



FSP MATHEMATICS CONTEST

QUESTION BOOKLET

2021

GRADE 9 & 10

TIME ALLOWED: 90 Minutes

MAXIMUM MARKS: 90

VIBRANT YOUNGSTERS
FAMOUS STUDENTS PLATFORM
WE FAMOUS YOU

INSTRUCTIONS

- 1) **DON'T START ATTEMPTING THE PAPER UNTIL INSTRUCTED BY THE INVIGILATOR.**
- 2) **INSTRUCTIONS FROM THE EXAMINATION INVIGILATOR MUST BE CARRIED OUT PROMPTLY.**
- 3) **CAREFULLY RECHECK YOUR NAME, FATHER NAME, SCHOOL NAME, ADDRESS ETC AT THE BUBBLE SHEET / ANSWER SHEET.**
- 4) **RECORD ALL ANSWERS ON THE BUBBLE SHEET ONLY. SELECT BEST ANSWER FROM THE FOUR GIVEN OPTIONS AND MARK ONLY ONE OPTION IN EACH QUESTION.**
- 5) **USE BLUE / BLACK INK TO FILL UP THE CIRCLES FOR YOUR ANSWERS ON THE BUBBLE SHEET. USE OF LEAD PENCIL IS NOT ALLOWED.**
- 6) **USE OF ANY HELPING MATERIAL INCLUDING CELL PHONES AND ELECTRONIC DEVICES IS STRICTLY PROHIBITED.**
- 7) **EVERY CORRECT ANSWER EARNS THREE POINTS. THERE WOULD BE NEGATIVE MARKING. ONE POINT WOULD BE DEDUCTED FOR EVERY INCORRECT ANSWER.**
- 8) **CANDIDATES MAY NOT LEAVE THE EXAMINATION ROOM UNESCORTED FOR ANY REASON, AND THIS INCLUDES USING THE WASHROOM.**
- 9) **NO MATERIALS OR ELECTRONIC DEVICES SHALL BE BROUGHT IN TO THE ROOM.**
- 10) **THERE ARE FIVE CATEGORIES OF THE CONTEST AS UNDER:**
 - A) **VIBRANT YOUNGSTERS (GRADE 1 & 2)**
 - B) **VIBRANT YOUNGSTERS (GRADE 3 & 4)**
 - C) **VIBRANT YOUNGSTERS (GRADE 5 & 6)**
 - D) **VIBRANT YOUNGSTERS (GRADE 7 & 8)**
 - E) **VIBRANT YOUNGSTERS (GRADE 9 & 10 / 0-LEVELS)**
- 11) **ONLY REGISTERED STUDENTS CAN PARTICIPATE IN THE CONTEST.**
- 12) **NO CANDIDATE SHALL TAKE OUT OF THE HALL ANY ANSWER BOOK(S) OR PART OF AN ANSWER BOOK, WHETHER USED OR UNUSED, OR OTHER SUPPLIED MATERIAL.**
- 13) **IF A PARTICIPANT DOES NOT UNDERSTAND A WORD OR PHRASE ON THE EXAM PAPER, NEITHER EXAMINER NOR INVIGILATOR IS PERMITTED TO ANSWER.**
- 14) **FOR INFORMATION ABOUT UPCOMING CONTESTS OR PROVIDING VALUABLE FEEDBACK, PLEASE VISIT WWW.FSPCOMPETITIONS.ORG**
- 15) **ANY ACADEMIC MISCONDUCT OR MALPRACTICE MUST BE REPORTED TO FSP VIBRANT YOUNGSTERS AT INFO@FSPCOMPETITIONS.ORG**

Q.1) There are two examination rooms A and B. If 10 students are sent from A to B, then the number of students in each room is the same. If 20 candidates are sent from B to A, then the number of students in A is double the number of students in B. The number of students in room A is:

☒ A 20

☐ B 80

☐ C 200

☐ D 100

Q.2) How many of the following numbers are divisible by 132?

264, 396, 462, 792, 968, 2178, 5184, 6336

☒ A 7

☐ B 6

☐ C 5

☐ D 4

Q.3) If 7 spiders make 7 webs in 7 days, then 1 spider will make 1 web in how many days?

☒ A 1

☐ B 7

☐ C $7/2$

☐ D 49

Q.4) A family consists of two grandparents, two parents and three grand children. The average age of the grandparents is 67 years, that of the parents is 35 years and that of the grandchildren is 6 years. What is the average age of the family?

☒ A $28\frac{4}{7}$ years

☐ B $31\frac{5}{7}$ years

☐ C $32\frac{1}{7}$ years

☐ D None of these

Q.5) In a certain store, the profit is 320% of the cost. If the cost increases by 25% but the selling price remains constant, approximately what percentage of the selling price is the profit?

☒ A 30%

☐ B 70%

☐ C 100%

☐ D 250%

Q.6) Today is Monday. After 61 days, it will be:

☐ A Saturday

☐ B Tuesday

☐ C Wednesday

☐ D Thursday

Q.7) Two numbers A and B are such that the sum of 5% of A and 4% of B is two-third of the sum of 6% of A and 8% of B. Find the ratio of A: B.

☐ A 1:1

☐ B 2:3

☐ C 3:4

☐ D 4:3

Q.8) From a point P on a level ground, the angle of elevation of the top tower is 30° if tower is 100m high, the distance of point P from the foot of the tower is:

☐ A 149m

☐ B 156m

☐ C 173m

☐ D 200m

Q.9) A train running at the speed of 60 km/hr crosses a pole in 9 seconds. What is the length of the train?

☐ A 120 meters

☐ B 150 meters

☐ C 180 meters

☐ D 324 meters

Q.10) Mr. Thomas invested an amount of Rs. 13,900 divided in two different schemes A and B at the simple interest rate of 14% p.a. and 11% p.a. respectively. If the total amount of simple interest earned in 2 years be Rs. 3500, what was the amount invested in scheme B?

☐ A Rs. 6400

☐ B Rs. 6500

☐ C Rs. 7200

☐ D Rs. 7500

Q.11) Find out the wrong number in the given sequence of numbers.

