: 20.3%
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Question no: 27

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

This redacted item is not for public release.

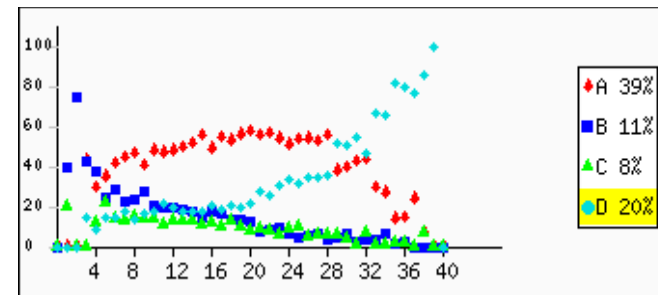


Overall	A: 13.0%	B: 39.8%	C: 17.4%	D: 9.3%	Invalid Answer: 0.1%	Not Attempted: 20.4%
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Question no: 28

Skill: Integers and Rational numbers, Powers and Bases Paper Set: A, Medium: English

This redacted item is not for public release.

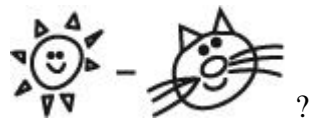
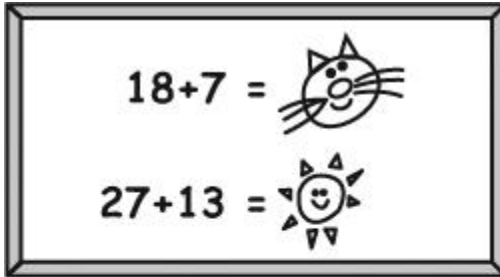


Overall	A: 39.4%	B: 11.1%	C: 8.2%	D: 20.7%	Invalid Answer: 0.2%	Not Attempted: 20.5%
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Question no: 29

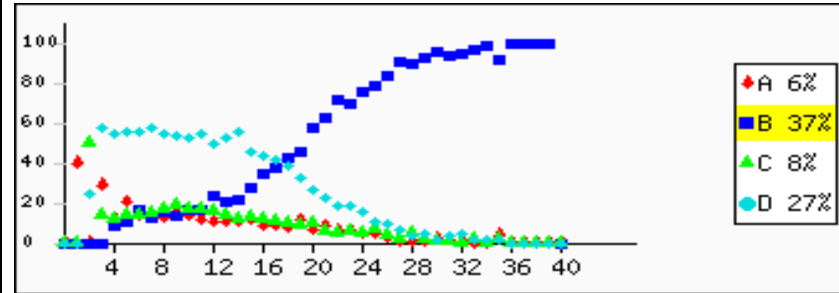
Skill: Algebra: concepts and applications Paper Set: A, Medium: English

Look at the picture below.



