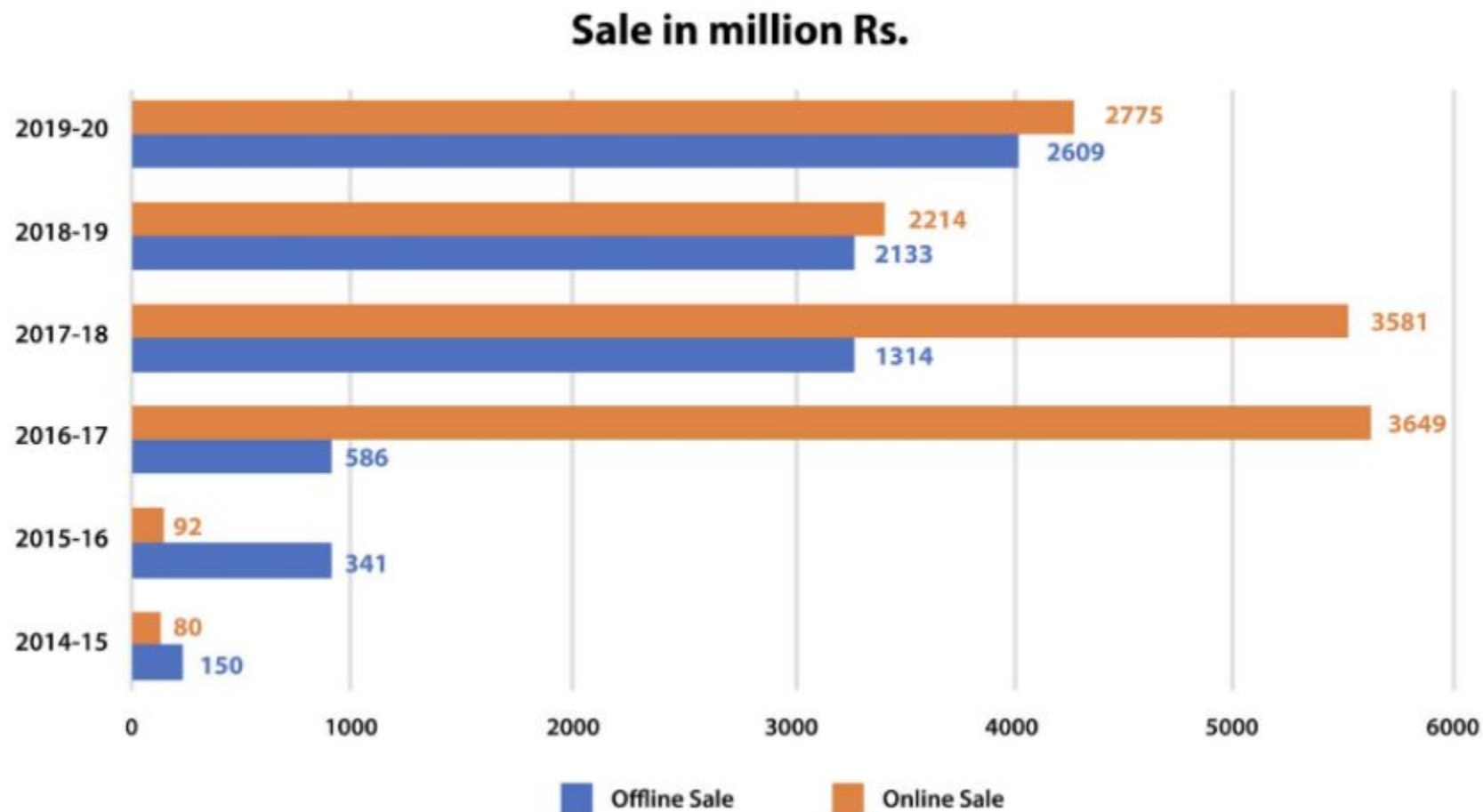


# BAR GRAPHS, COLUMN GRAPHS, VENN DIAGRAMS

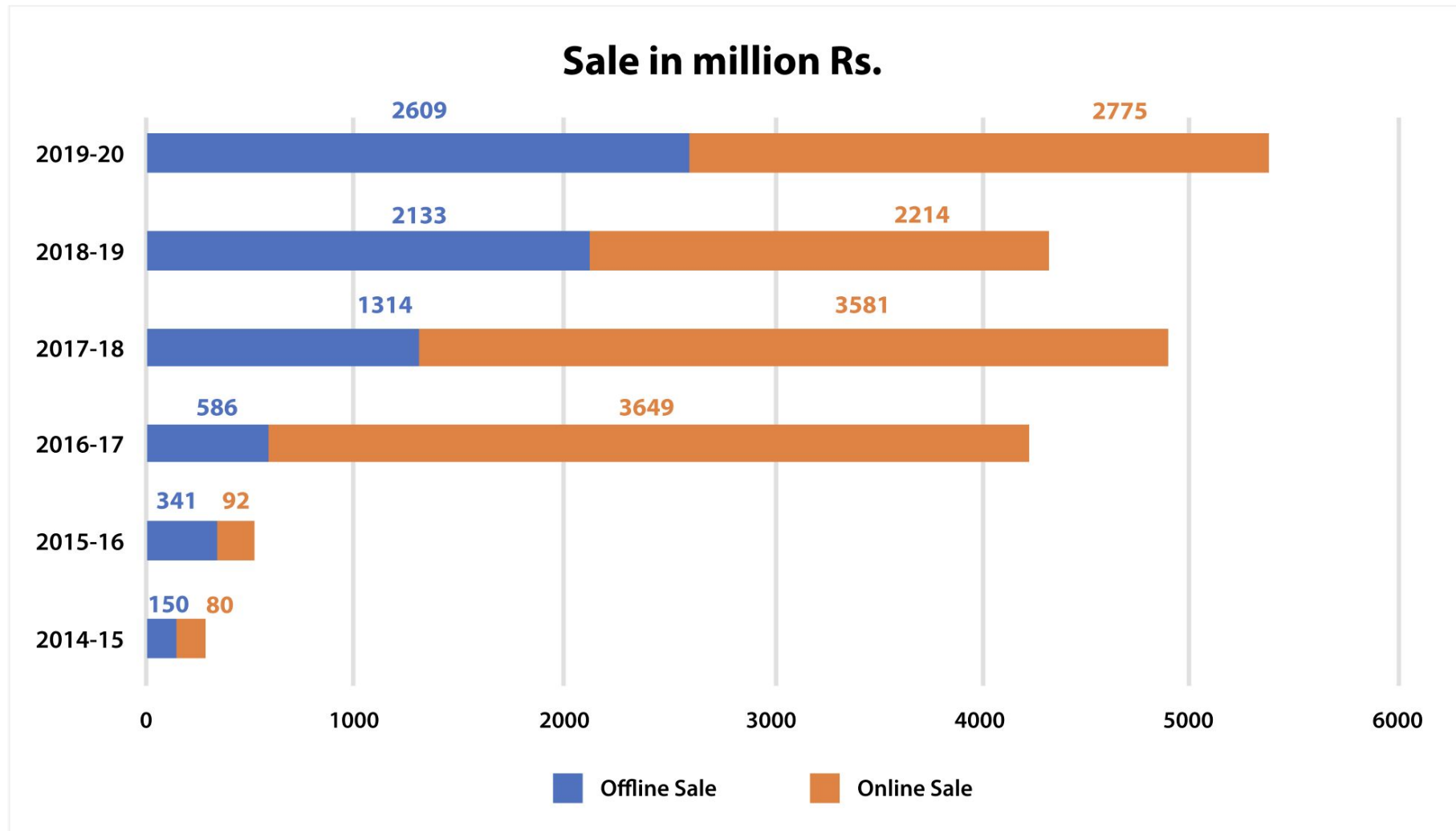
**Relevel**  
by Unacademy



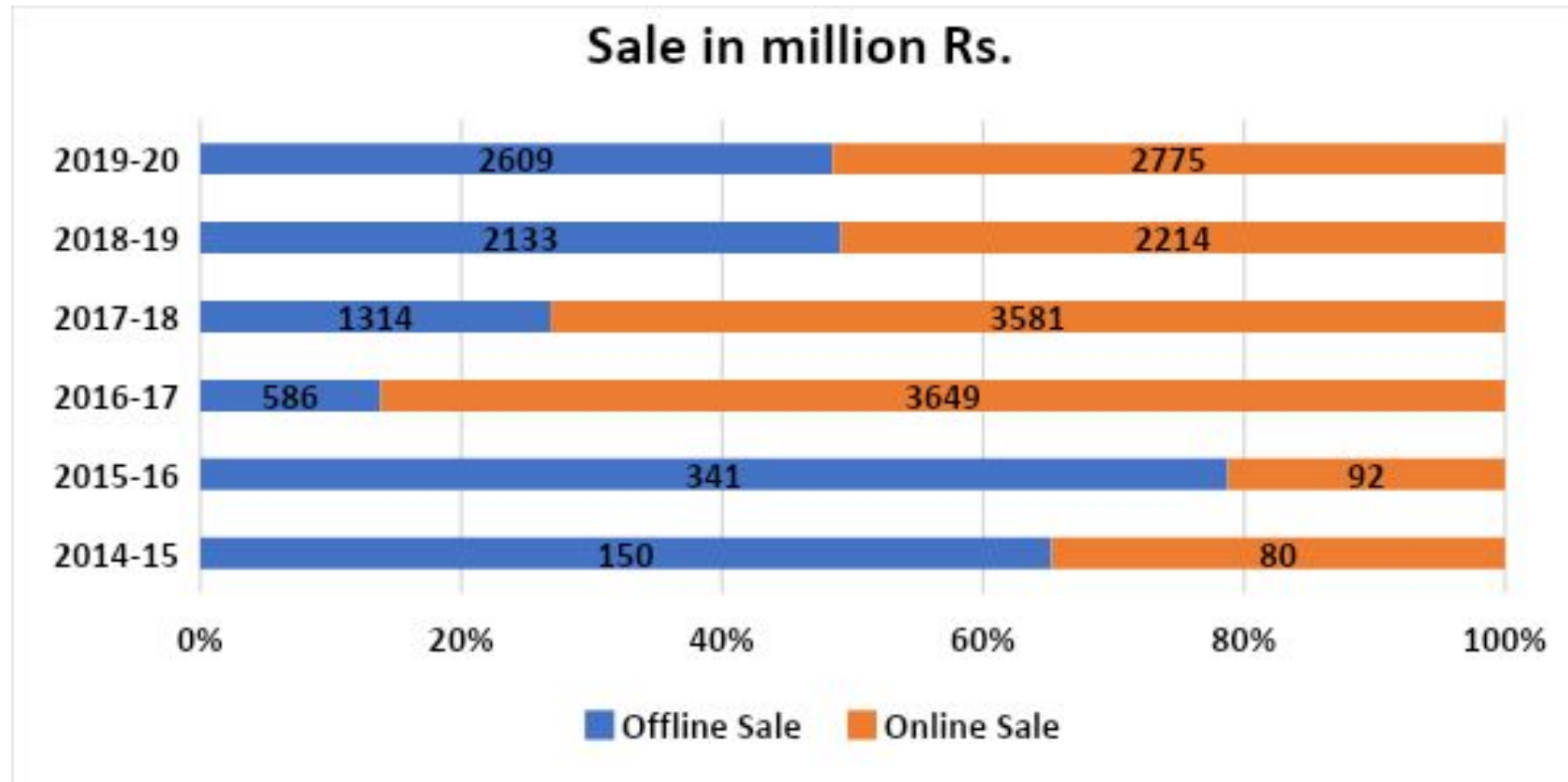
## CLUSTERED BAR GRAPH



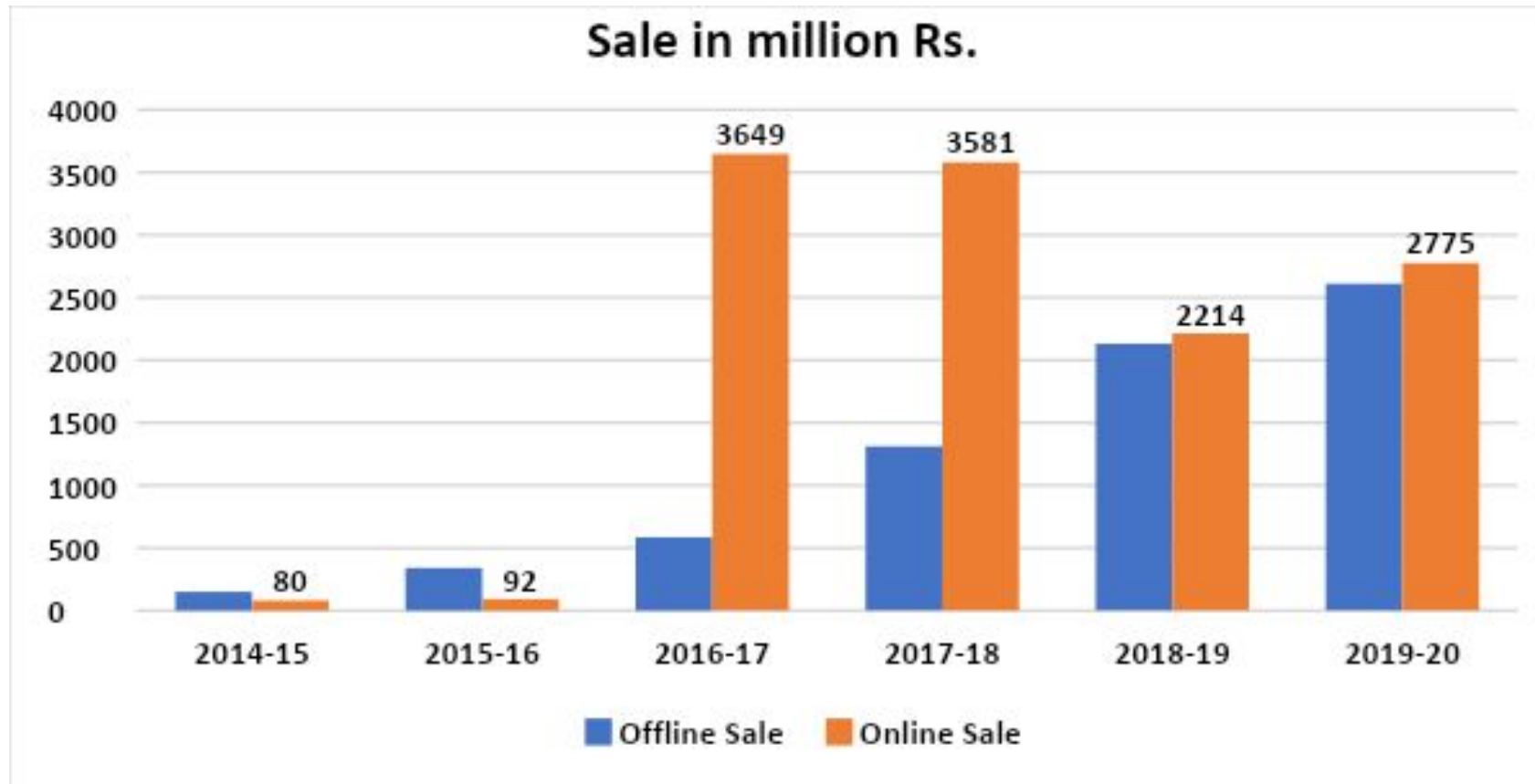
## STACKED BAR GRAPH



## 100% STACKED BAR GRAPH



## COLUMN BAR GRAPH



# AVERAGES

Find the average of the following sets of numbers:

i) 123, 127, 129, 118, 117

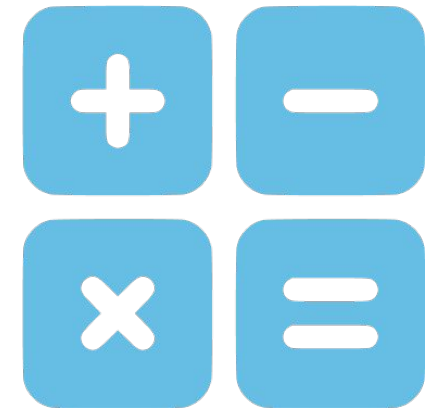
**Method of Deviation:** Let's assume an average close to the numbers and find out their deviations. Let's take 120, So deviations are +3, +7, +9, -2, -3. Now find the mean of the deviations and add to 120.

ii) 81.3, 76.4, 89.2, 82.7, 90.1

Assumed mean: 80

Mean of deviations =  $(1.3 - 3.6 + 9.2 + 2.7 + 10.15)/5 = 19.7/5 = 3.94$

Hence average is  $80 + 3.94 = 83.94$



# AVERAGES

Find the average of the following sets of numbers:

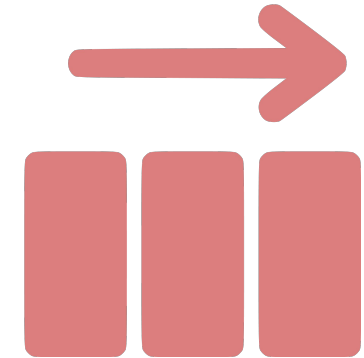
iii) If the average of 25, 18, 27, 32, and  $x$  is 26, find  $x$

Since the average is 26, the net deviation should be 0

The deviations are  $-1, -8, +1, +6$ .