125, 127, 130, 135, 142, 153, 165

☐ A 130

☐ B 142

☐ C 153

☐ D 165

Q.12) The areas of some bodies of water in Massachusetts are shown in the table below:

Body of Water	Area (in acres)
Silver Lake	70
Neponset Reservior	300
Whitehall Reservior	575
Greenwood Lake	110
Kingsbury Pond	

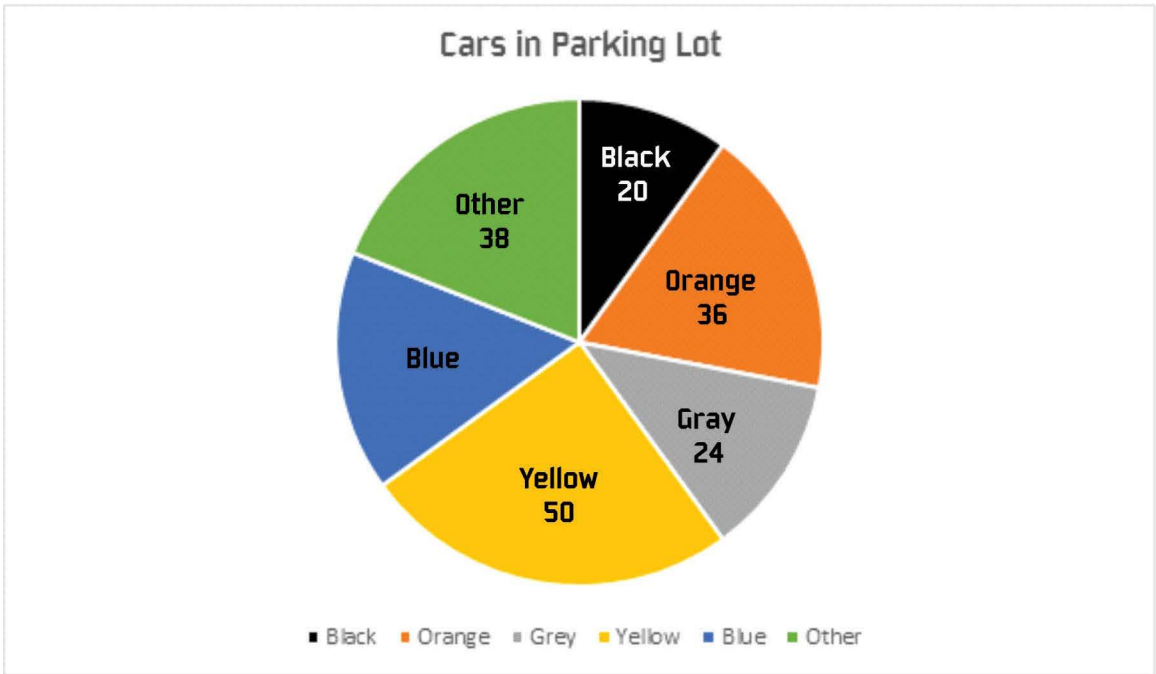
The mean area of the 5 bodies of water is 214 acres. What is the area, in acres, of Kingsbury Pond?

- A254
- B50
- C43
- D15

Q.13) To fill a tank, 25 buckets of water is required. How many buckets of water will be required to fill the same tank if the capacity of the bucket is reduced to two-fifth of its present?

- A10
- B35
- C62.5
- DCannot be determined

Q.14) The circle graph below represents the number of cars in a parking lot and their colors.



If 25% of the cars in the parking lot are yellow, how many cars in the parking lot are blue?

A 32

B 36

C 42

D 56

Q.15) A green can and a silver can are each in the shape of a right circular cylinder. The cans have the same radius, but the height of the green can is 3 times the height of the silver can. What is the ratio of the volume of the green can to the volume of the silver can?

A 27:1

B 9:1

C 6:1

D 3:1

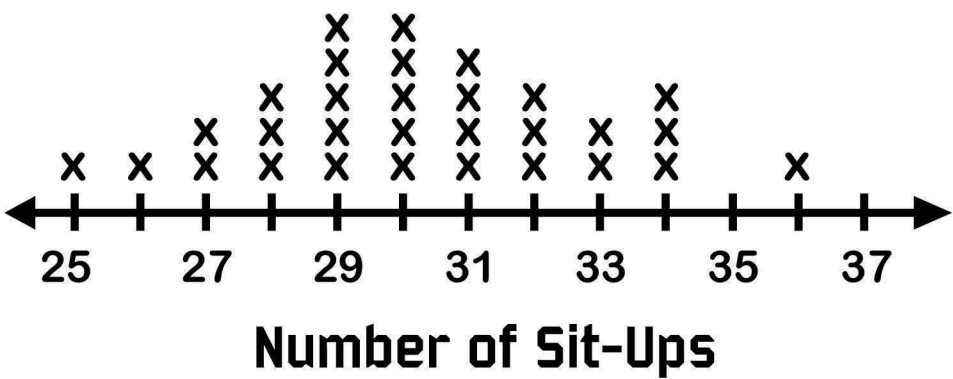
Q.16) The first term in a sequence is 24. Each term in the sequence after the first term is equal to half the previous term, plus 4. Which of the following statements best describes the terms in the sequence as it progresses?

- A** The terms get closer to 8.
 - B** The terms get closer to 12.
 - C** The terms increase at a constant rate.
 - D** The terms decrease at a constant rate.
-

Q.17) A computer software package is sold to small-business clients. The total cost of the software package is \$500 for the first 10 computers on which the software is installed, plus \$20 for installation on each additional computer. Which statement best describes the function that models the relationship between the number of computers on which the software is installed and the cost of the software?