What is

- A: 6
- B: 15
- C: 20
- D: 40

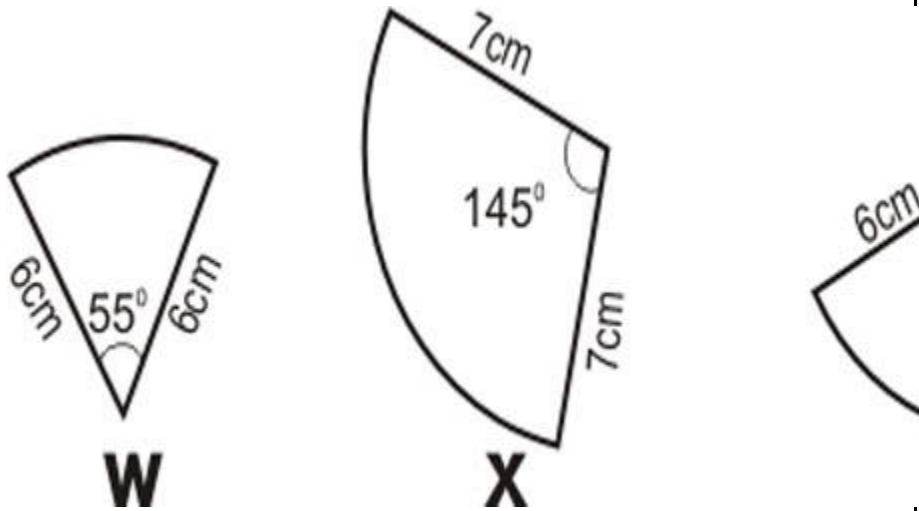


Overall	A: 6.4%	B: 37.5%	C: 8.3%	D: 27.2%	Invalid Answer: 0.3%	Not Attempted: 20.4%
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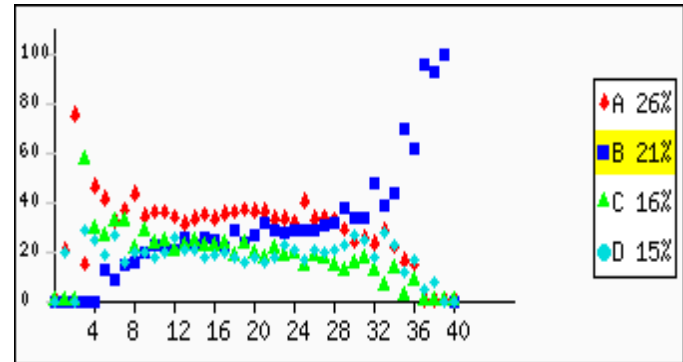
Question no: 30

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



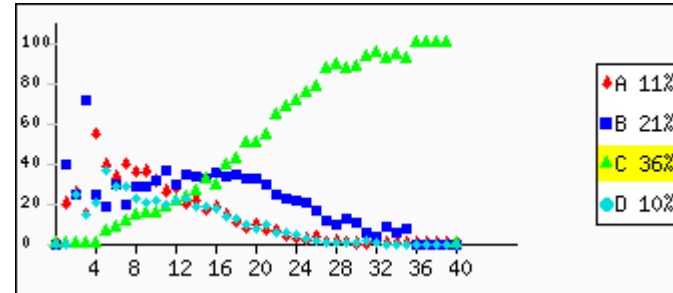
Overall	A: 26.5%	B: 21.1%	C: 16.2%	D: 15.5%	Invalid Answer: 0.1%	Not Attempted: 20.6%
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Question no: 31

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

Which fraction is the simplified form of $\frac{820}{100}$?

- A: $\frac{120}{100}$
- B: $\frac{45}{100}$
- C: $\frac{25}{100}$
- D: $\frac{48}{100}$