Since 2 must be the deviation to make the overall deviation 0, the last term is  $26 + 2 = 28$

Hence  $x = 28$



## AVERAGES- EXERCISE (FIND THE MISSING NUMBERS)

	Language 1	Language 2	Science	Maths	Social Science	Average
<b>Radhika</b>	75	67	93	88	78	??
<b>Umesh</b>	81	??	86	89	71	79.8
<b>Tarak</b>	72	69	??	93	81	82
<b>Viraj</b>	67	71	79	85	??	73.4
<b>Sanjay</b>	??	74	83	78	78	80.8
<b>Wyomkesh</b>	78	81	69	??	75	??
<b>Younus</b>	??	67	84	81	69	76.6

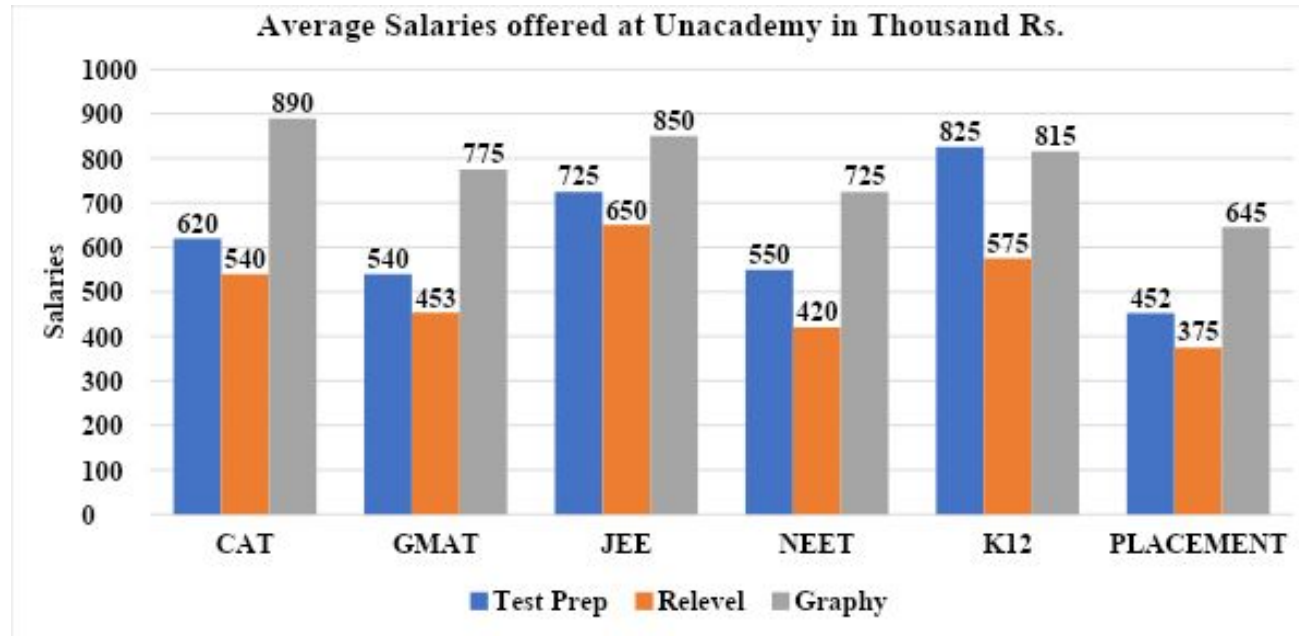


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Viraj	67	71	79	85	65	73.4
Sanjay	91	74	83	78	78	80.8
Wyomkesh	78	81	69	cbd	75	cbd
Younus	82	67	84	81	69	76.6

## DATA SET I

At Unacademy, employees can join in one of the three categories – Test Prep, Relevel and Graphy. The column graph below gives the average salaries offered to the employees of all the six verticals – CAT, GMAT, JEE, NEET, K12, and PLACEMENT in 2020. Employees of any vertical can be from one of the three categories mentioned. All the questions given below are based on the data for the year 2020 only.

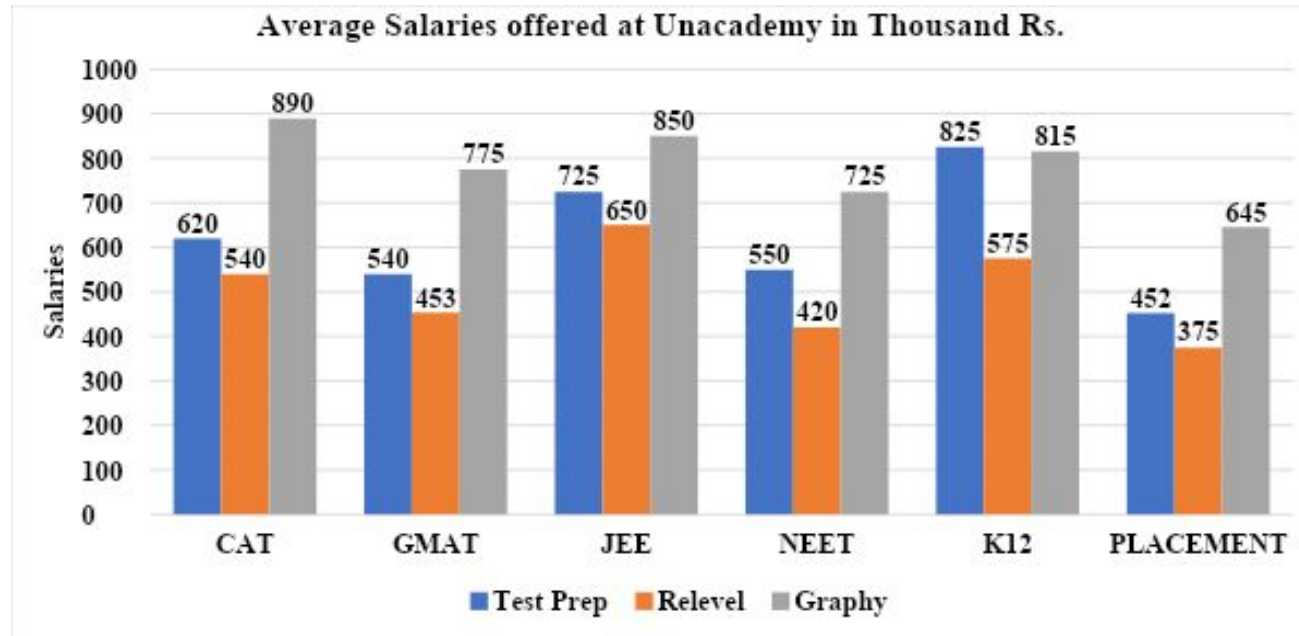


1. What is the average salary offered to a Test Prep employee of CAT, GMAT and NEET?

- (a) Rs. 570000      (b) Rs. 580000      (c) Rs. 560000  
(d) Rs. 590000      (e) Cannot be determined

## DATA SET I

At Unacademy, employees can join in one of the three categories – Test Prep, Relevel and Graphy. The column graph below gives the average salaries offered to the employees of all the six verticals – CAT, GMAT, JEE, NEET, K12, and PLACEMENT in 2020. Employees of any vertical can be from one of the three categories mentioned. All the questions given below are based on the data for the year 2020 only.

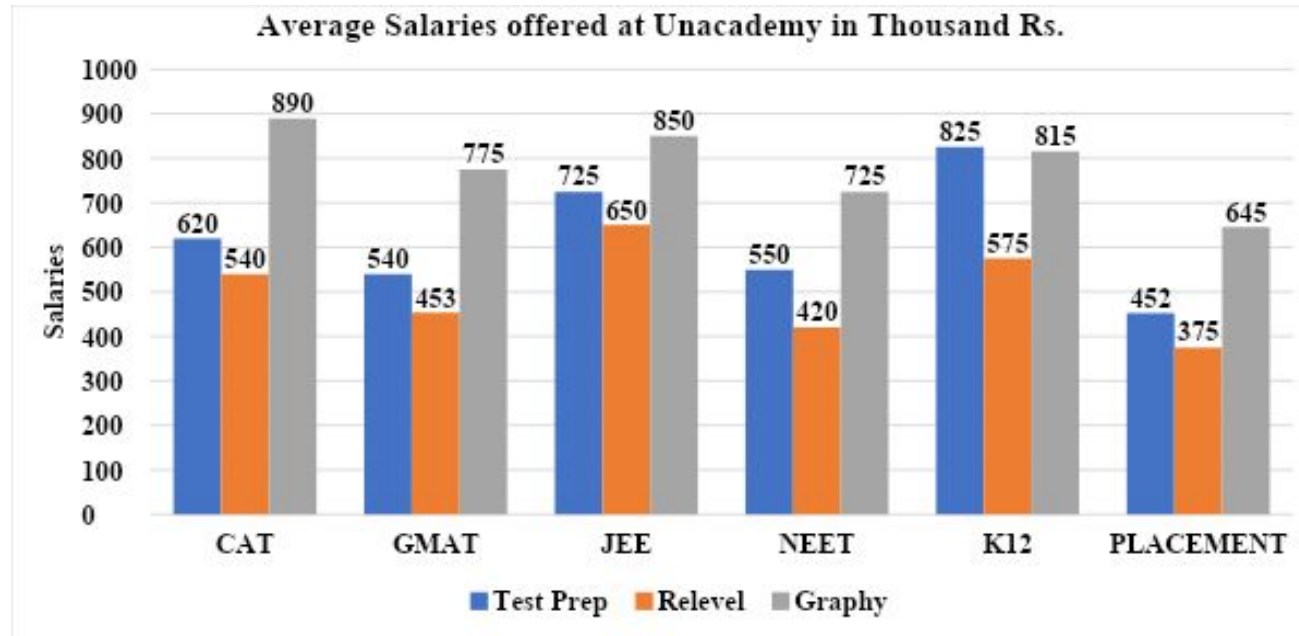


2. Out of a total of 150 employees in NEET, 60 are from Test Prep, 40 from Relevel, and the rest from Graphy. What is the average salary offered to an employee of NEET?

- (a) Rs. 747000      (b) Rs. 553000      (c) Rs. 574000  
(d) Rs. 675000      (e) Cannot be determined

## DATA SET I

At Unacademy, employees can join in one of the three categories – Test Prep, Relevel and Graphy. The column graph below gives the average salaries offered to the employees of all the six verticals – CAT, GMAT, JEE, NEET, K12, and PLACEMENT in 2020. Employees of any vertical can be from one of the three categories mentioned. All the questions given below are based on the data for the year 2020 only.

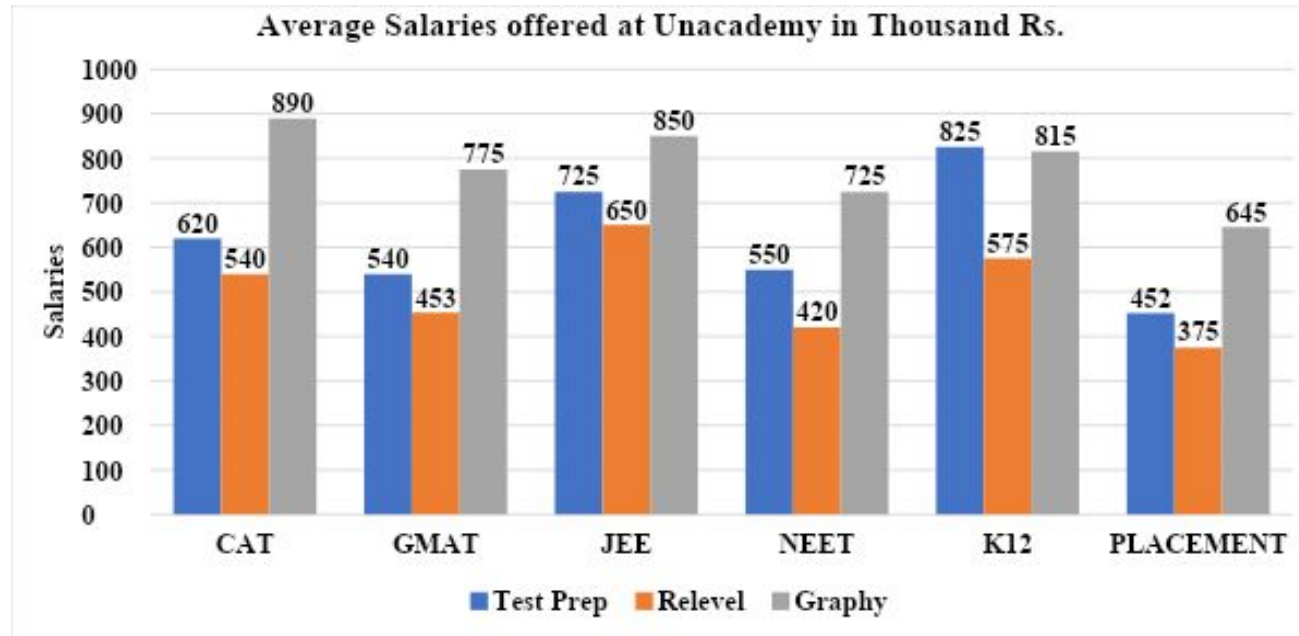


3. There are 60 employees in K12, out of which 25 are from Test Prep, 15 from Relevel and 20 from Graphy. What is the difference in the average salaries offered to employees of NEET and K12? (Use data from Ques. 2)

- (a) Rs. 185000      (b) Rs. 206000      (c) Rs. 120000  
(d) Rs. 312000      (e) Cannot be determined

## DATA SET I

At Unacademy, employees can join in one of the three categories – Test Prep, Relevel and Graphy. The column graph below gives the average salaries offered to the employees of all the six verticals – CAT, GMAT, JEE, NEET, K12, and PLACEMENT in 2020. Employees of any vertical can be from one of the three categories mentioned. All the questions given below are based on the data for the year 2020 only.

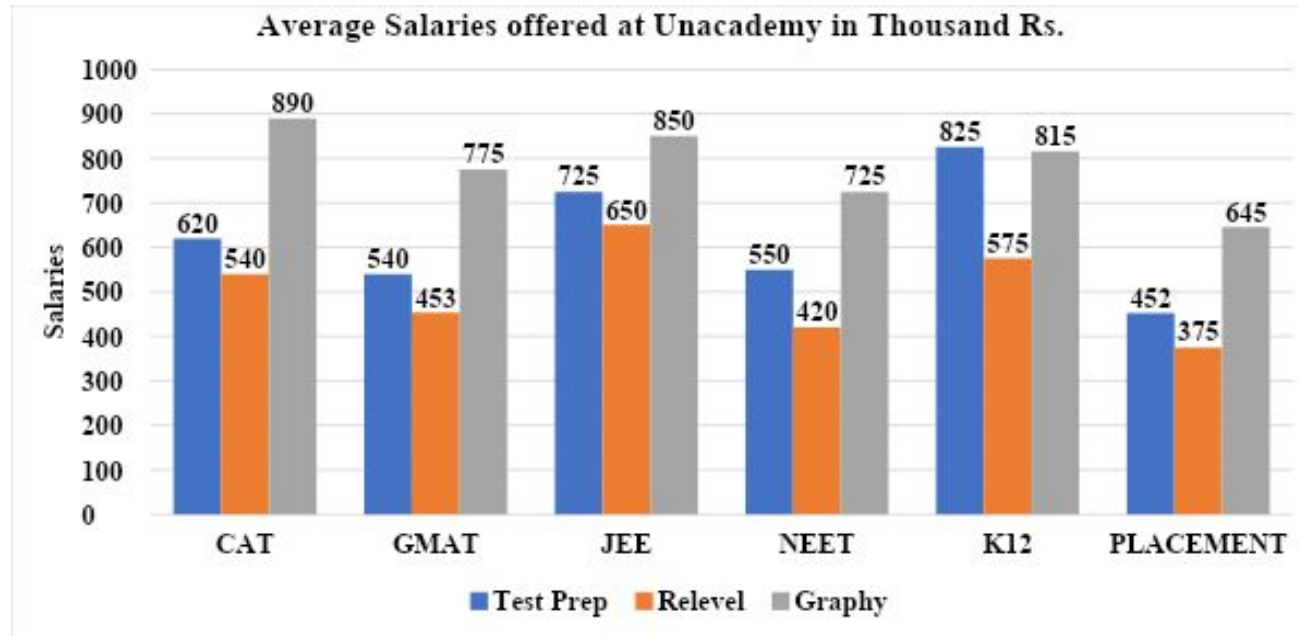


4. In GMAT, 50 employees are from Test Prep, 45 from Relevel and 110 from Graphy. What is the average salary offered to a GMAT employee?