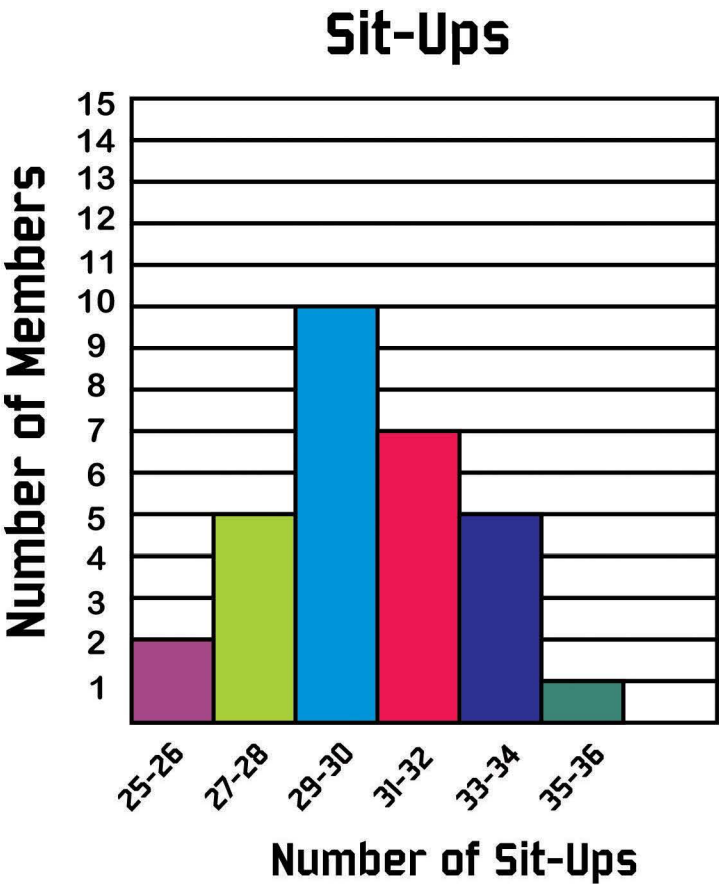
- A** It is a constant linear function for 10 or fewer computers and an exponential function for more than 10 computers.
 - B** It is an increasing linear function for 10 or fewer computers and an exponential function for more than 10 computers.
 - C** It is a constant linear function for 10 or fewer computers and an increasing linear function for more than 10 computers.
 - D** It is an increasing linear function for 10 or fewer computers and a constant linear function for more than 10 computers.
-

Q.18) Members of a gym recorded the number of sit-ups they did in one minute. The results are shown in the line plot below.

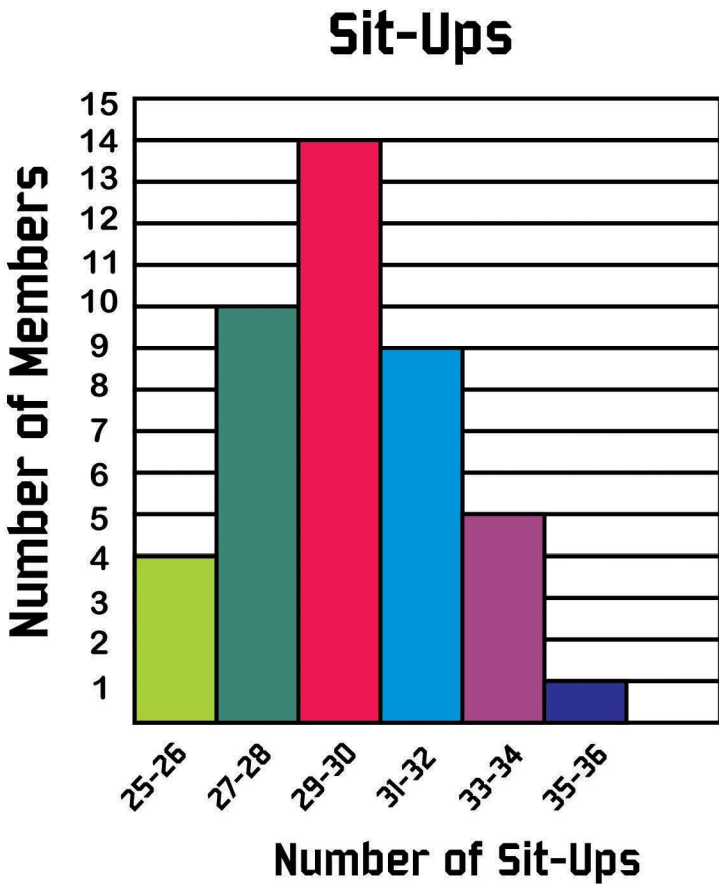


Which of the following histograms best represents the data?