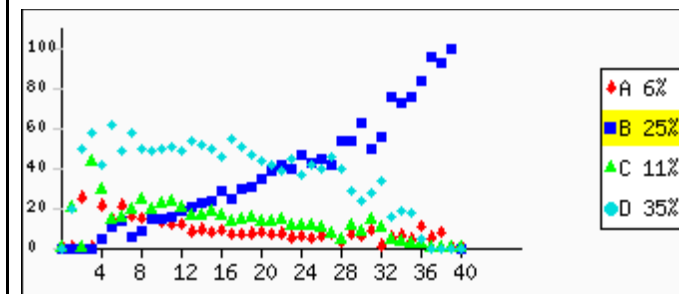


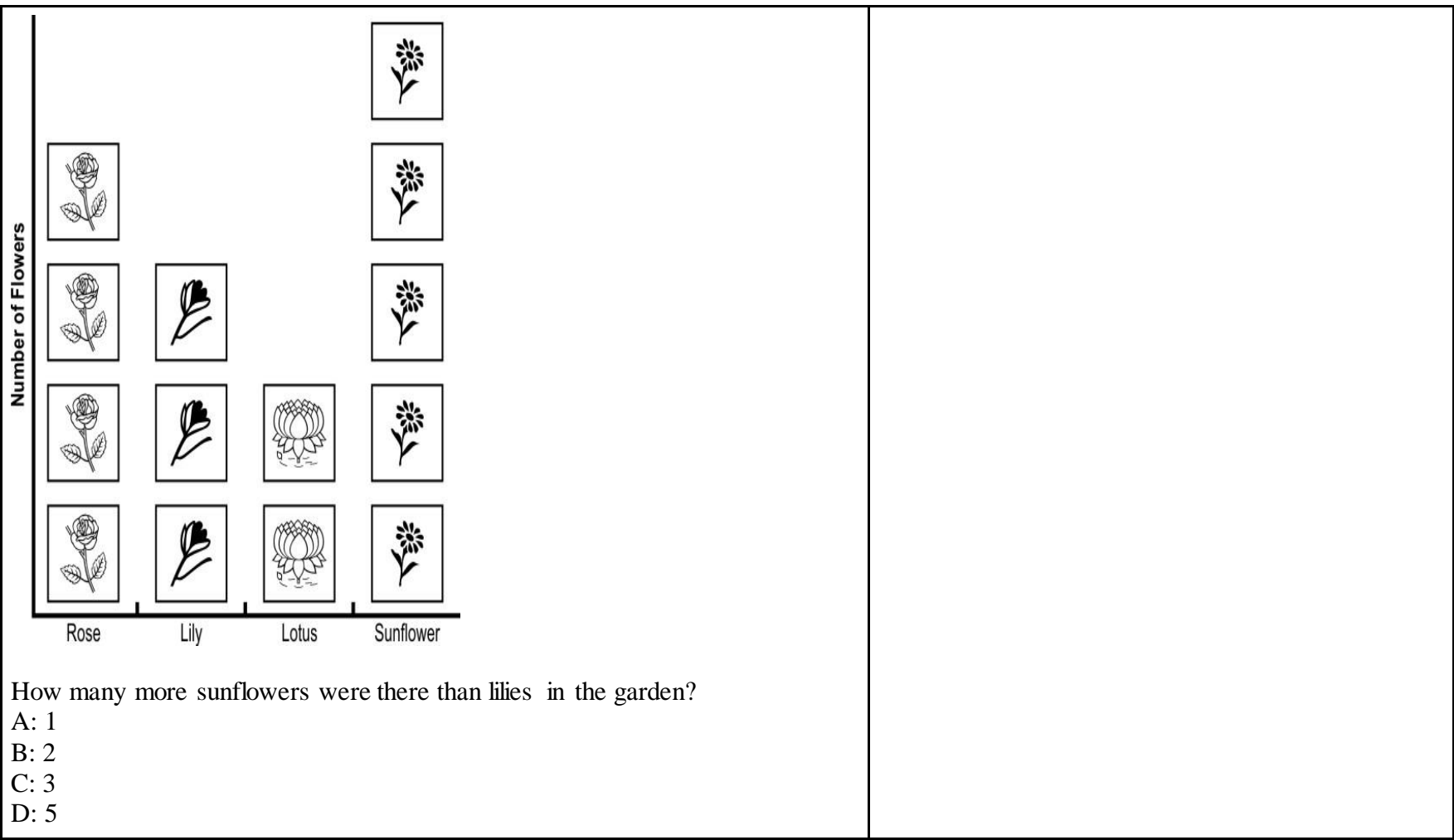
Overall	A: 11.6%	B: 21.4%	C: 36.5%	D: 10.1%	Invalid Answer: 0.1%	Not Attempted: 20.3%
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Question no: 32

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

Sheel counted the number of flowers in her garden. She made the following chart.
Study the chart and answer the following question.





How many more sunflowers were there than lilies in the garden?