- (a) Rs. 540000      (b) Rs. 647000      (c) Rs. 778000  
(d) Rs. 605000      (e) Rs. 575000

## DATA SET I

At Unacademy, employees can join in one of the three categories – Test Prep, Relevel and Graphy. The column graph below gives the average salaries offered to the employees of all the six verticals – CAT, GMAT, JEE, NEET, K12, and PLACEMENT in 2020. Employees of any vertical can be from one of the three categories mentioned. All the questions given below are based on the data for the year 2020 only.

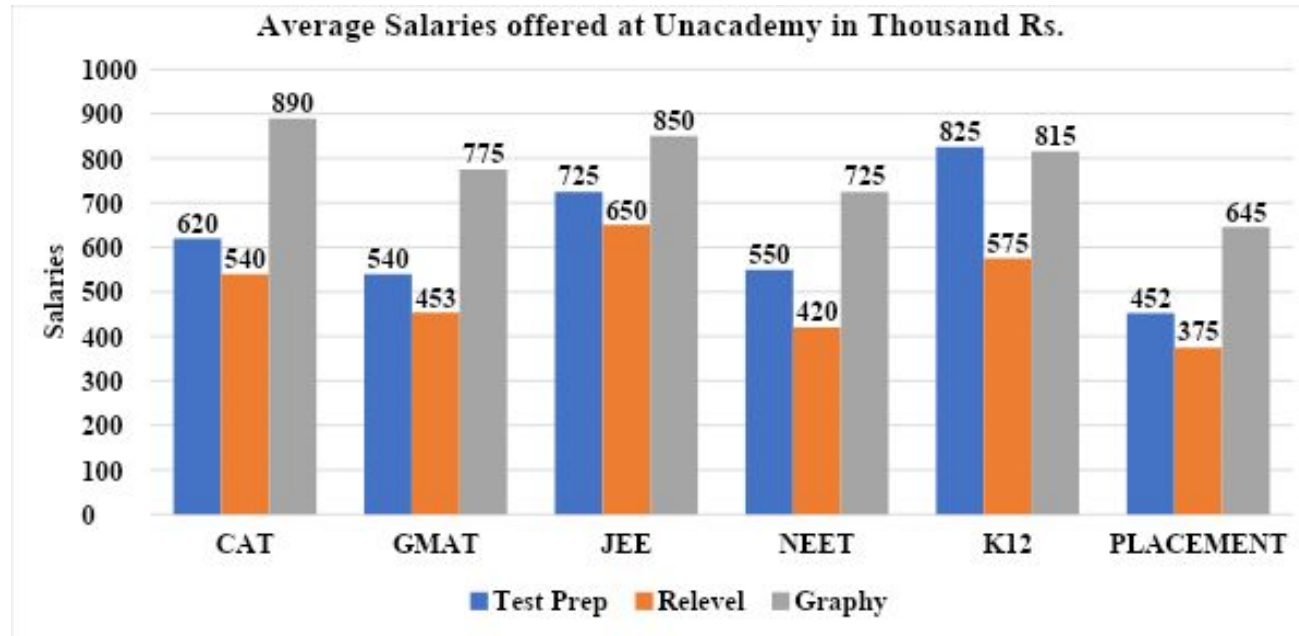


5. If the number of employees in GMAT from Test Prep increases to 100 (use data from question 4), what would be the average salary offered to a GMAT employee?

- (a) Rs. 650000      (b) Rs. 647000      (c) Rs. 678000  
(d) Rs. 626000      (e) Rs. 665000

## DATA SET I

At Unacademy, employees can join in one of the three categories – Test Prep, Relevel and Graphy. The column graph below gives the average salaries offered to the employees of all the six verticals – CAT, GMAT, JEE, NEET, K12, and PLACEMENT in 2020. Employees of any vertical can be from one of the three categories mentioned. All the questions given below are based on the data for the year 2020 only.

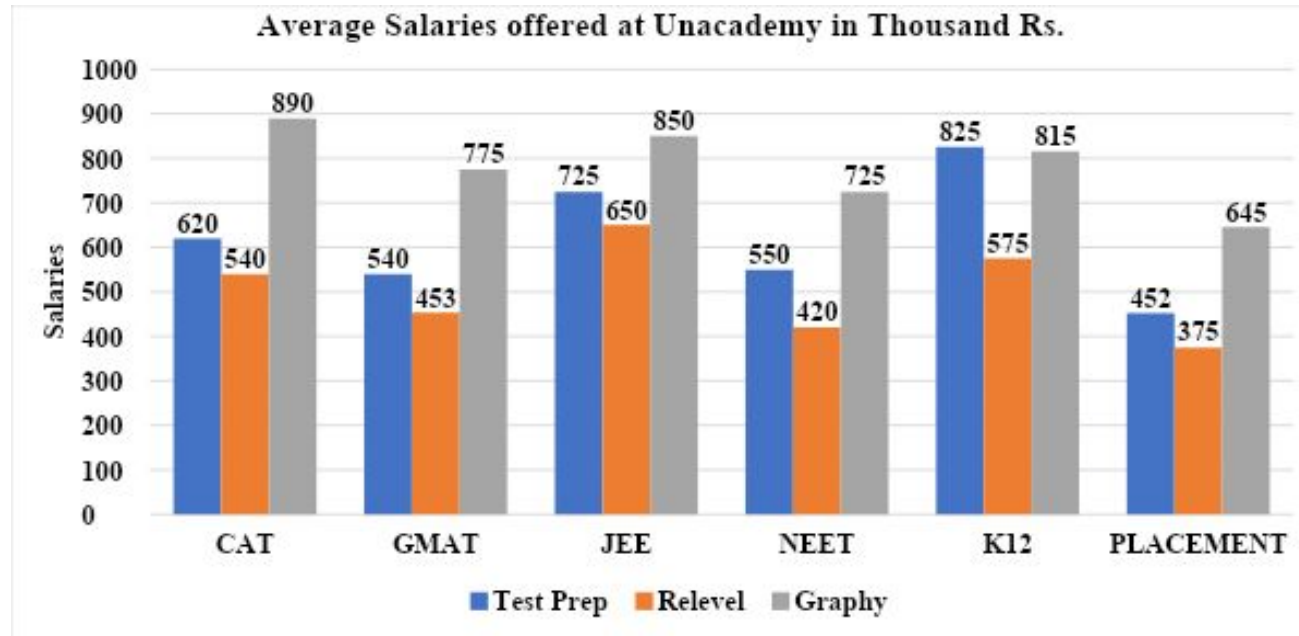


6. If the number of employees in GMAT from Graphy increases to 150 (use data from question 4), then what would be the average salary offered to a GMAT employee?

- (a) Rs. 650000      (b) Rs. 637000      (c) Rs. 668000  
(d) Rs. 635000      (e) Rs. 655000

## DATA SET I

At Unacademy, employees can join in one of the three categories – Test Prep, Relevel and Graphy. The column graph below gives the average salaries offered to the employees of all the six verticals – CAT, GMAT, JEE, NEET, K12, and PLACEMENT in 2020. Employees of any vertical can be from one of the three categories mentioned. All the questions given below are based on the data for the year 2020 only.



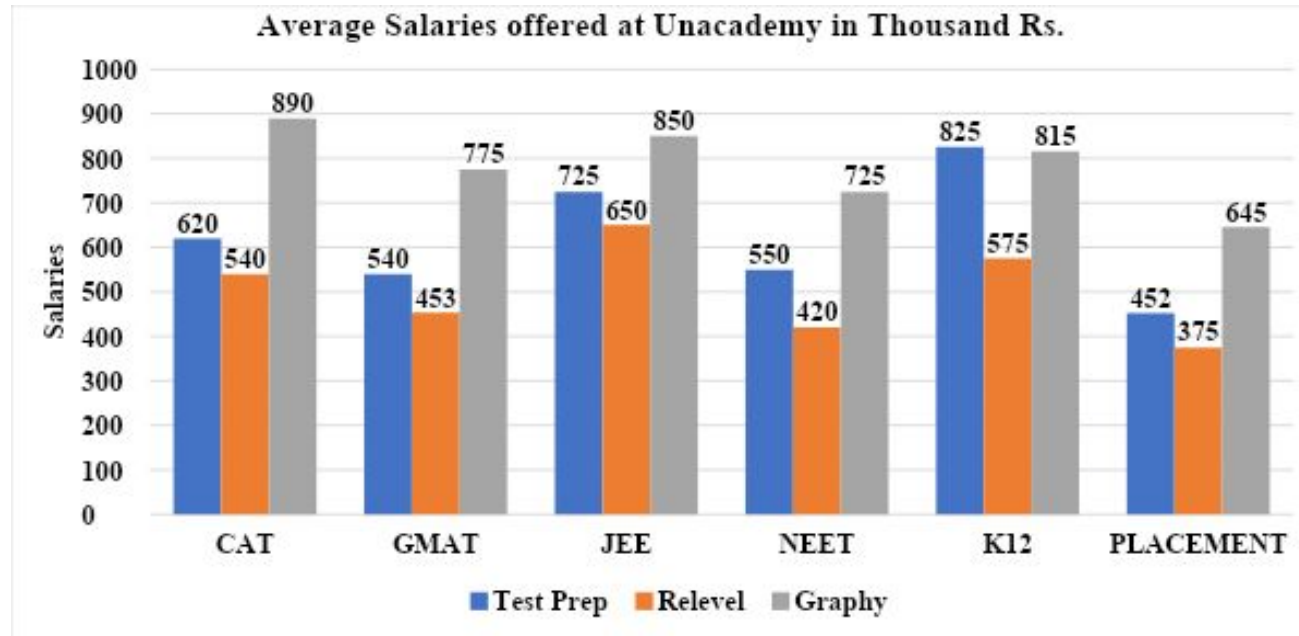
7. The number of Test Prep employees is 90 in CAT, 50 in GMAT, and 45 in JEE. What is the average salary offered to a Test Prep employee from one of these three verticals?

- (a) Rs. 615000      (b) Rs. 647000      (c) Rs. 624000  
(d) Rs. 635000      (e) Rs. 637000



## DATA SET I

At Unacademy, employees can join in one of the three categories – Test Prep, Relevel and Graphy. The column graph below gives the average salaries offered to the employees of all the six verticals – CAT, GMAT, JEE, NEET, K12, and PLACEMENT in 2020. Employees of any vertical can be from one of the three categories mentioned. All the questions given below are based on the data for the year 2020 only.



8. If in JEE, 500 employees are from Graphy out of which 200 got an appraisal and their new average salary becomes Rs. 1000000, what will be the average salary of the remaining employees?

- (a) Rs. 74000      (b) Rs. 750000      (c) Rs. 778000  
(d) Rs. 800000      (e) None of these

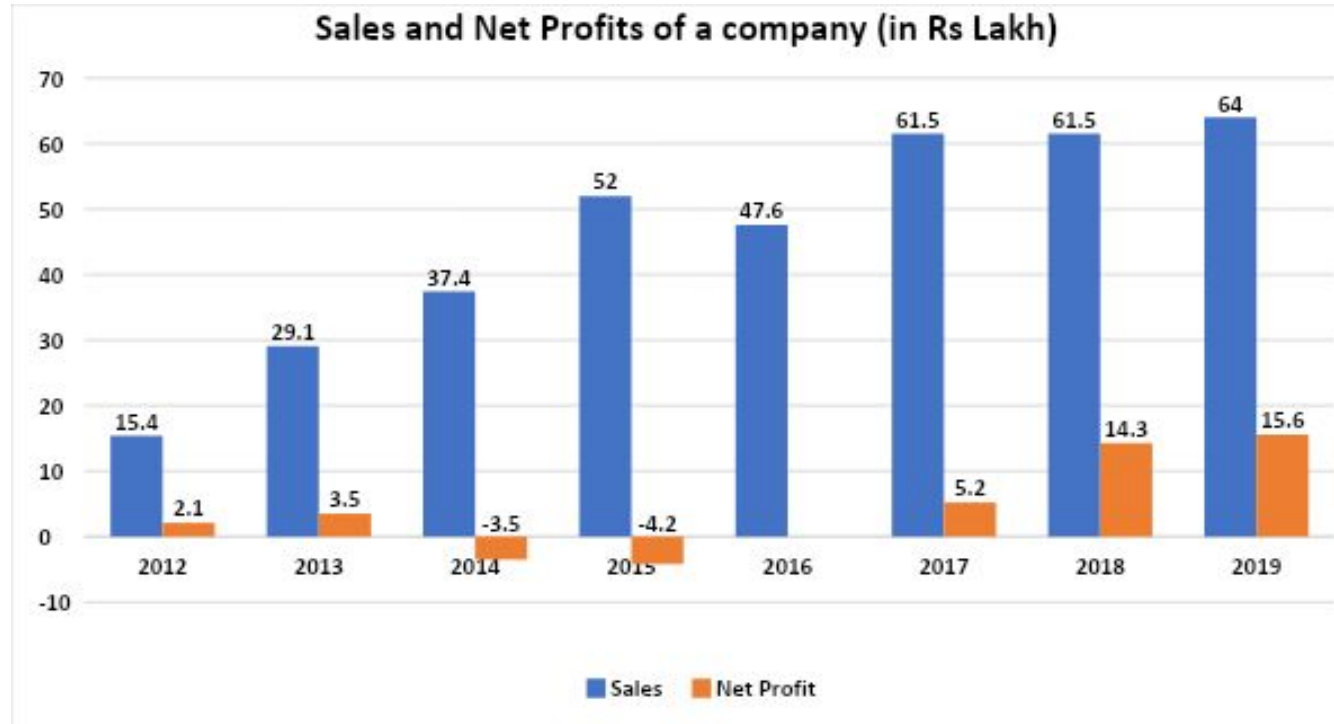
## DATA SET I (ANSWERS)

1. E
2. C
3. A
4. B
5. D
6. C
7. C
8. B



## DATA SET II

The following Bar chart gives the details of the Sales and Net Profits of a company. Read the given data carefully and answer the following questions that follow.

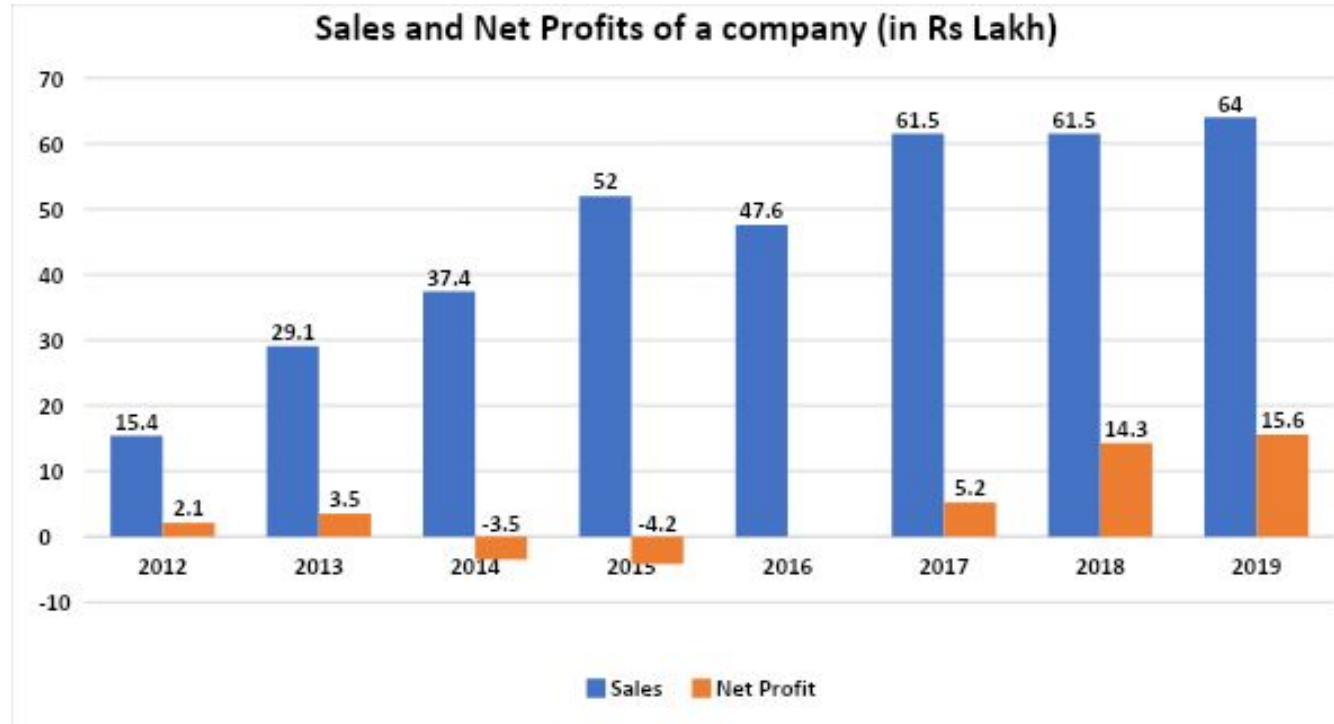


1. Which was the year in which the sales revenue registered the highest percentage growth compared to that of the previous year?