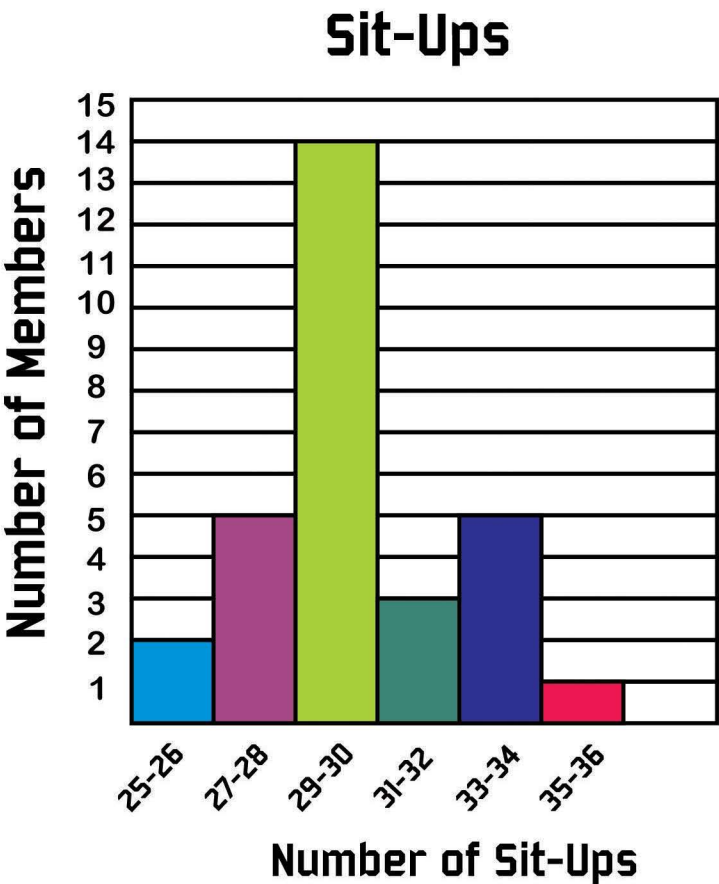
A



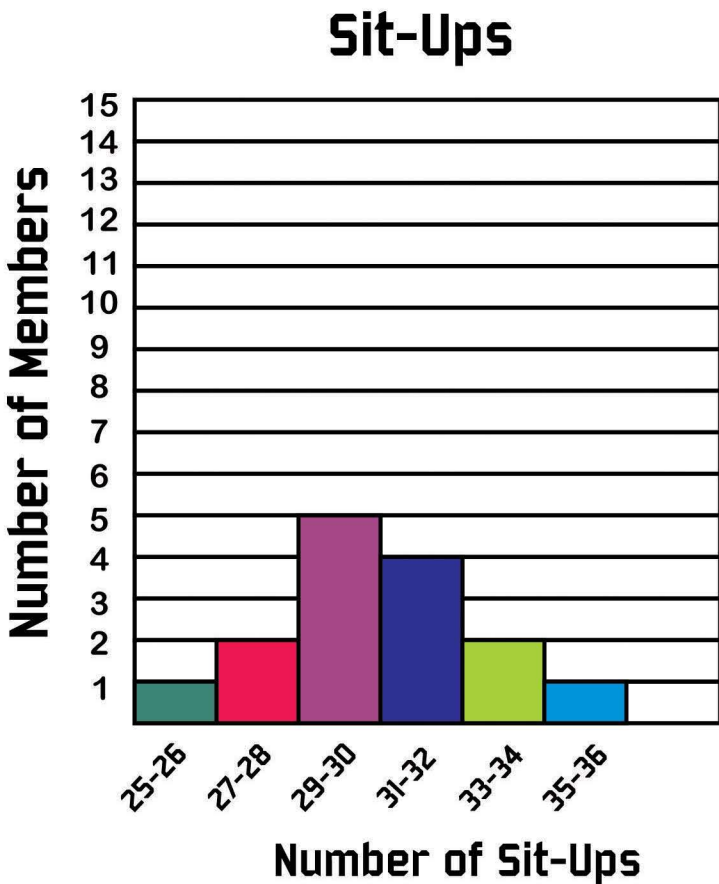
B



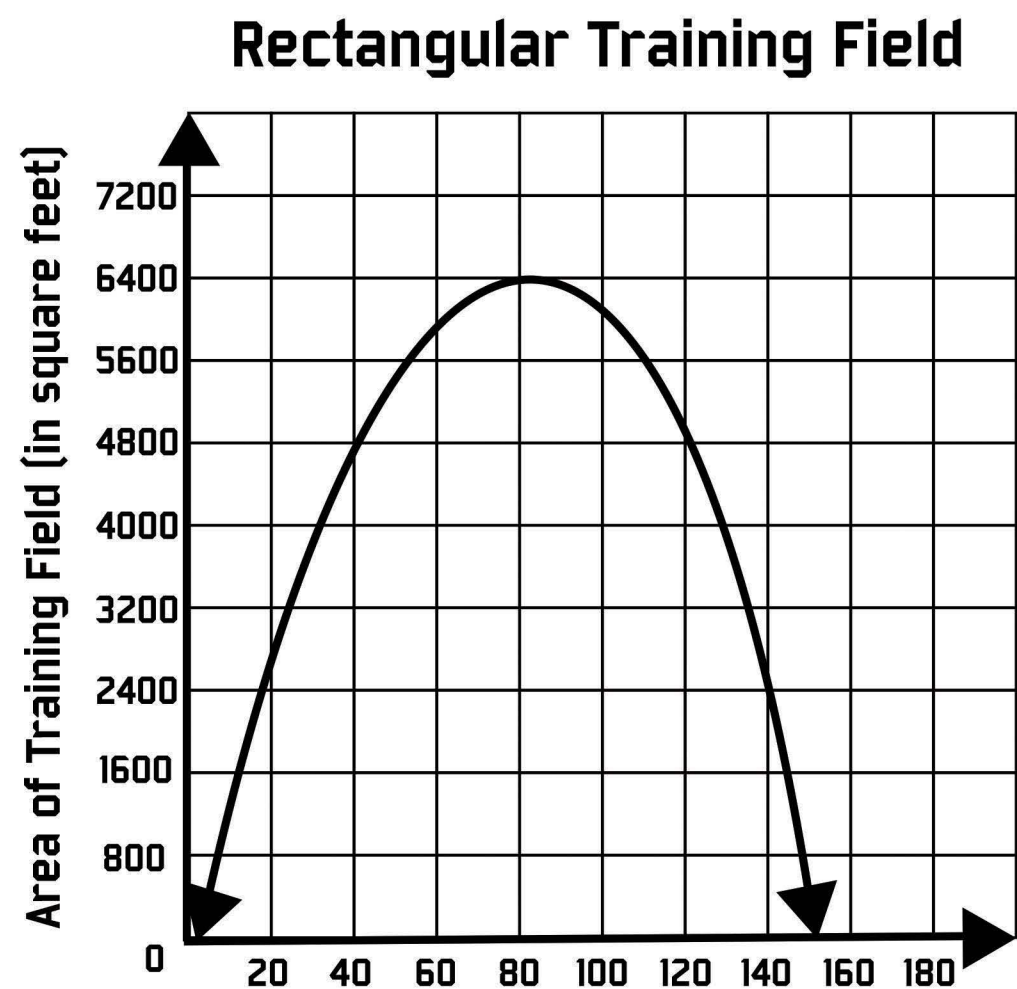
C



D



Q.19) A dog trainer will use 320 feet of fence to create a rectangular training field. The graph below displays the relationship between the length, in feet, of the training field and the area, in square feet, of the training field.



What is the length of the rectangular training field that has the greatest area?

- A 40 feet

B 80 feet

C 160 feet

D 180 feet

Q.20) When the number square below is completed, any three numbers in a line will add up to 24. The three numbers can be added across, up, down, or diagonally.

Which number belongs in Box A?