- A: 1
- B: 2
- C: 3
- D: 5

Overall	A: 6.5%	B: 25.0%	C: 12.0%	D: 35.8%	Invalid Answer: 0.3%	Not Attempted: 20.5%
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Question no: 33

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

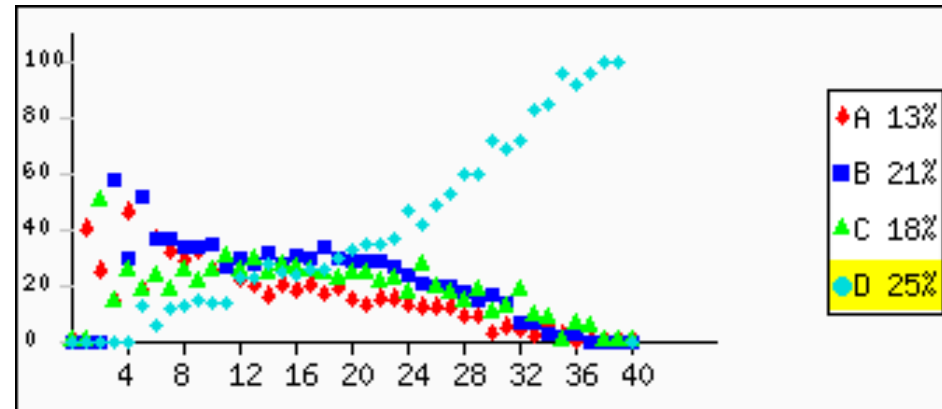
Which of these is a triangle?



B:



D:

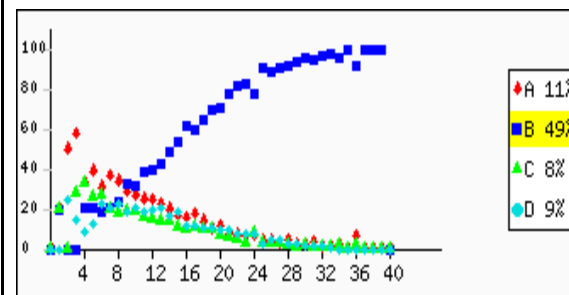
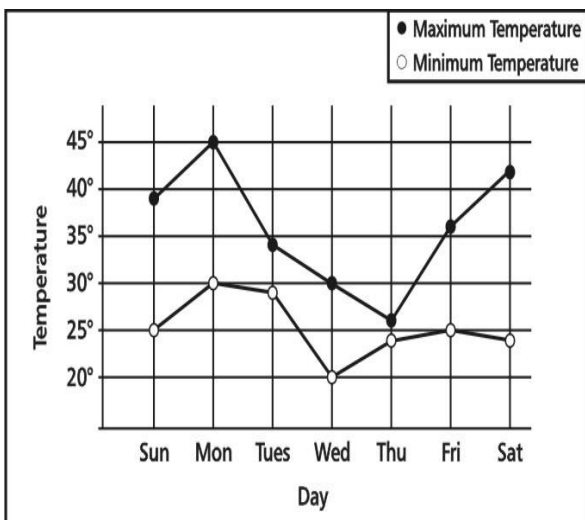


Overall	A: 13.9%	B: 21.4%	C: 18.1%	D: 26.0%	Invalid Answer: 0.3%	Not Attempted: 20.4%
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Question no: 34

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

Shown below is the graph representing the highest and the lowest temperature recorded in a day for a week. Study it and answer the question.



On which day of the week was the HIGHEST temperature recorded?

- A: Sunday
- B: Monday
- C: Wednesday
- D: Saturday

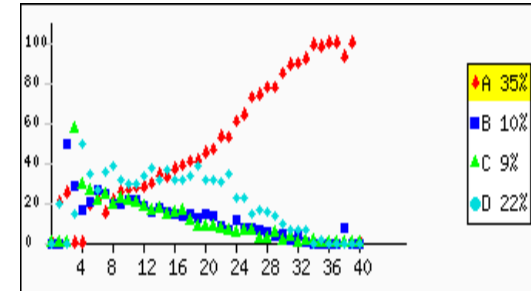
Overall	A: 11.9%	B: 49.5%	C: 8.2%	D: 9.7%	Invalid Answer: 0.2%	Not Attempted: 20.5%
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Question no: 35

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

Rahul is older than Ramesh and Ramesh is older than Peter. Which statement must be true?