- (a) 2013
- (b) 2015
- (c) 2017
- (d) 2019

## DATA SET II

The following Bar chart gives the details of the Sales and Net Profits of a company. Read the given data carefully and answer the following questions that follow.

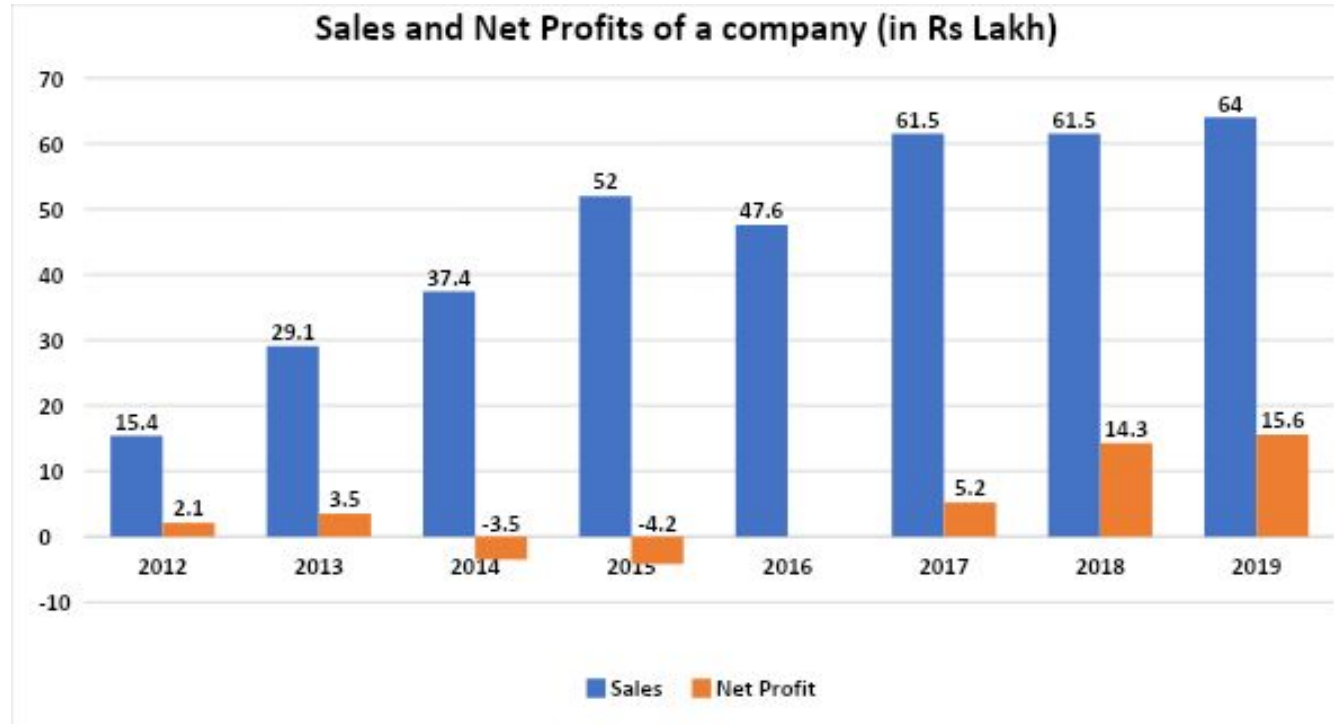


2. What was the cumulative net profit of the first five years for which particulars are shown?

- (a) 2.2 Lakh
- (b) -1.2 Lakh
- (c) -1.8 Lakh
- (d) 3.2 Lakh

## DATA SET II

The following Bar chart gives the details of the Sales and Net Profits of a company. Read the given data carefully and answer the following questions that follow.

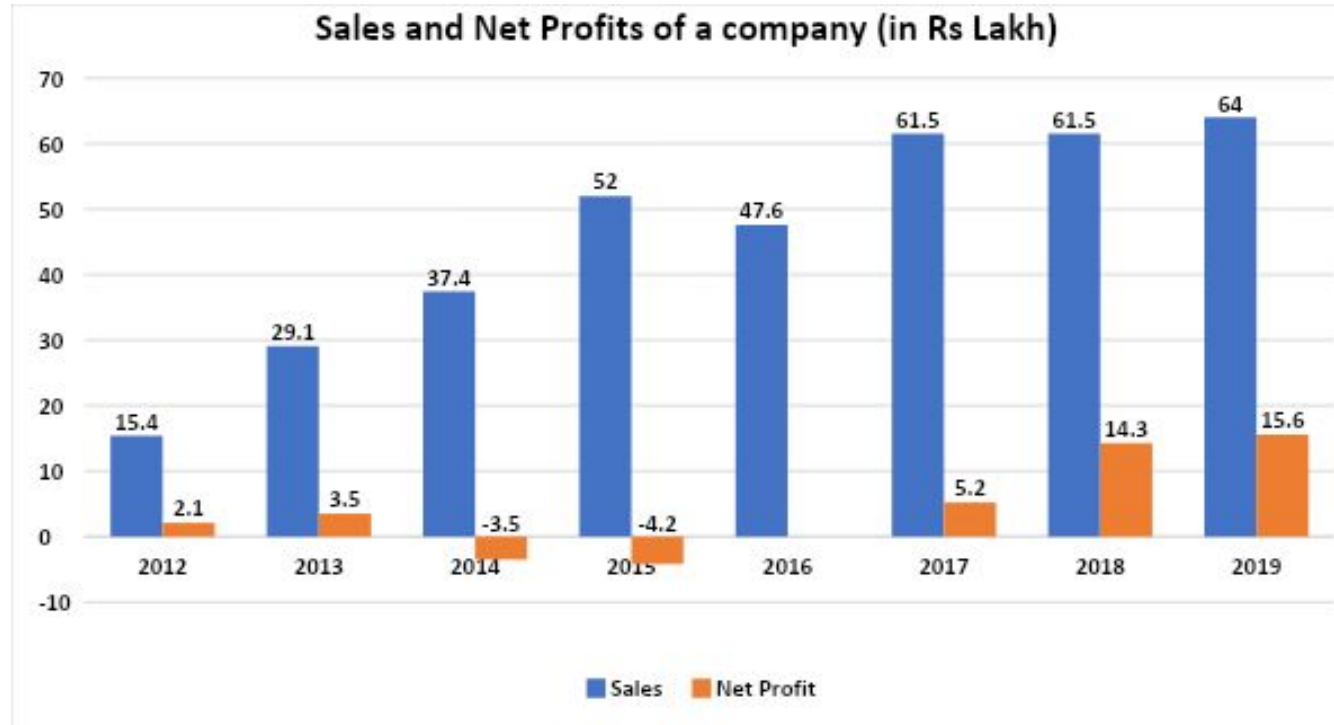


3. Which was the year in which the expenses of the company were the highest?

- (a) 2019
- (b) 2018
- (c) 2017
- (d) 2015

## DATA SET II

The following Bar chart gives the details of the Sales and Net Profits of a company. Read the given data carefully and answer the following questions that follow.

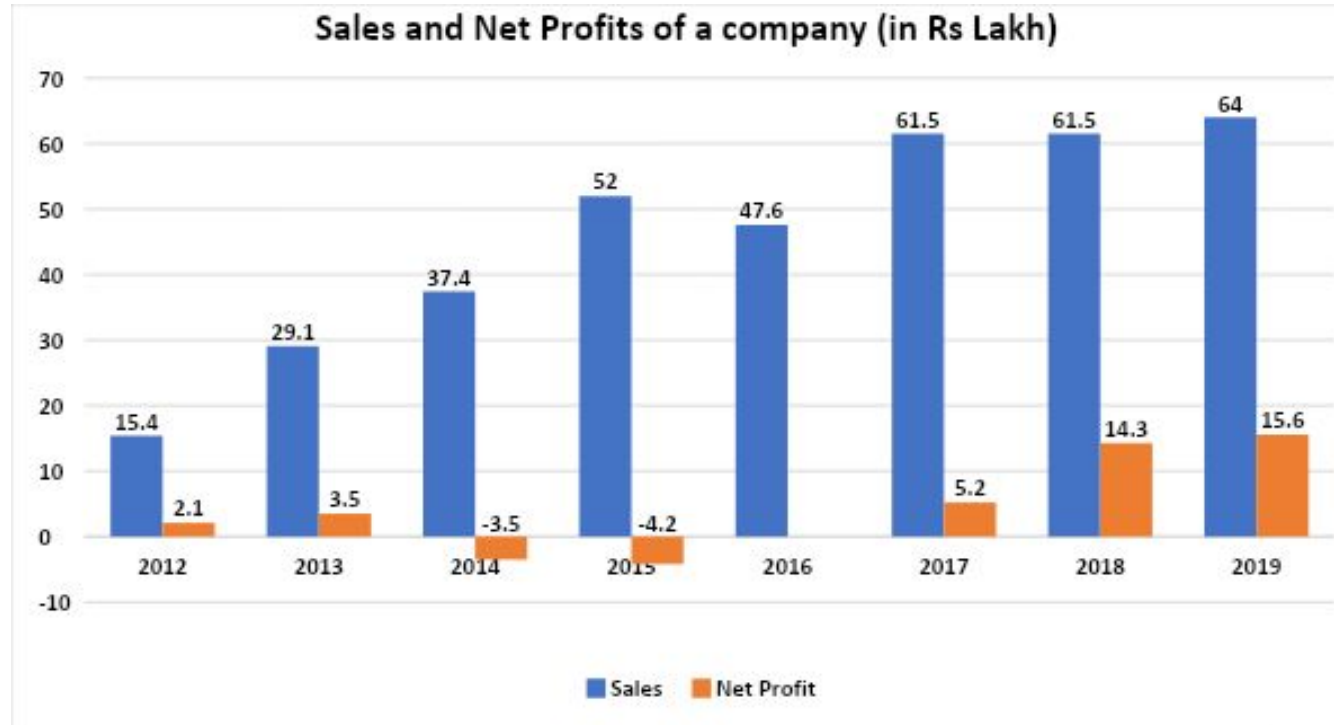


4. The trends of growth of sales revenue and net profit were the same for which of the two years?

- (a) 2013-14
- (b) 2014-15
- (c) 2015-16
- (d) 2017-18

## DATA SET II

The following Bar chart gives the details of the Sales and Net Profits of a company. Read the given data carefully and answer the following questions that follow.

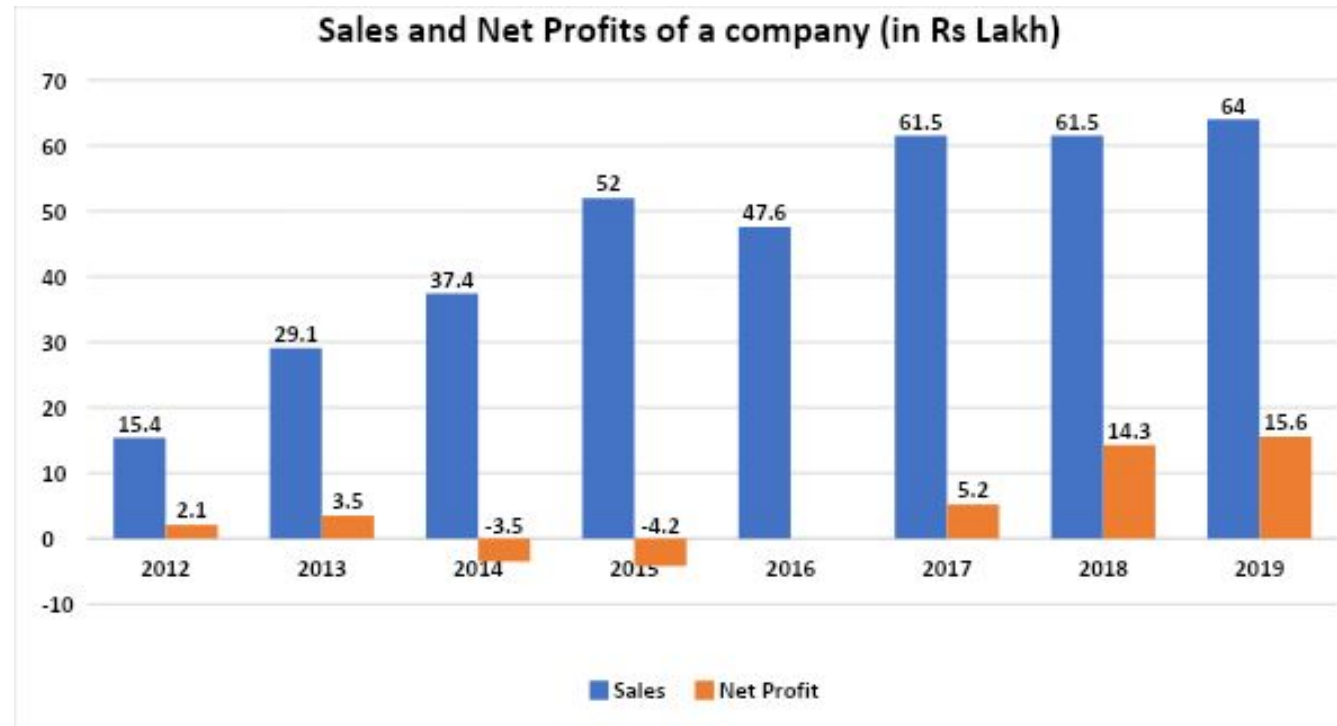


5. If a tax of 55% was paid on gross profit before the net profit was arrived at, what was the combined gross profit (in Lakh Rs) for the years 2018 and 2019?

- (a) 67
- (b) 62
- (c) 46
- (d) 38

## DATA SET II

The following Bar chart gives the details of the Sales and Net Profits of a company. Read the given data carefully and answer the following questions that follow.

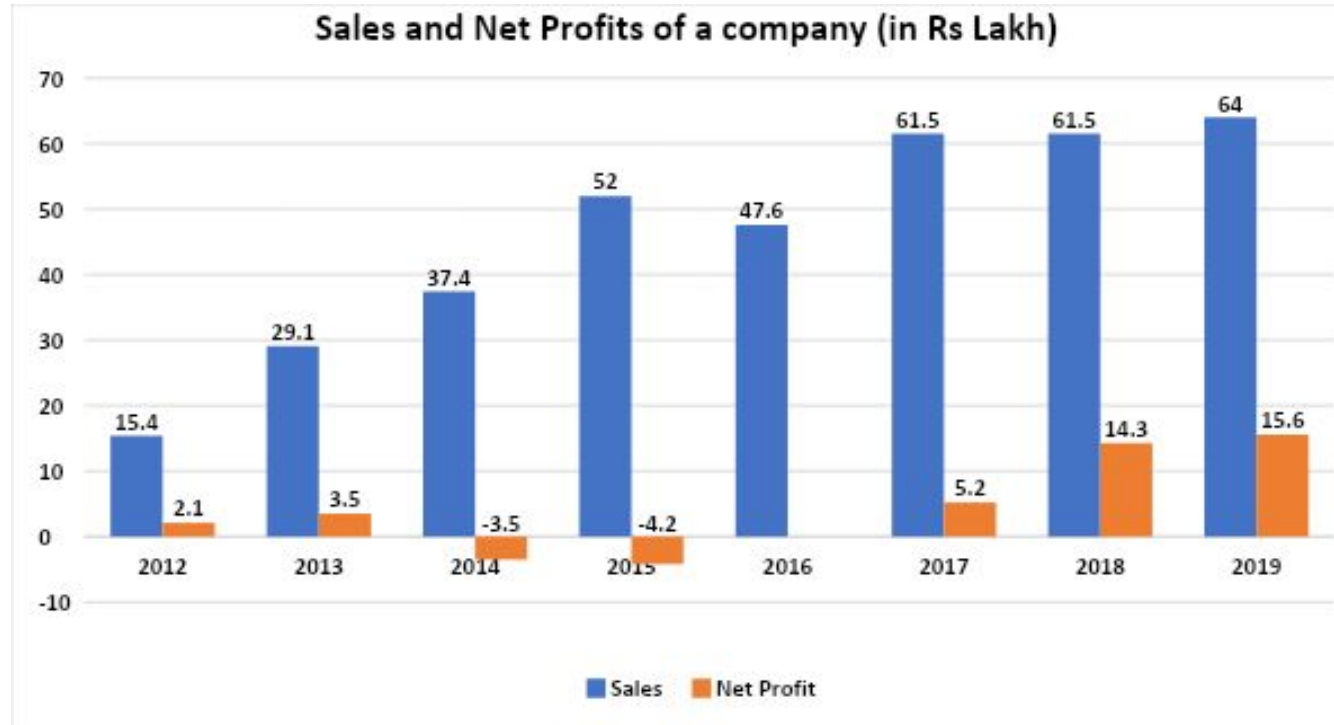


6. If the net profit in 2020 was 18% more than in 2019, and this was 20% of the sales turnover in that year, the sales turnover in 2020 was
- (a) 78 Lakh      (b) 84 Lakh  
(c) 102 Lakh      (d) 92 Lakh



## DATA SET II

The following Bar chart gives the details of the Sales and Net Profits of a company. Read the given data carefully and answer the following questions that follow.