6		2
A	8	
	0	10

- A 4

B 9

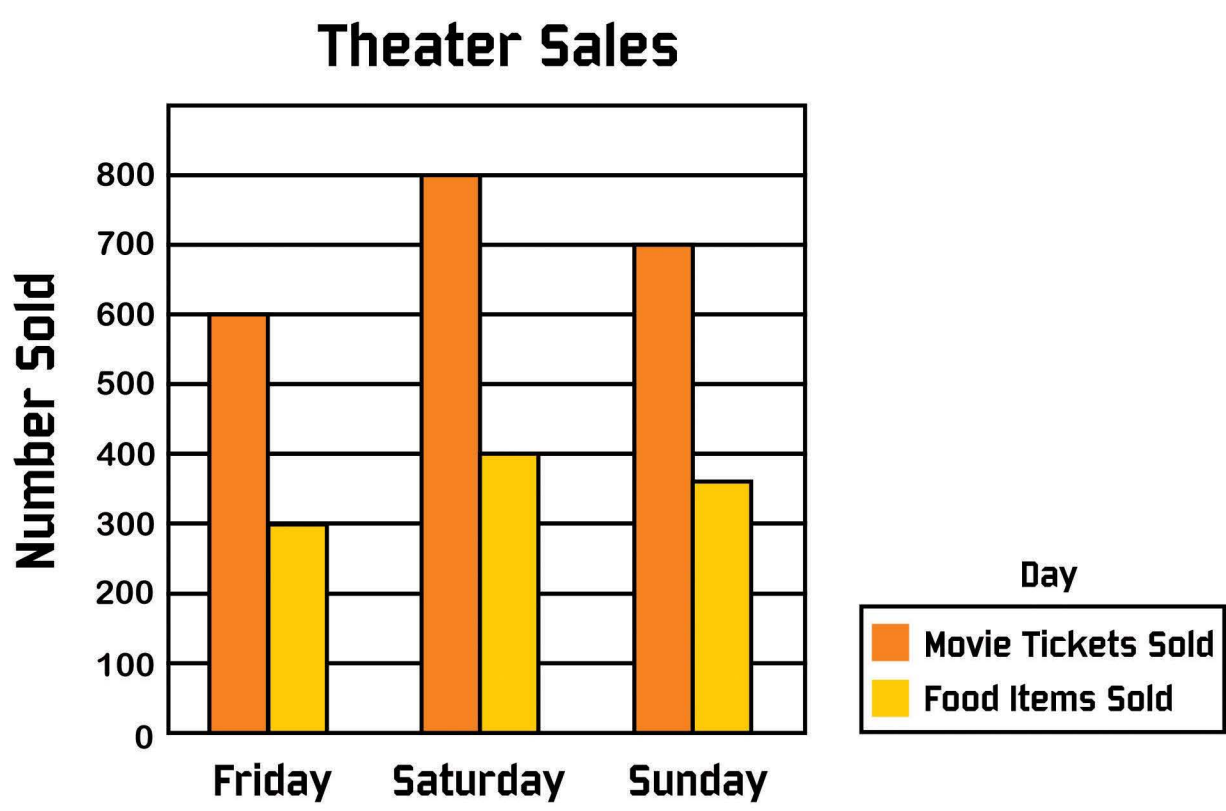
C 14

D 16

Q.21) As students entered a concert, a key chain was given to every second student in line. T-shirts were given to every third student in line. Which student in line was the first to receive both a key chain and a T-shirt?

- A 5th
- B 6th
- C 8th
- D 9th

Q.22) Andrea works at a movie theater. She made the graph below to compare the number of movie tickets with the number of food items that were sold during three days.



How many more movie tickets were sold on saturday than on Friday?

- A 100
- B 200
- C 300
- D 400

Q.23) Tina bought some gum. The number of pieces of each flavor of gum she bought is shown below.

GUM TINA BOUGHT	
Flavor of Gum	Number of Pieces
Grape	40
Cherry	40
Peppermint	20
TOTAL	100

What percent of the total number of pieces of gum are peppermint flavor?

☐ A 20%

☐ B 60%

☐ C 40%

☐ D 80%

Q.24) Last year 950 people attended a town's annual parade. This year 1,520 people attended. What was the percent increase in attendance from last year to this year?

☐ A 37.5%

☐ B 60.0%

☐ C 62.5%

☐ D 57.0%

Q.25) Mr. Thomas is buying two types of gift cards to give as prizes to employees at a company meeting. He will buy restaurant gift cards that each cost \$50. He will also buy movie theater gift cards that each cost \$20. He has \$450 to buy a total of 15 gift cards.

How many of each type of gift card can Mr. Thomas buy?

☐ A He can buy 5 restaurant gift cards and 10 movie theater gift cards.

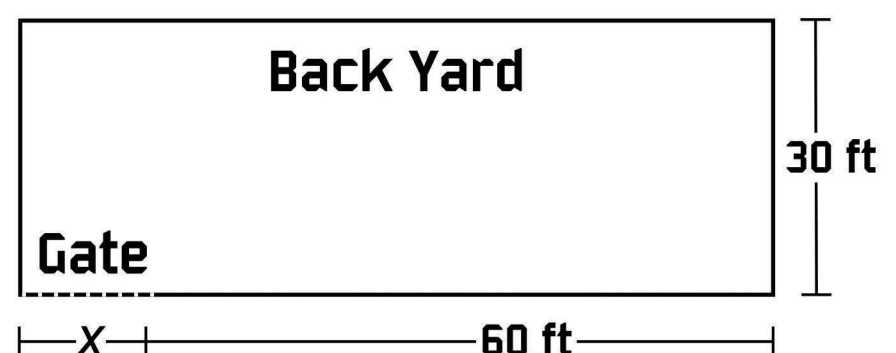
☐ B He can buy 8 restaurant gift cards and 7 movie theater gift cards.

☐ C He can buy 10 restaurant gift cards and 5 movie theater gift cards.

☐ D He can buy 12 restaurant gift cards and 3 movie theater gift cards.

Q.26) When Keisha installed a fence along the 200-foot perimeter of her rectangular back yard, she left an opening for a gate. In the diagram below, she used x to represent the length, in feet, of the gate.

What is the value of x ?