- A: Rahul is older than Peter.
- B: Rahul is younger than Peter.
- C: Rahul is the same age as Peter.
- D: We cannot tell who is the oldest from the information.



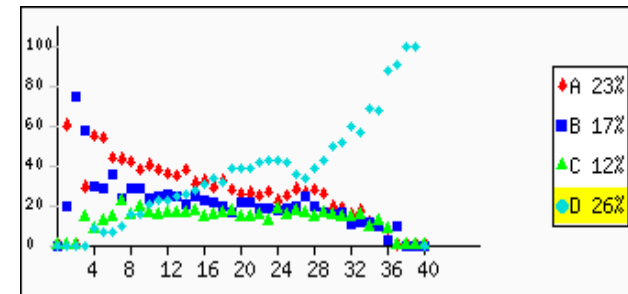
Overall	A: 36.0%	B: 10.8%	C: 9.7%	D: 22.7%	Invalid Answer: 0.2%	Not Attempted: 20.7%
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Question no: 36

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: 24.0%	B: 17.0%	C: 12.4%	D: 26.1%	Invalid Answer: 0.2%	Not Attempted: 20.3%
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Question no: 37

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

The table below shows the relationship between the x and y .

x	2	3	4	5
y	4	7	10	13

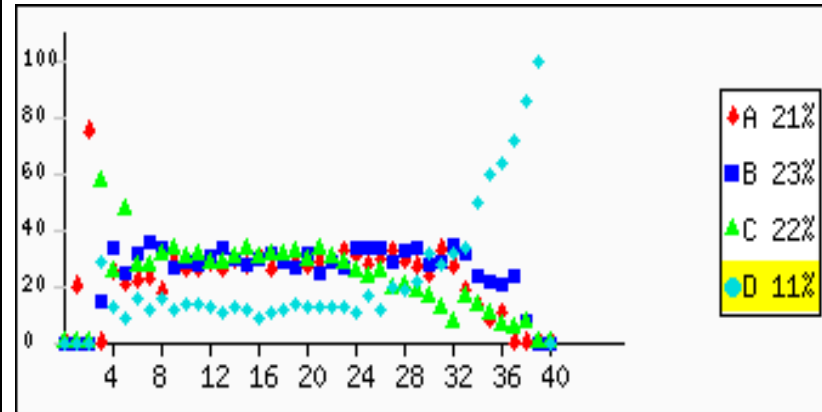
Which of the these equations expresses this relation?