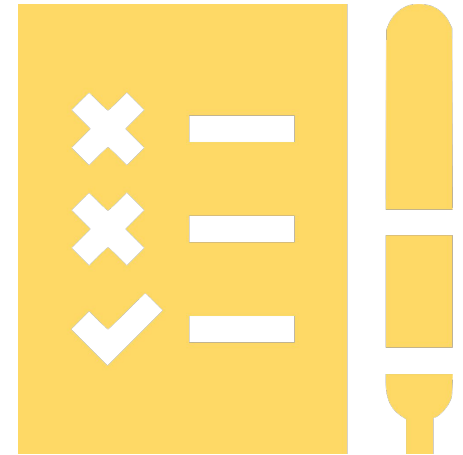


7. If, in the year 2019, the expenditure on advertisement was 2.5% of the sales turnover, what was its percentage on the net profit for that year?

- (a) 11.8%
- (b) 10.2%
- (c) 13.5%
- (d) 9.4%

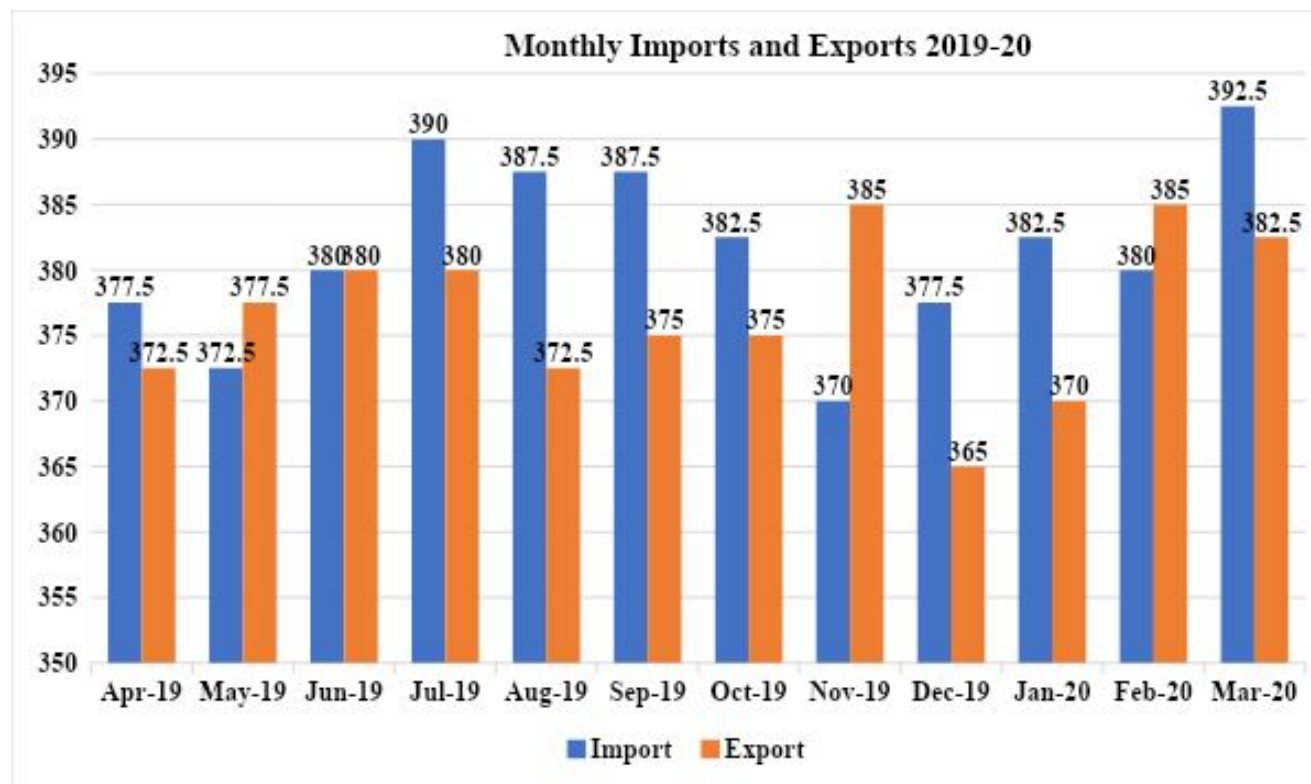
## DATA SET II (ANSWERS)

1. A
2. C
3. C
4. B
5. A
6. D
7. B



## DATA SET III

Answer the questions based on the Bar Chart:

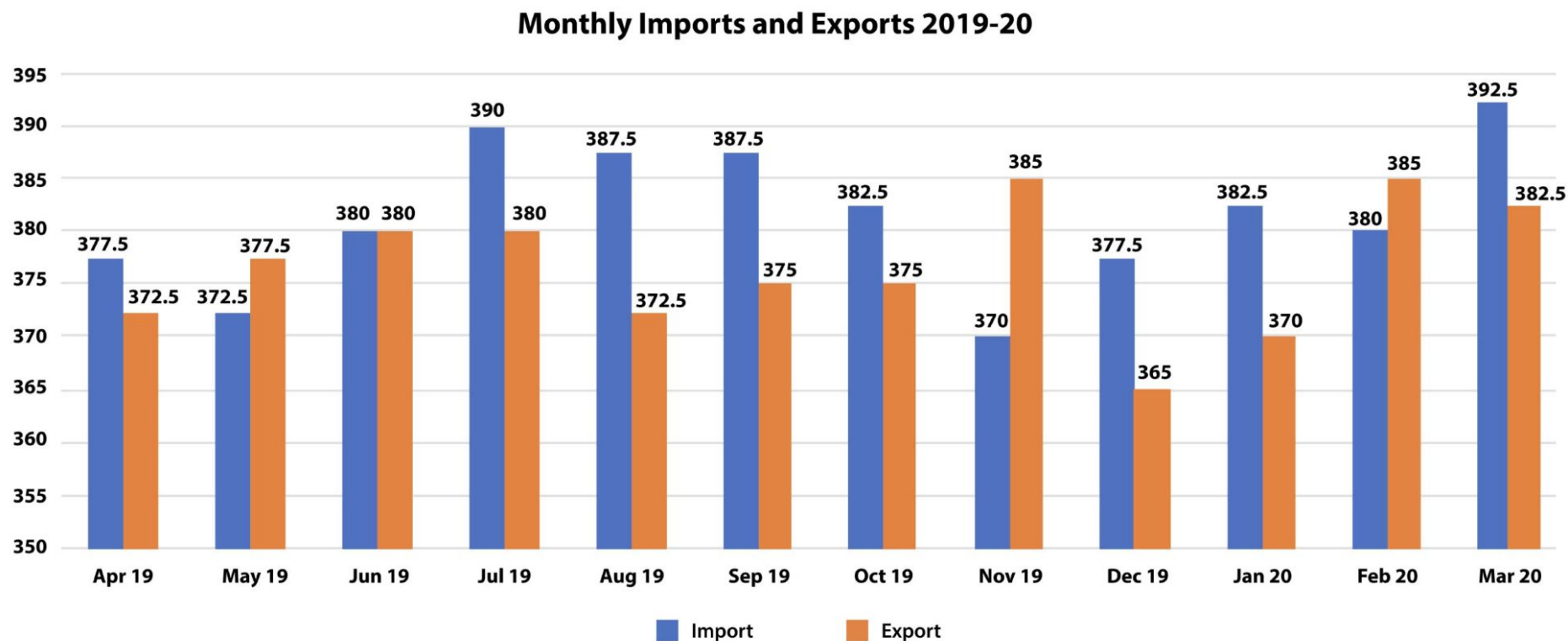


1. What was the total value of exports (in Rs million) during the period April- Sept 2019-20

- (a) Rs 1885      (b) Rs. 2632  
(c) Rs 2257.5      (d) Rs 2325

## DATA SET III

Answer the questions based on the Bar Chart:

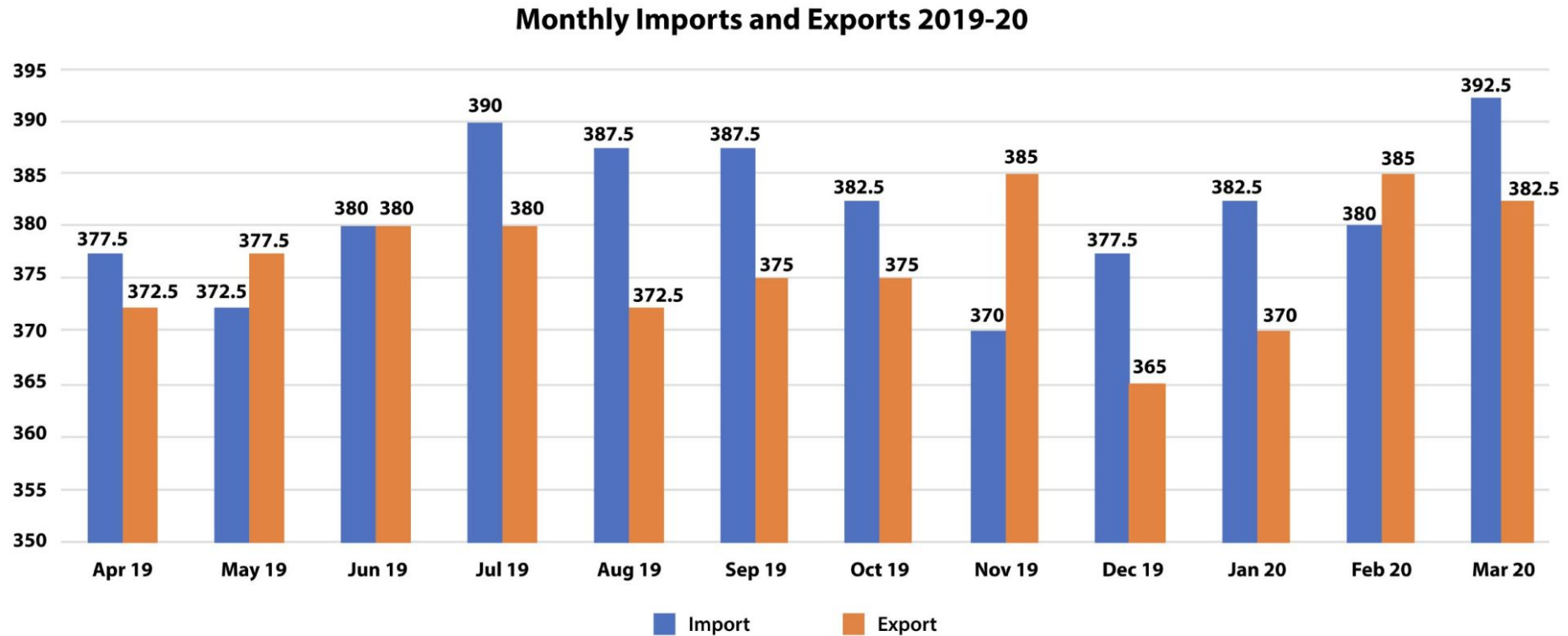


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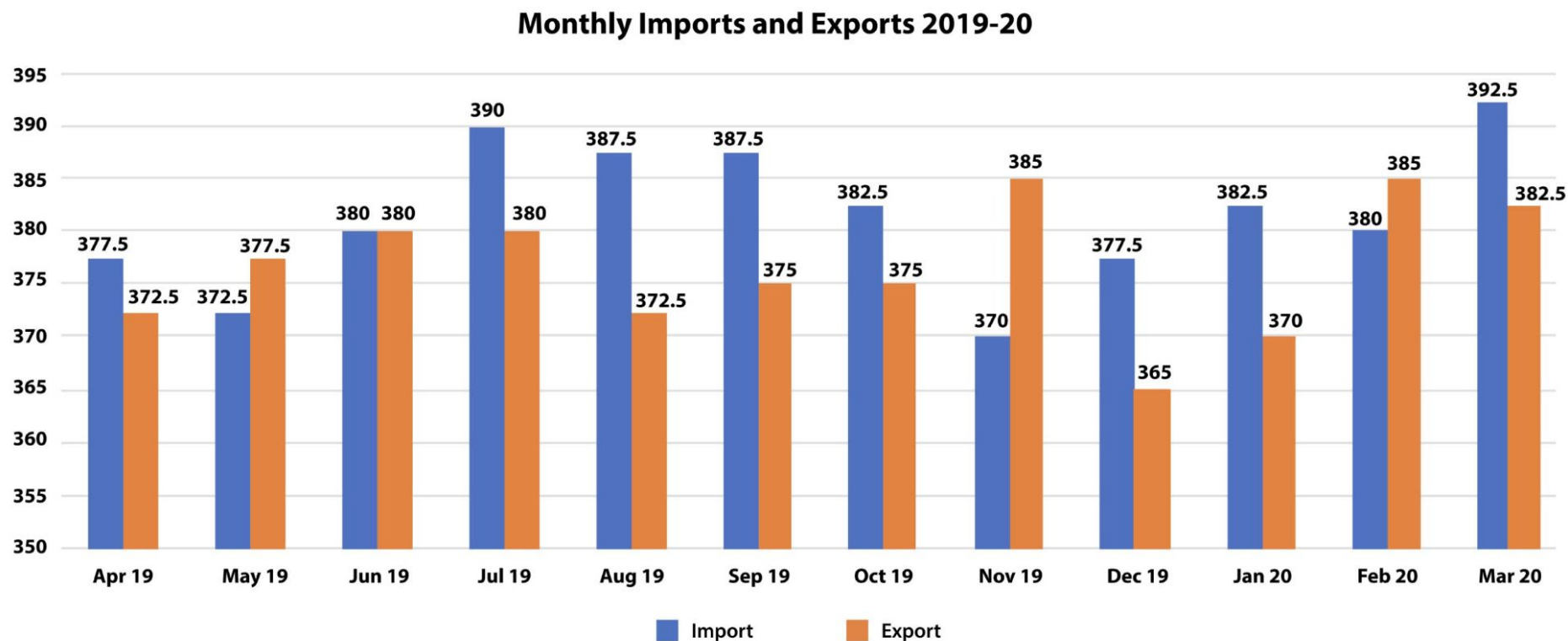


2. The gap between monthly imports and export was greatest in

- (a) Aug & Sept
- (b) Sept & Dec
- (c) Dec & Jan
- (d) Aug & Nov

## DATA SET III

Answer the questions based on the Bar Chart:

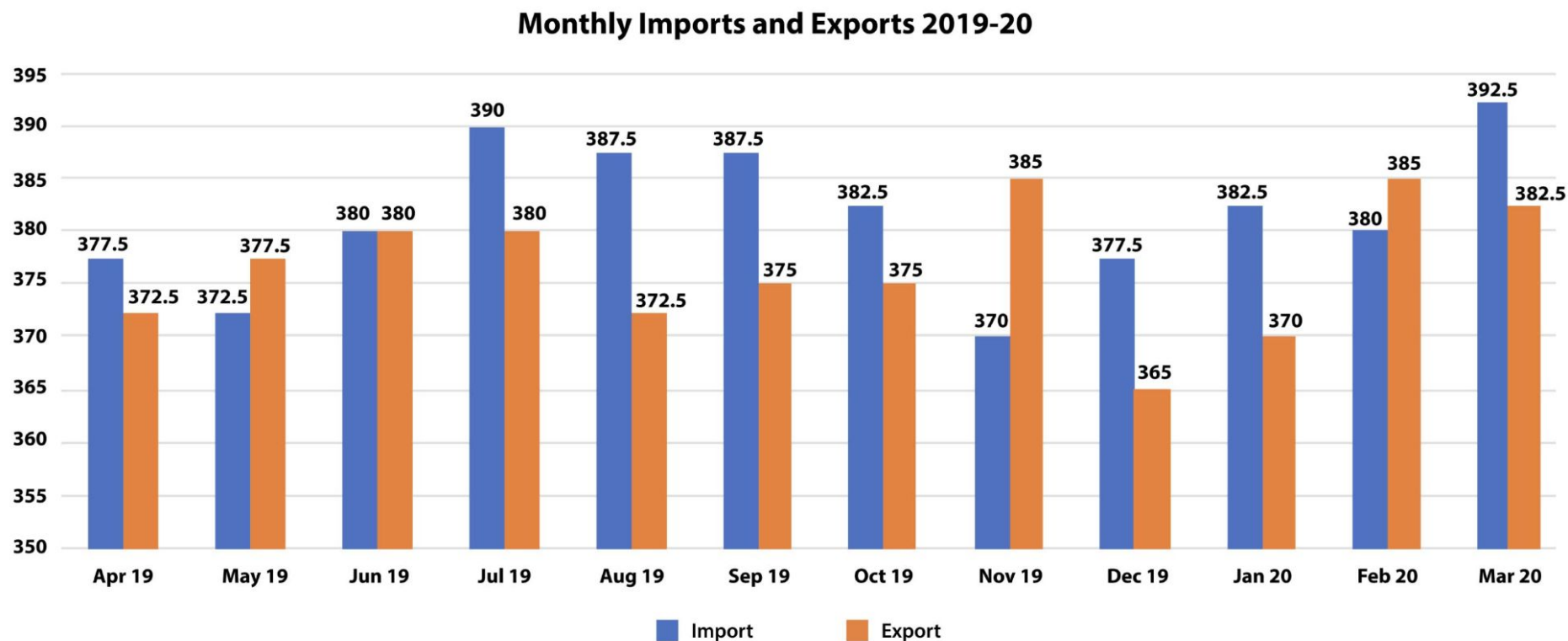


3. In the first three months of 2020, imports exceeded exports by (in Mn)

- (a) Rs 27.5
- (b) Rs 20
- (c) Rs 17.5
- (d) Rs 32.5

## DATA SET III

Answer the questions based on the Bar Chart:



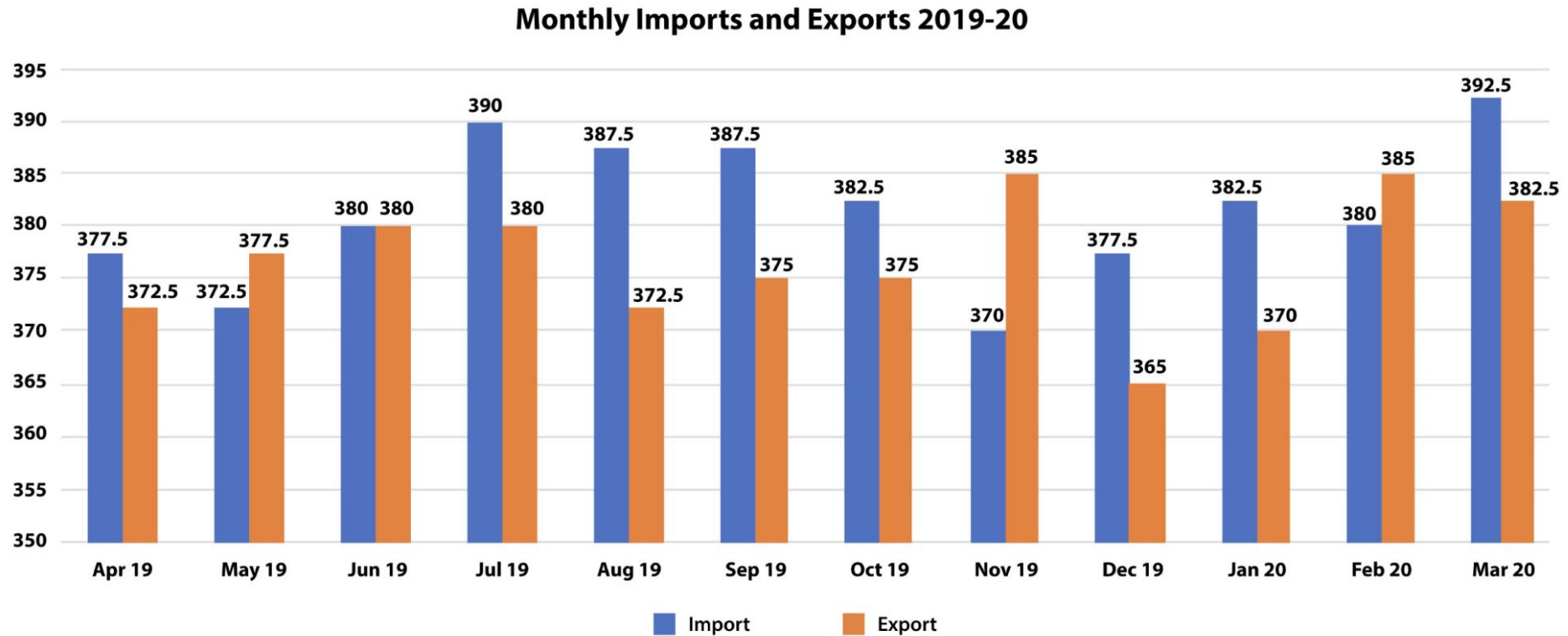
**4.** During the financial year 2019-20

- (a) Imports exceeded exports by Rs 100 million.
- (c) Exports exceeded imports by Rs 250 million.

- (b) Imports exceeded exports by Rs 60 million.
- (d) Exports and imports were of equal value.

## DATA SET III

Answer the questions based on the Bar Chart:



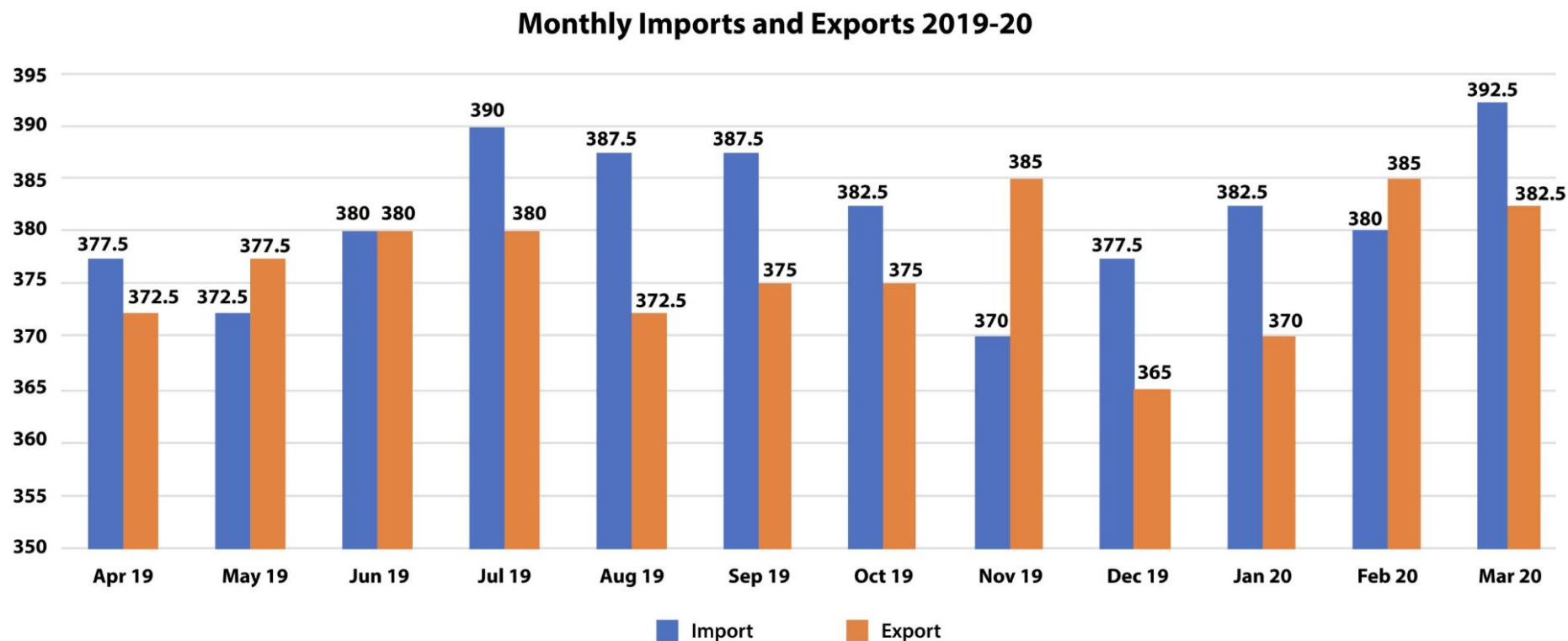
5. In how many months did the import exceed export?

- (a) 8
- (b) 3
- (c) 7
- (d) 5



## DATA SET III

Answer the questions based on the Bar Chart:

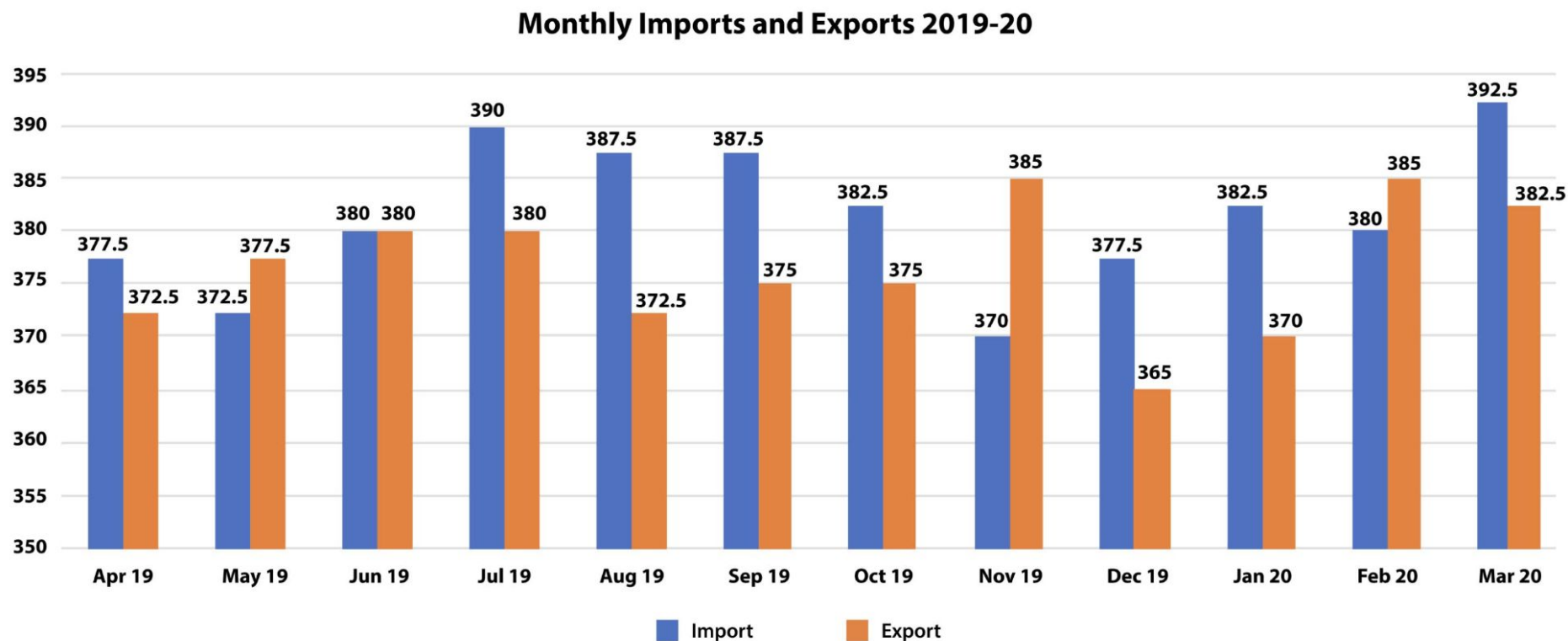


6. For the month when exports and imports were of equal value, the import bill was.....

- (a) Rs 760 million
- (b) Rs 377.5 million
- (c) Rs 380 million
- (d) Rs 387.5 million

## DATA SET III

Answer the questions based on the Bar Chart:

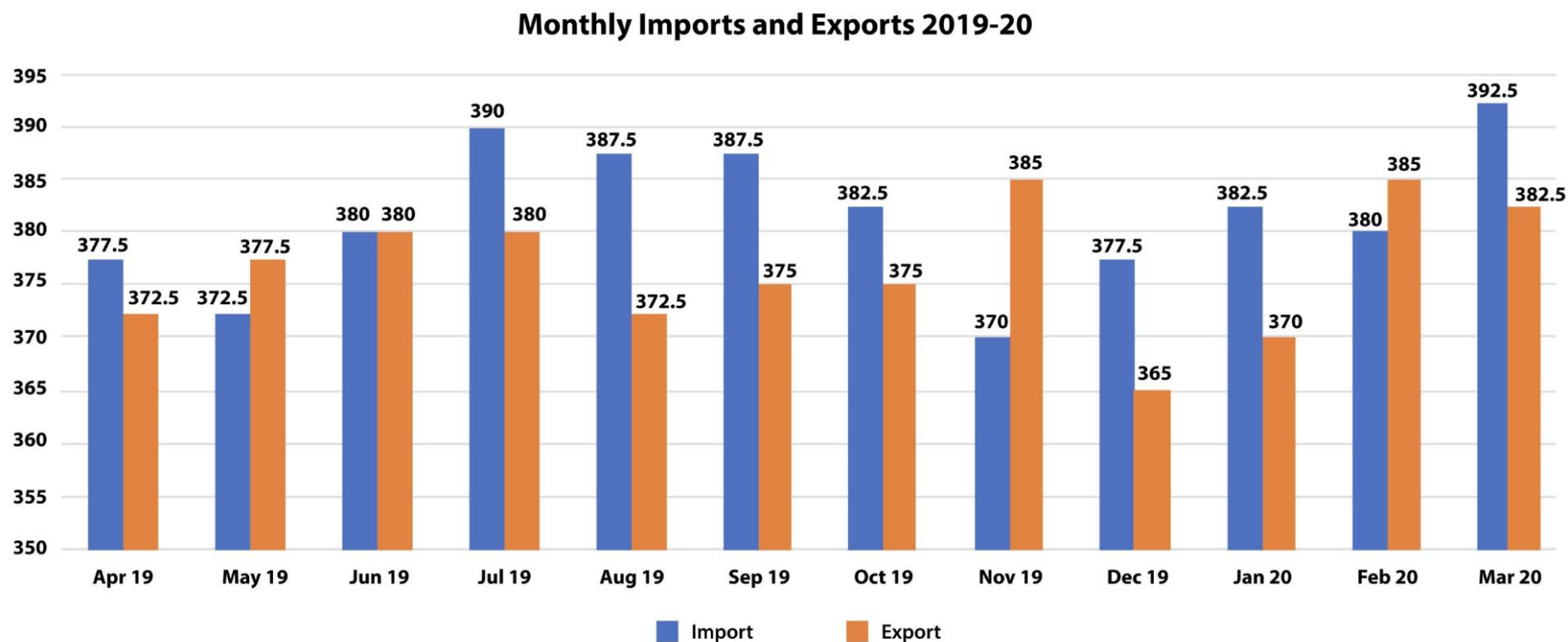


7. The three-month period during which import was greatest was

- (a) Jan-Mar
- (b) Aug-Oct
- (c) July-sept
- (d) May-July

## DATA SET III

Answer the questions based on the Bar Chart:



8. In which quarter of the financial year was the difference between import and export values the least?

- (a) First
- (b) Second
- (c) Third
- (d) Fourth

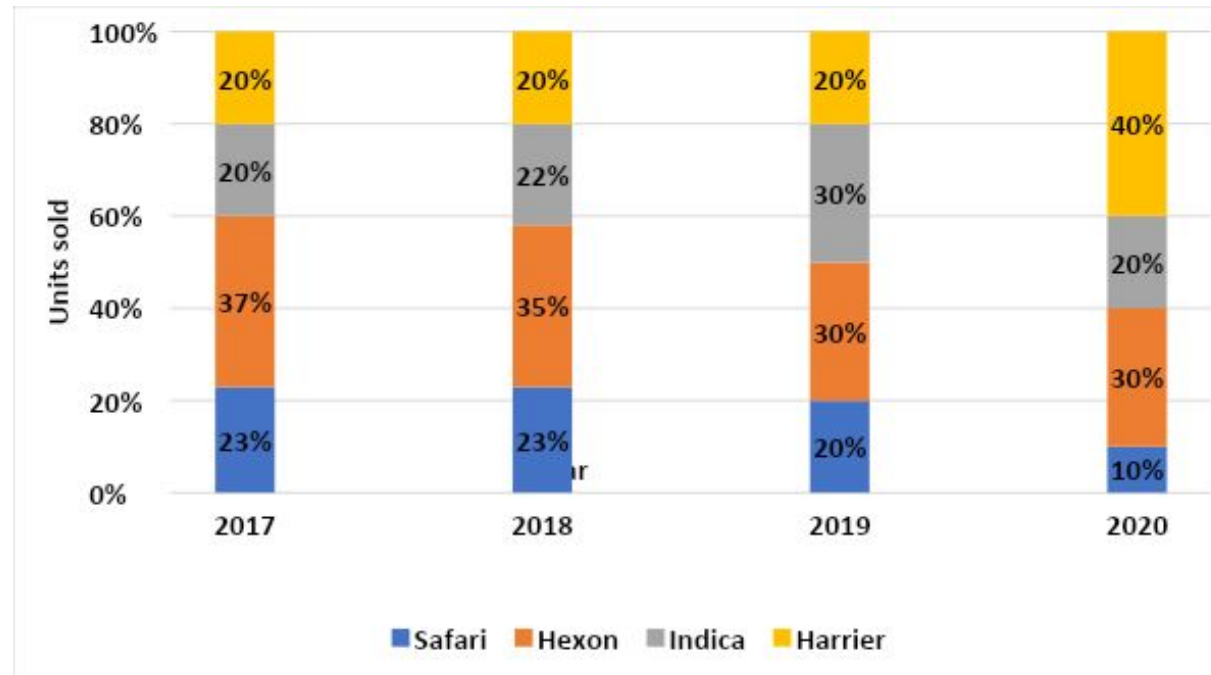
## DATA SET III (ANSWERS)

1. C
2. D
3. C
4. B
5. A
6. C
7. C
8. A



## DATA SET IV

Following Stacked Bar Chart gives the sale of four Models of Cars – Safari, Hexon, Indica and Harrier of Tata Motors for 4 years. It is given that the total sale increases at the rate of 10% per annum over its value in the previous year in the period 2017-20. It is also known that the number of units of Indica sold in 2020 minus the number of units of Safari sold in 2018 is equal to 1320.