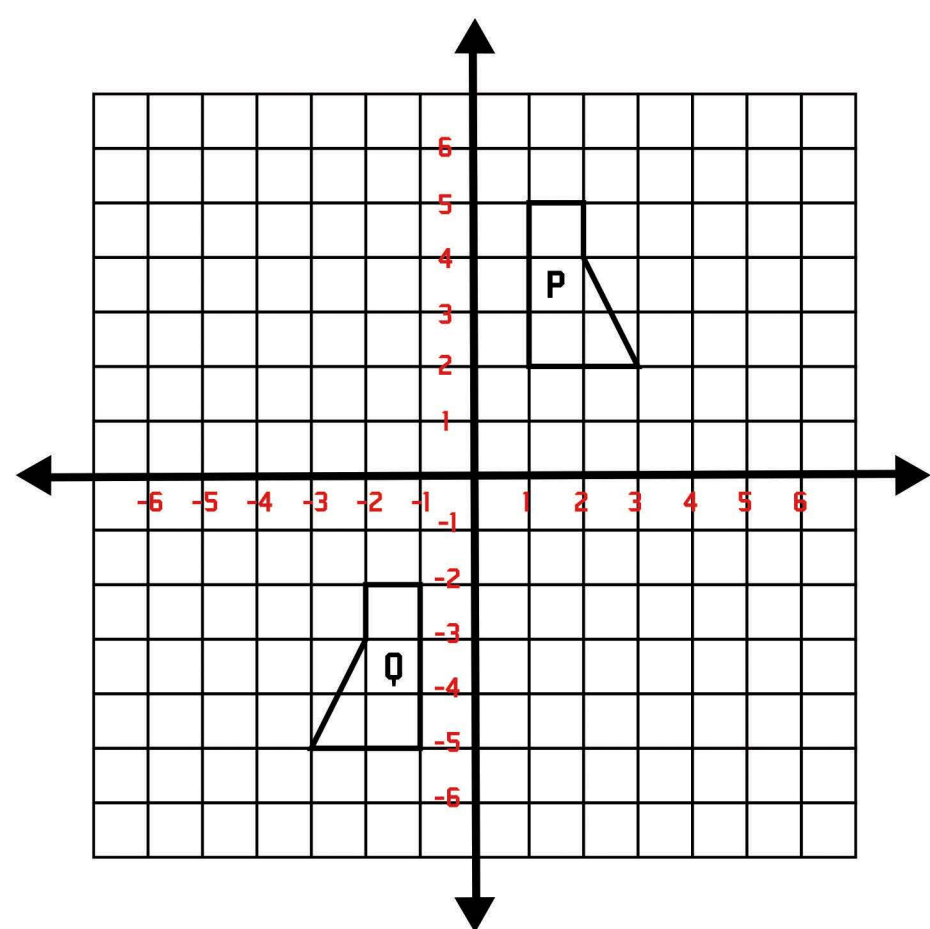
☐ A 10

☐ B 20

☐ C 25

☐ D 30

Q.27) Pentagon P and pentagon Q, shown below, are congruent.



Which sequence could be used to transform pentagon P to pentagon Q?

- A 180° clockwise rotation about the origin.
- A translation four units left & then a reflection over the x-axis.
- A reflection over the y-axis & then a translation seven units down.
- A translation seven units down & then a 90° clockwise rotation about the origin.

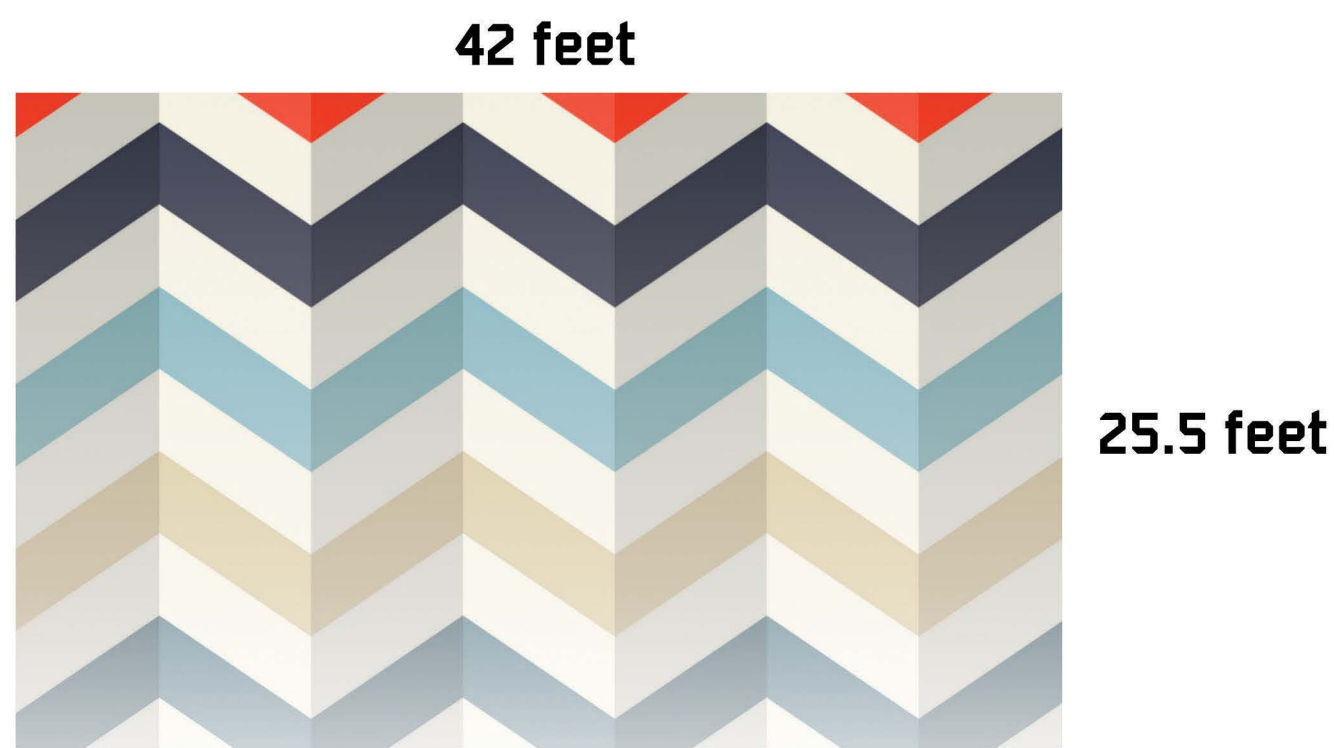
Q.28) A clothing store used the sign shown below to advertise a discount on shirts.



Usman wants to buy three shirts, which were originally priced \$49.96 each. The store will discount the price of the third shirt and then apply a 7.10/o tax to the total cost of all three shirts. Including the tax, what will be the mean (average) cost of each shirt?