A: $y = 2x + 2$

B: $y = x + 2$

C: $y = 4x - 4$

D: $y = 3x - 2$



Overall

A: 21.4%

B: 23.6%

C: 22.1%

D: 12.0%

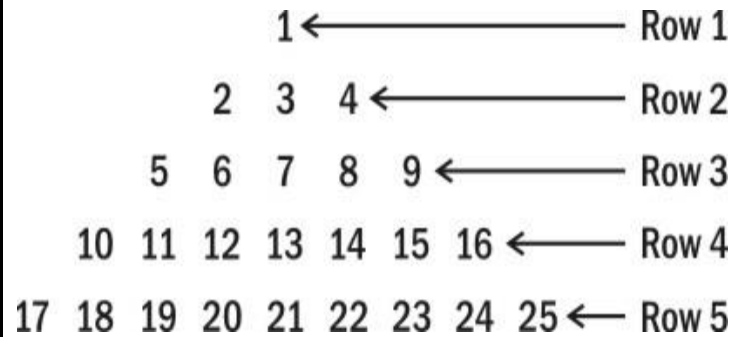
Invalid Answer: 0.3%

Not Attempted: 20.7%

Question no: 38

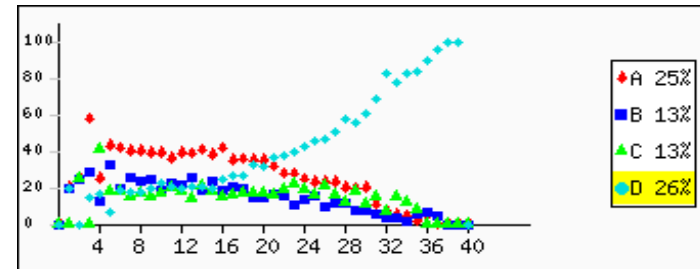
Skill: Reasoning and Problem Solving (Advanced or challenging problems) Paper Set: A, Medium: English

Observe the number pattern in the number triangle below.



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

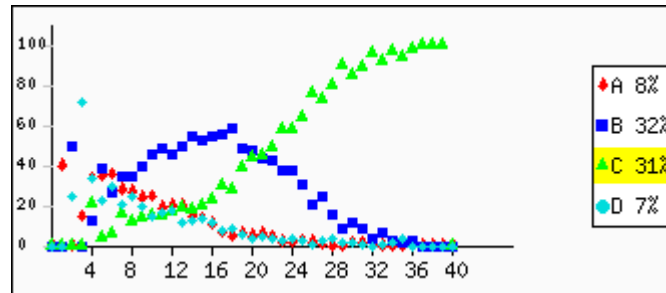


Overall	A: 25.4%	B: 13.6%	C: 13.6%	D: 26.5%	Invalid Answer: 0.3%	Not Attempted: 20.6%
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Question no: 39

Skill: Integers and Rational numbers, Powers and Bases **Paper Set: A, Medium: English**

7^2
A: 7
B: 14
C: 49
D: 72

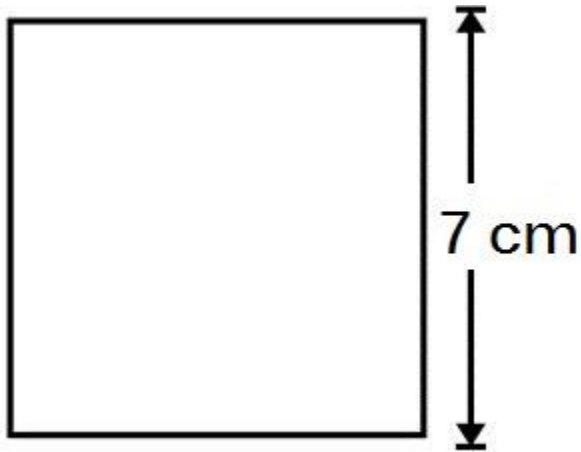


Overall	A: 8.4%	B: 32.2%	C: 31.2%	D: 7.5%	Invalid Answer: 0.2%	Not Attempted: 20.6%
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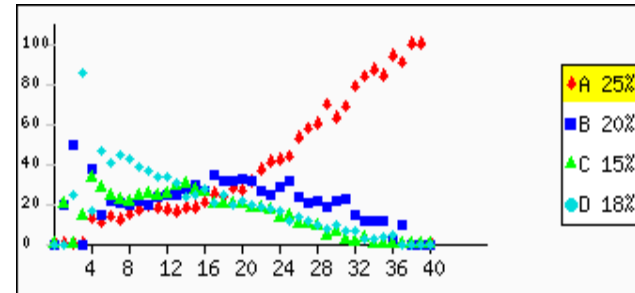
Question no: 40

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

What is the area of the square shown below?



- A: 49 cm²
- B: 28 cm²
- C: 14 cm²
- D: 7 cm²



Overall	A: 25.0%	B: 20.3%	C: 15.6%	D: 18.7%	Invalid Answer: 0.1%	Not Attempted: 20.3%
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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.