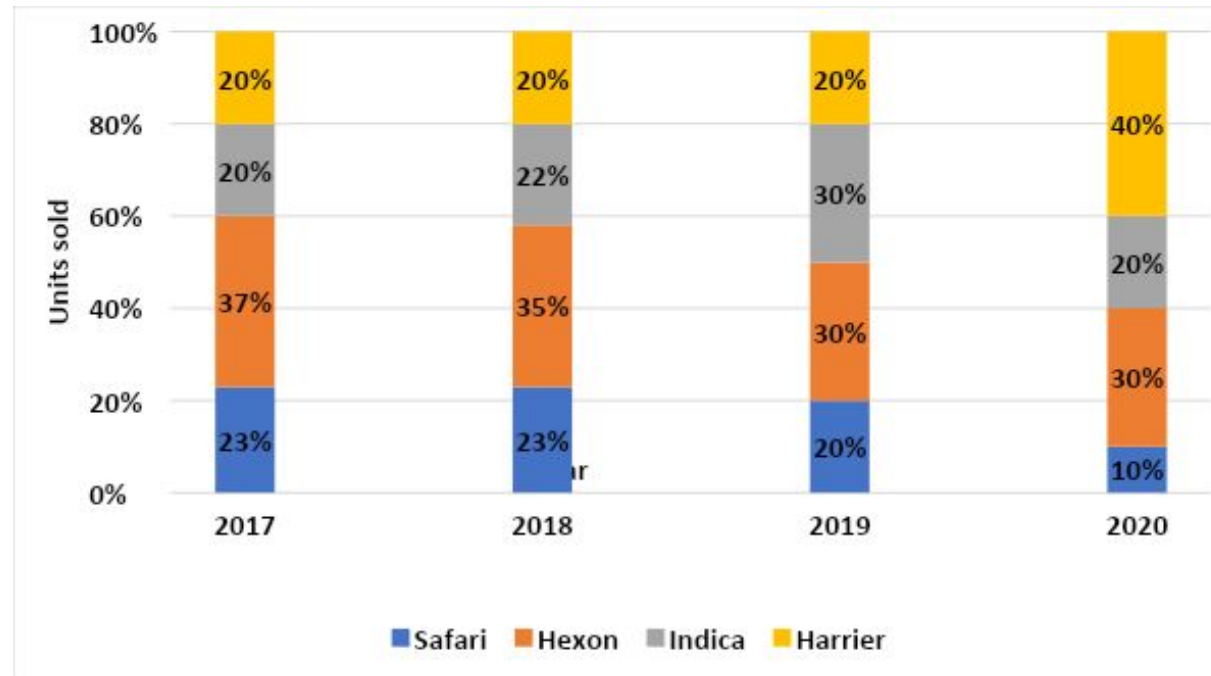


1. The annual compounded percentage increase in the units of Indica sold for the period 2017-19 is approximate.

- (a) 35%                      (b) 40%                      (c) 45%  
(d) 31%                      (e) 42%

## DATA SET IV

Following Stacked Bar Chart gives the sale of four Models of Cars – Safari, Hexon, Indica and Harrier of Tata Motors for 4 years. It is given that the total sale increases at the rate of 10% per annum over its value in the previous year in the period 2017-20. It is also known that the number of units of Indica sold in 2020 minus the number of units of Safari sold in 2018 is equal to 1320.

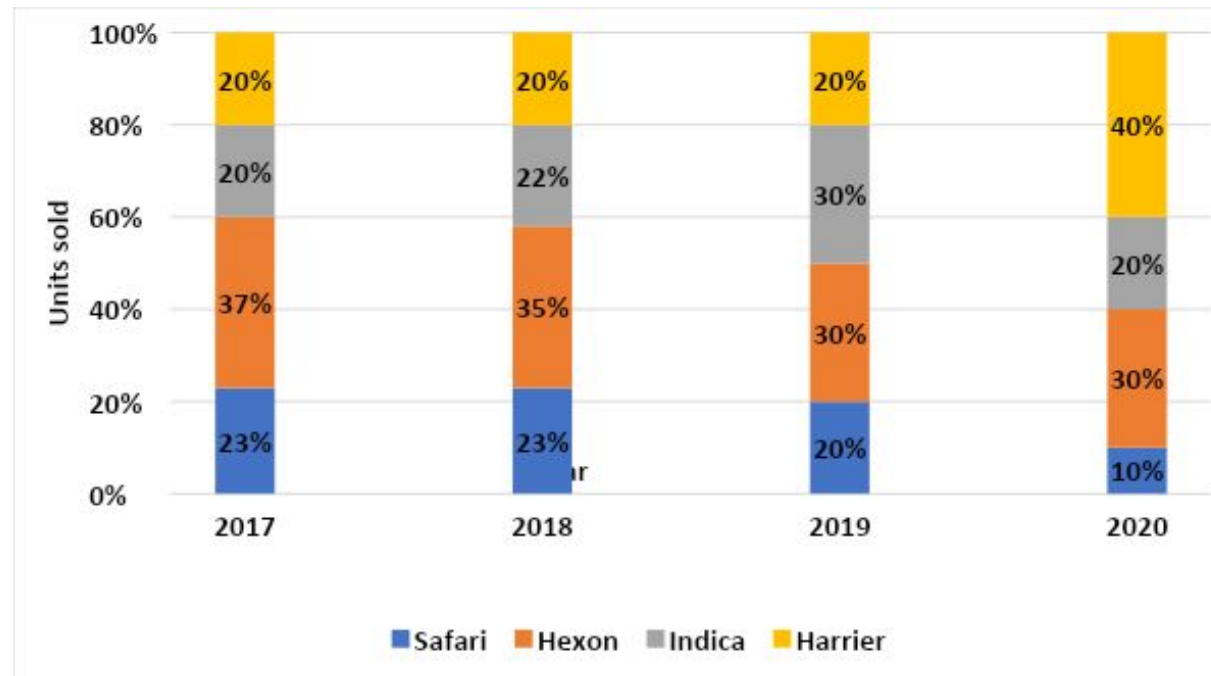


2. The price of Harrier is 15L per unit in 2019. The sale revenue contributed by Harrier in 2019 will be

- (a) Rs. 363000L      (b) Rs. 435600L      (c) Rs. 235460L  
(d) Rs 453650L      (e) Cannot be determined

## DATA SET IV

Following Stacked Bar Chart gives the sale of four Models of Cars – Safari, Hexon, Indica and Harrier of Tata Motors for 4 years. It is given that the total sale increases at the rate of 10% per annum over its value in the previous year in the period 2017-20. It is also known that the number of units of Indica sold in 2020 minus the number of units of Safari sold in 2018 is equal to 1320.

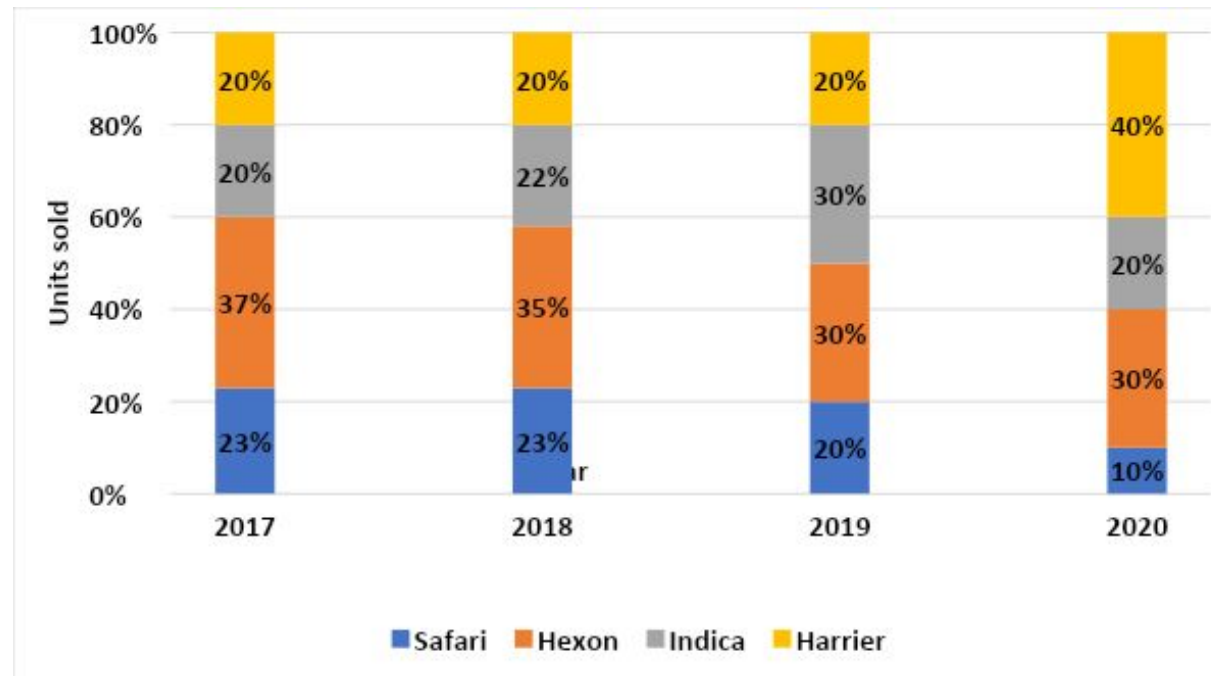


3. Which model has the largest cumulative sale?

- (a) Hexon                      (b) Indica                      (c) Harrier  
(d) Safari                      (e) Cannot be determined

## DATA SET IV

Following Stacked Bar Chart gives the sale of four Models of Cars – Safari, Hexon, Indica and Harrier of Tata Motors for 4 years. It is given that the total sale increases at the rate of 10% per annum over its value in the previous year in the period 2017-20. It is also known that the number of units of Indica sold in 2020 minus the number of units of Safari sold in 2018 is equal to 1320.



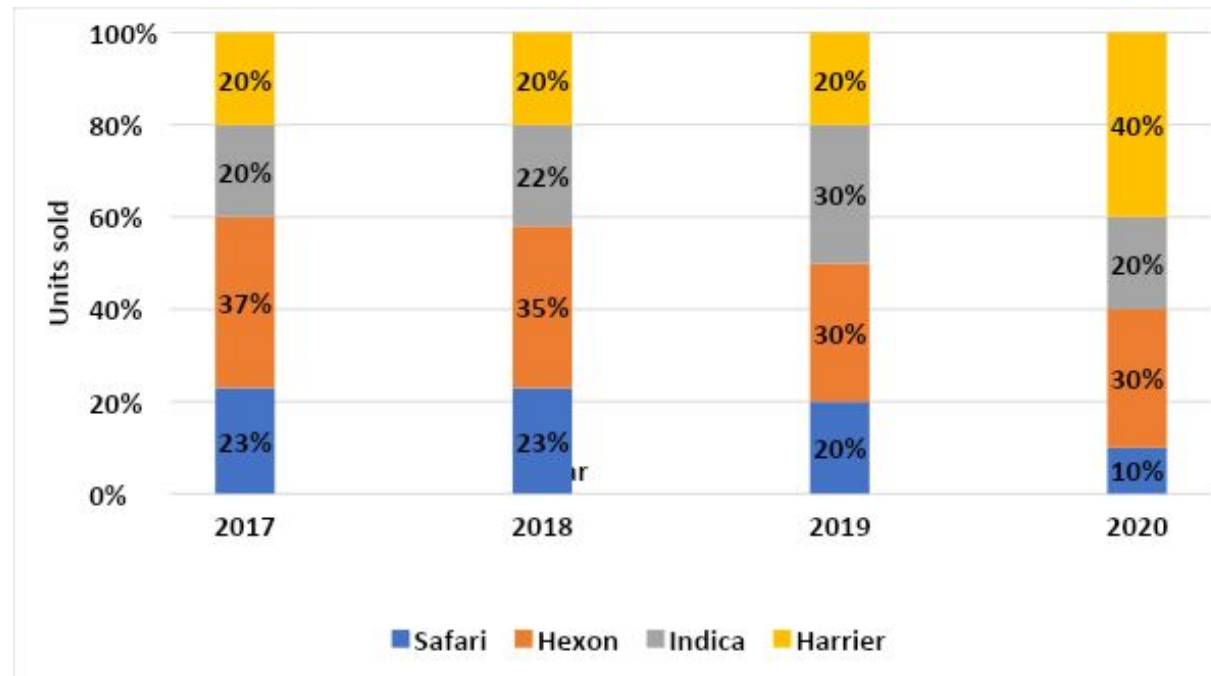
4. If the value of the sale of Harrier in 2020 minus the value of sale of Safari in 2018 is Rs 4191L, which model has the largest cumulative sale?

- (a) Harrier
- (b) Indica
- (c) Safari
- (d) Hexon
- (e) Cannot be determined



## DATA SET IV

Following Stacked Bar Chart gives the sale of four Models of Cars – Safari, Hexon, Indica and Harrier of Tata Motors for 4 years. It is given that the total sale increases at the rate of 10% per annum over its value in the previous year in the period 2017-20. It is also known that the number of units of Indica sold in 2020 minus the number of units of Safari sold in 2018 is equal to 1320.

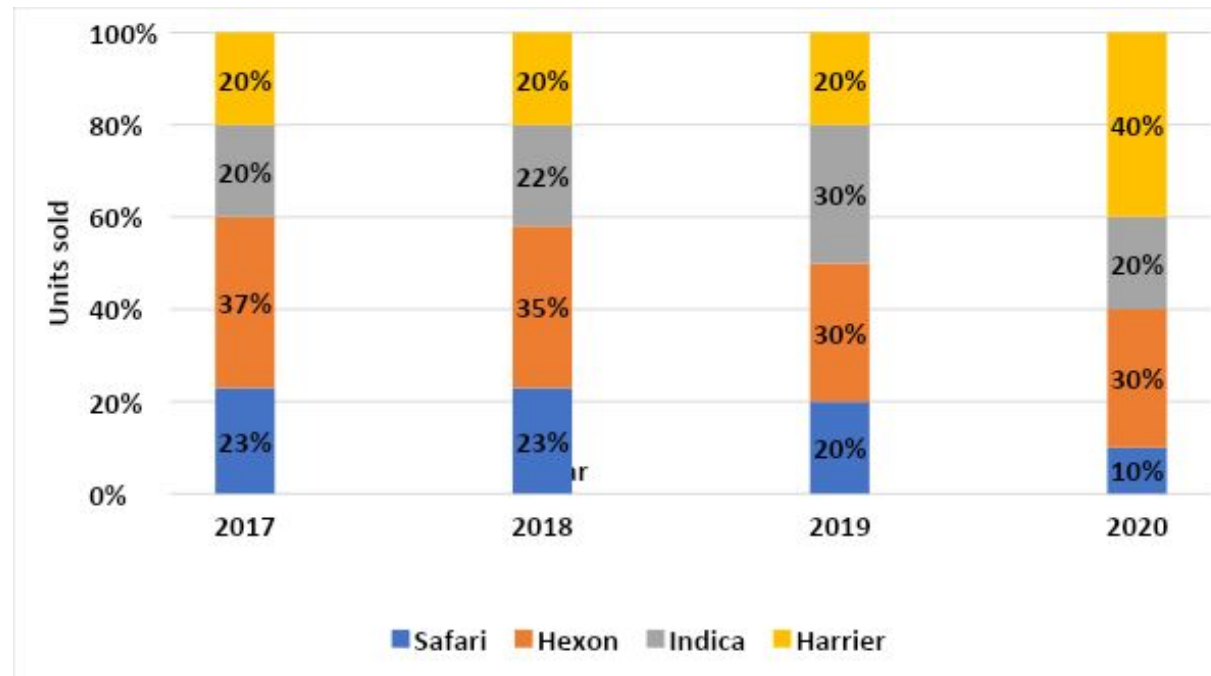


5. If Tata Motors was able to sell all its production, then what is the ratio of the sales revenues of Safari during this period?