- \$41.99
- \$42.70
- \$44.59
- \$45.18

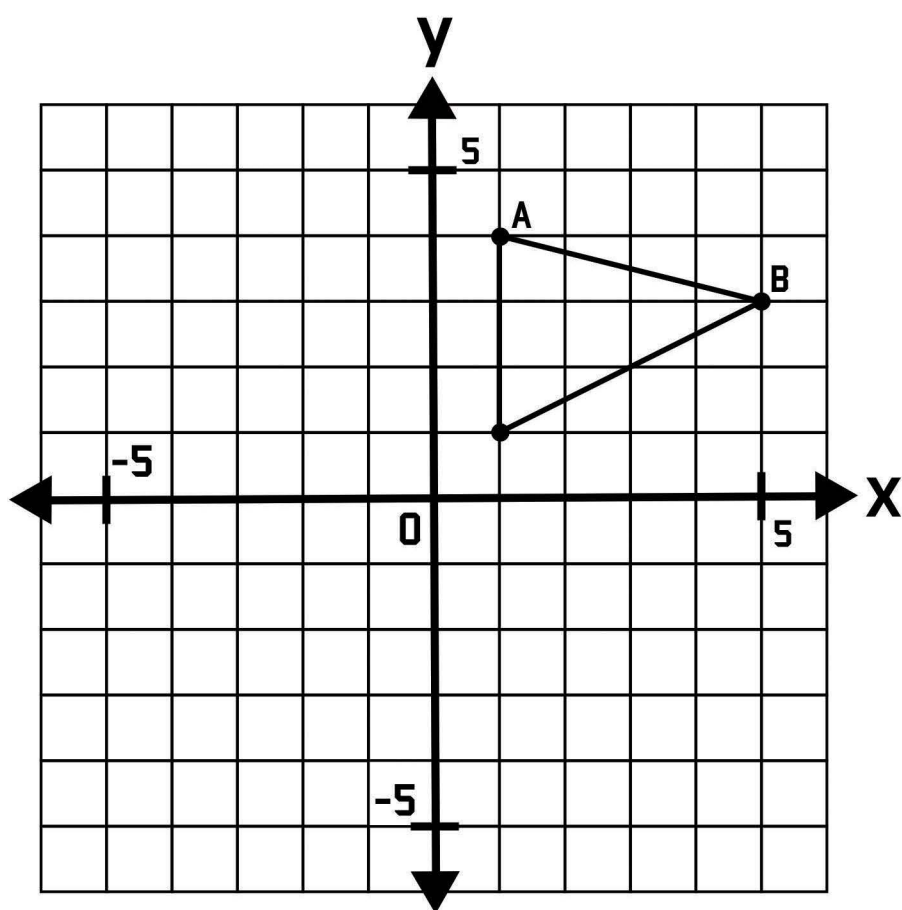
Q.29) Wallpaper was applied to one rectangular wall of a large room. The dimensions of the wall are shown below.



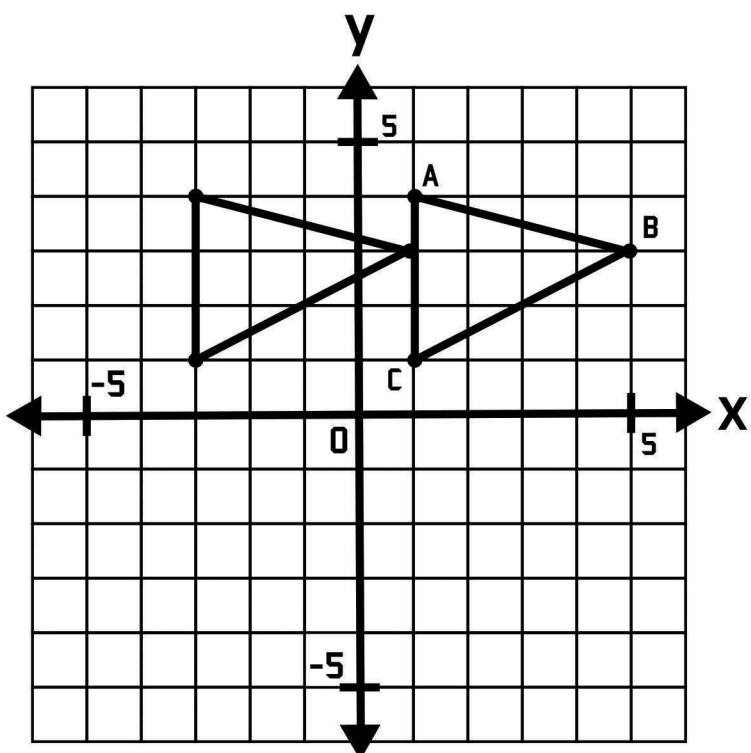
If the total cost of the wallpaper was \$771.12, what was the cost, in dollars, of the wallpaper per square foot?

- A \$0.61
- B \$0.72
- C \$1.39
- D \$1.65

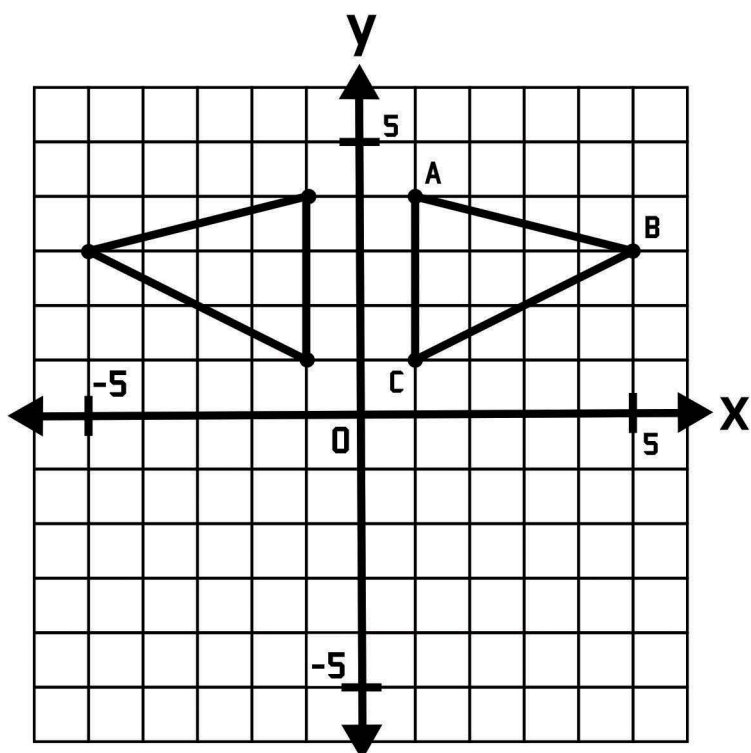
Q.30) Which of the following represents the combined design when Figure ABC is rotated 180° about the origin to produce rotation symmetry?



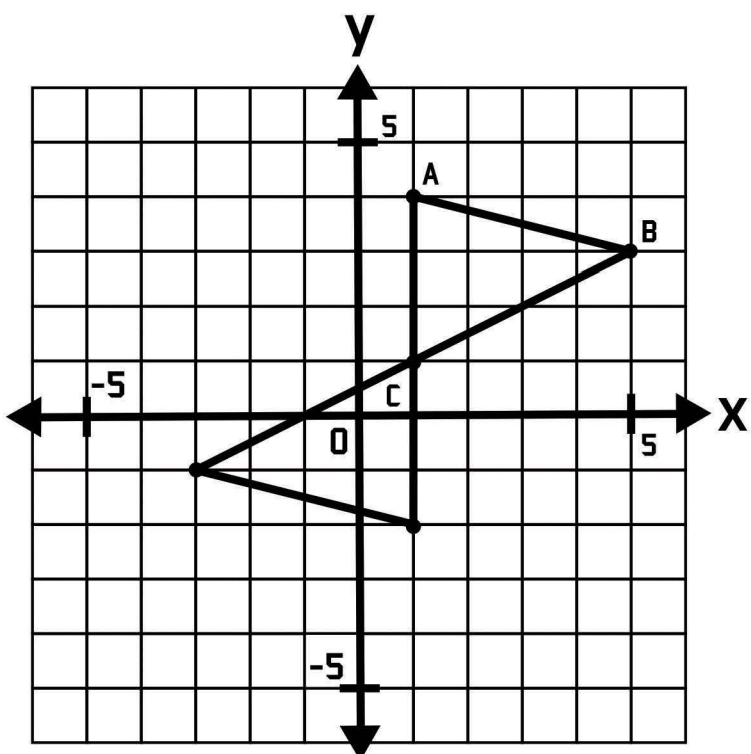
A



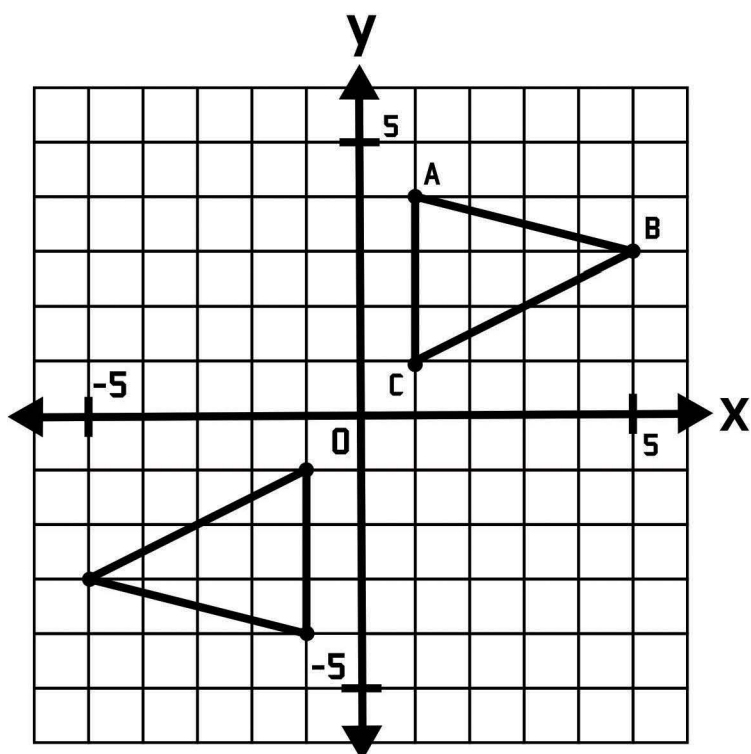
B



C



D



THE END

ANSWER



SHEET

Q. No.	Answer			
1	<input checked="" type="radio"/> A	<input type="radio"/> B	<input type="radio"/> C	<input type="radio"/> D
2	<input checked="" type="radio"/> A	<input type="radio"/> B	<input type="radio"/> C	<input type="radio"/> D
3	<input checked="" type="radio"/> A	<input type="radio"/> B	<input type="radio"/> C	<input type="radio"/> D
4	<input checked="" type="radio"/> A	<input type="radio"/> B	<input type="radio"/> C	<input type="radio"/> D
5	<input checked="" type="radio"/> A	<input type="radio"/> B	<input type="radio"/> C	<input type="radio"/> D
6	<input type="radio"/> A	<input checked="" type="radio"/> B	<input type="radio"/> C	<input type="radio"/> D
7	<input checked="" type="radio"/> A	<input type="radio"/> B	<input type="radio"/> C	<input type="radio"/> D
8	<input checked="" type="radio"/> A	<input type="radio"/> B	<input type="radio"/> C	<input type="radio"/> D
9	<input checked="" type="radio"/> A	<input type="radio"/> B	<input type="radio"/> C	<input type="radio"/> D
10	<input type="radio"/> A	<input checked="" type="radio"/> B	<input type="radio"/> C	<input type="radio"/> D
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12	<input checked="" type="radio"/> A	<input type="radio"/> B	<input type="radio"/> C	<input type="radio"/> D
13	<input checked="" type="radio"/> A	<input type="radio"/> B	<input type="radio"/> C	<input type="radio"/> D
14	<input type="radio"/> A	<input checked="" type="radio"/> B	<input type="radio"/> C	<input type="radio"/> D
15	<input checked="" type="radio"/> A	<input type="radio"/> B	<input type="radio"/> C	<input type="radio"/> D

Q. No.	Answer			
16	<input type="radio"/> A	<input checked="" type="radio"/> B	<input type="radio"/> C	<input type="radio"/> D
17	<input checked="" type="radio"/> A	<input type="radio"/> B	<input type="radio"/> C	<input type="radio"/> D
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29	<input checked="" type="radio"/> A	<input type="radio"/> B	<input type="radio"/> C	<input type="radio"/> D
30	<input checked="" type="radio"/> A	<input type="radio"/> B	<input type="radio"/> C	<input type="radio"/> D



FSP Vibrant Youngsters
A Project of:
Famous Stationary & Paper products.
We deal in all kind of printing & stationary.

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