- (a) 2300:2530:2420:1331      (b) 240: 255:342:313  
(c) 1230:3425:3241:2314      (d) 23:26:32:42      (e) Cannot be determined

## DATA SET IV

Following Stacked Bar Chart gives the sale of four Models of Cars – Safari, Hexon, Indica and Harrier of Tata Motors for 4 years. It is given that the total sale increases at the rate of 10% per annum over its value in the previous year in the period 2017-20. It is also known that the number of units of Indica sold in 2020 minus the number of units of Safari sold in 2018 is equal to 1320.



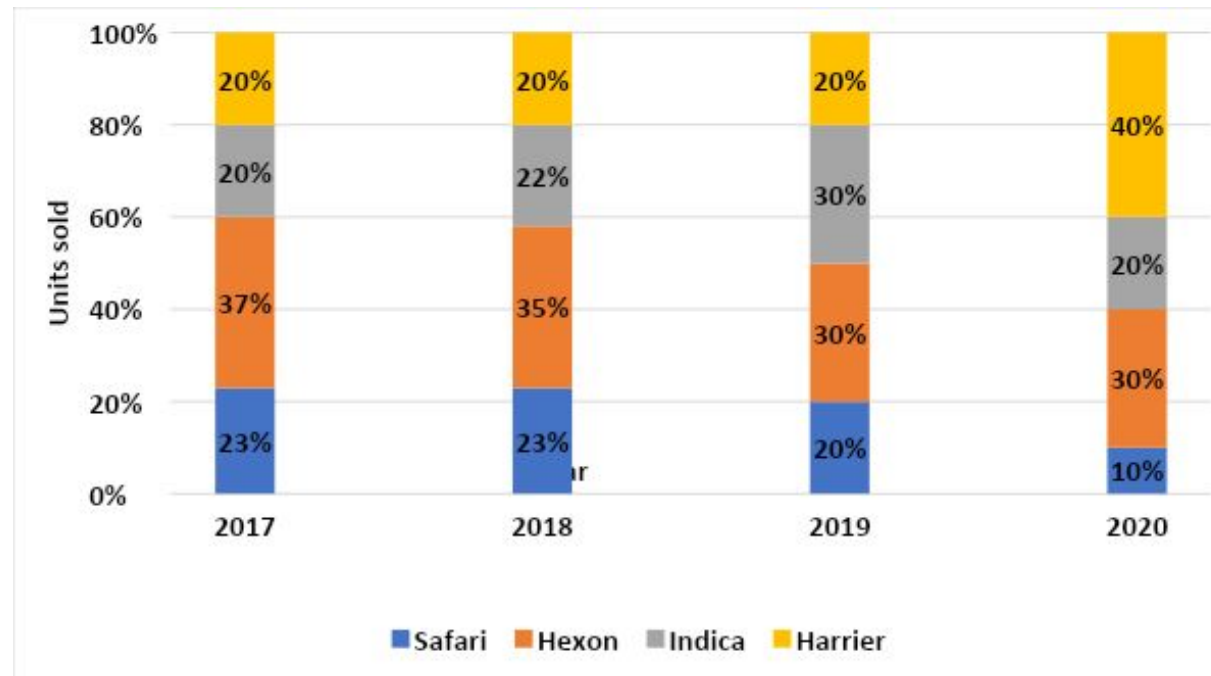
6. If a profit of 20% is earned in 2019 from the sale of Harrier at the selling of Rs 12L per unit, at what loss percentage has Hexon at a selling price of Rs 15L per unit, been sold, so that the overall profit on the sale of Hexon and Harrier took together is 5% in the year 2019?

(Assume that the entire production of Hexon and Harrier is sold)

- (a) 4.31%      (b) 4.76%      (c) 1.53%      (d) 5.3%      (e) Cannot be determined

## DATA SET IV

Following Stacked Bar Chart gives the sale of four Models of Cars – Safari, Hexon, Indica and Harrier of Tata Motors for 4 years. It is given that the total sale increases at the rate of 10% per annum over its value in the previous year in the period 2017-20. It is also known that the number of units of Indica sold in 2020 minus the number of units of Safari sold in 2018 is equal to 1320.

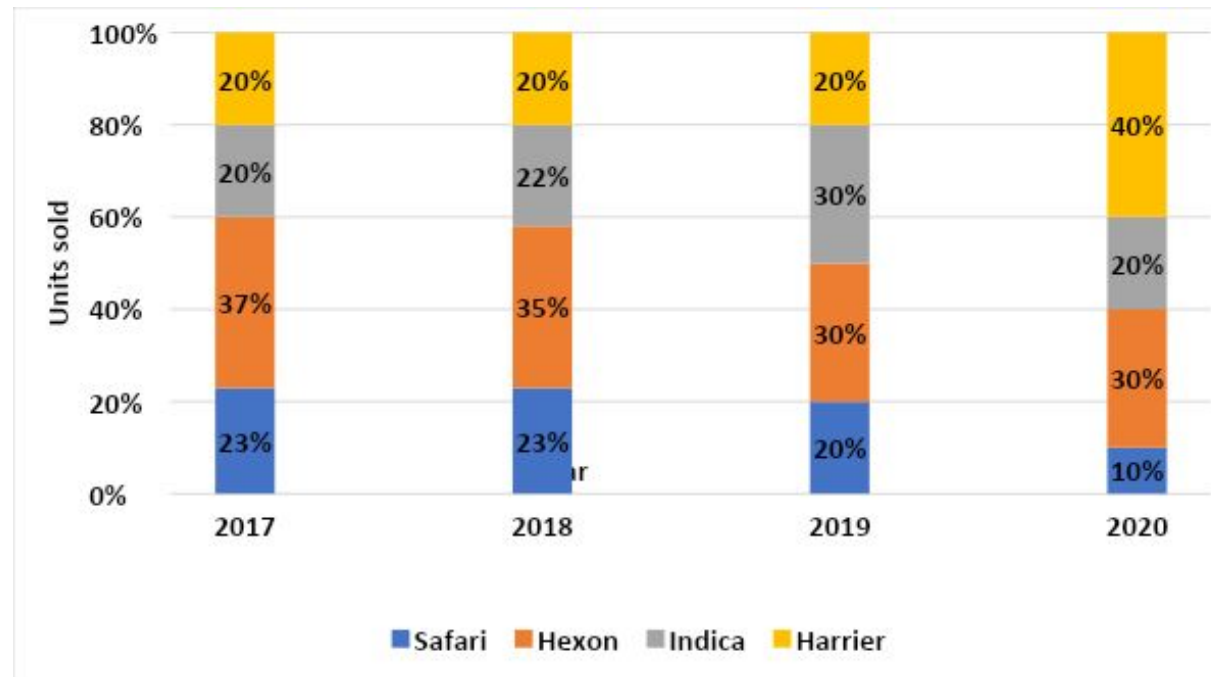


7. If in the year 2019 and in the year 2020 the growth rate of total sale would have been 25% instead of 10%, as given then what would have been the difference in the sale of Indica and Hexon in 2020?

- (a) 1500L      (b) 2500L      (c) 1800L  
(d) 2800L      (e) Cannot be determined

## DATA SET IV

Following Stacked Bar Chart gives the sale of four Models of Cars – Safari, Hexon, Indica and Harrier of Tata Motors for 4 years. It is given that the total sale increases at the rate of 10% per annum over its value in the previous year in the period 2017-20. It is also known that the number of units of Indica sold in 2020 minus the number of units of Safari sold in 2018 is equal to 1320.

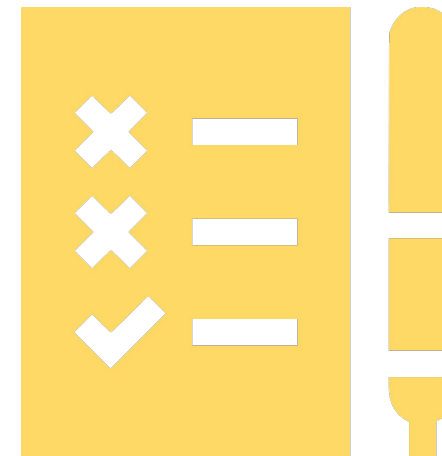


8. In 2018, the sale of Tata Motors drops by 5% over that in 2017 then what should be the growth rate in sales in 2019 for maintaining a CAGR of 10% in the period 2017-19?

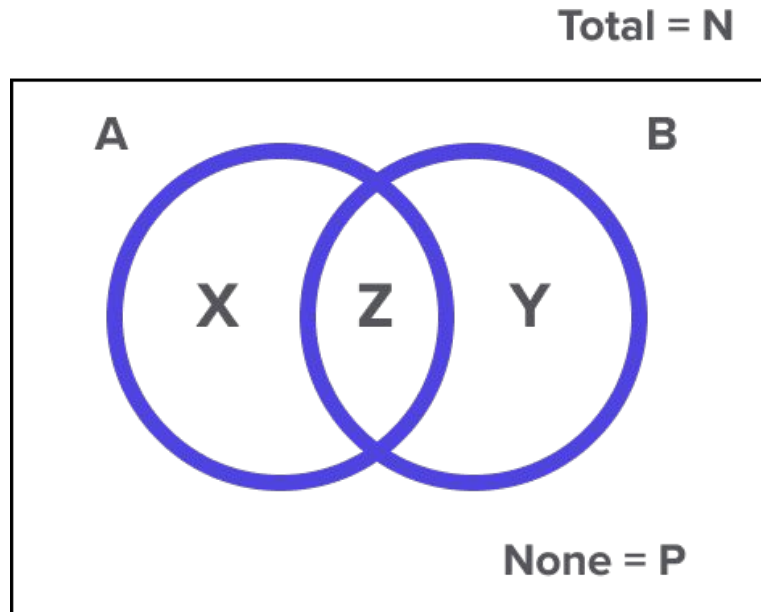
- (a) 30.5%      (b) 25.7%      (c) 27.4%  
(d) 18.6%      (e) Cannot be determined

## DATA SET IV (ANSWERS)

1. A
2. A
3. A
4. D
5. E
6. C
7. B
8. C



## VENN DIAGRAM



### Data Reading in 2 variable Venn Diagram:

Only A = x

Only B = y

A or B = x + y

A & B = z

Exactly one = x + y

Exactly two = z

At least one = Exactly one + exactly two = x + y + z

Total N = x + y + z + P

A = x + z

B = y + z

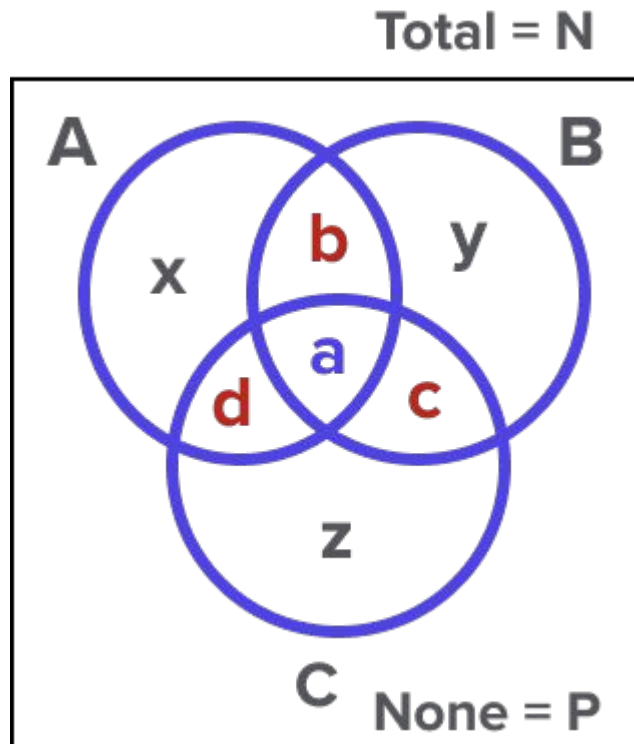
A + B = x + y + 2z

A or B = x + y + z

Does not belong to A = y + P

Does not belong to B = x + P

## VENN DIAGRAM



### Data Reading in 3 variable Venn Diagram:

Only A = x,      Only B = y,      Only C = z,      None = P

Exactly one =  $x + y + z$ ,

Exactly two =  $b + c + d$

Exactly three = a,

A & B or A as well as B =  $a + b$ ,

B & C or B as well as C =  $a + c$ ,

A & C or A as well as C =  $a + d$

Only A & B or A & B but not C = b

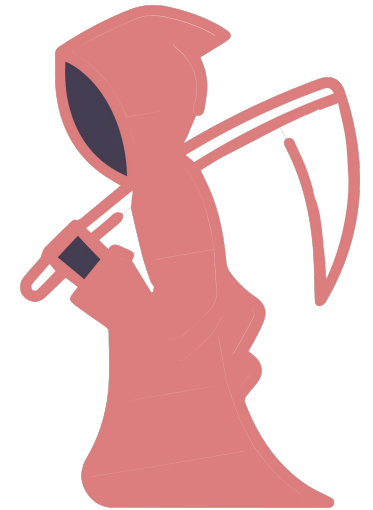
Only B & C or B & C but not A = c

Only A & C or A & C but not B = d

## VENN DIAGRAM- QUESTIONS

A survey was conducted among 80 people to find out their genre preferences – Romance (R), Comedy (C) or Horror (H). It was found that 54 people liked Romance, 42 people liked Comedy and 38 people like Horror, 30 like both Romance and Comedy, 22 like Comedy and Horror while 26 like Romance and Horror. 12 people like all the three.

- (i) How many people like at least 1 of the three genres?
- (ii) How many people like at least 2 of the 3 genres?
- (iii) How many people like exactly 1 of the three genres?
- (iv) How many people like none of the three genres?
- (v) How many people like only Romance?
- (vi) How many people like only Comedy?
- (vii) How many people like only Horror?
- (viii) How many like Romance and Comedy but not Horror?
- (ix) How many like Horror and Comedy but not Romance?
- (x) How many like Romance and Horror but not Comedy?





## ANSWERS

- (i) 68
- (ii) 54
- (iii) 14
- (iv) 12
- (v) 10
- (vi) 2
- (vii) 2
- (viii) 18
- (ix) 10
- (x) 14



## VENN DIAGRAM- QUESTIONS

In a group of 240 employees of a company, 100 are in Marketing, 110 are in Finance and 140 are in HR. It is also known as 30 works in both Marketing and Finance, 50 works in both Finance and HR. 50 works in both HR and Marketing while 20 works in Marketing, Finance as well as HR?

1. How many employees work in only Finance?

- (a) 40      (b) 50      (c) 60      (d) None of given

2. How many employees work in either Finance or Marketing?

- (a) 170      (b) 190      (c) 180      (d) None of given

3. How many do not work on Marketing?

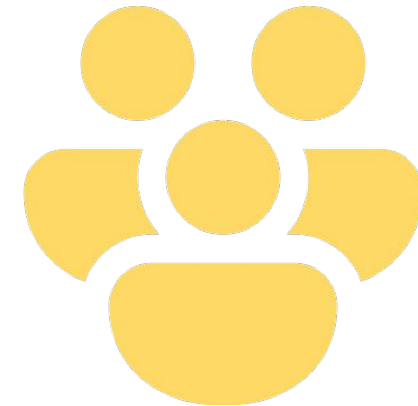
- (a) 140      (b) 110      (c) 100      (d) None of given

4. How many employees work in neither Finance nor HR?

- (a) 30      (b) 20      (c) 40      (d) None of given

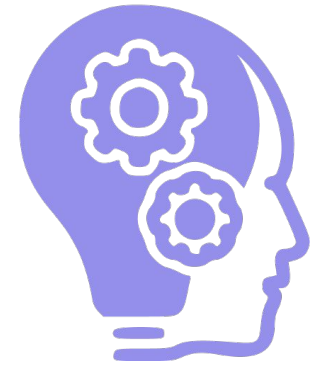
5. How many do not work in any given 3 departments?

- (a) 0      (b) 1      (c) 2      (d) None of given



## ANSWERS

1. B
2. C
3. A
4. C
5. A



## IN THE NEXT CLASS, WE WILL STUDY:



Mensuration



Time and work



Time, Speed, and Distance