7th Basic

8th Advanced

Helping With Math

USA GRADES

Frequency Polygon

Suitable for students **aged 11-13**

This pack is suitable for learners aged 11-13 years old or 7th and 8th graders (USA). The content covers fact files and relevant basic and advanced activities involving Frequency Polygon.

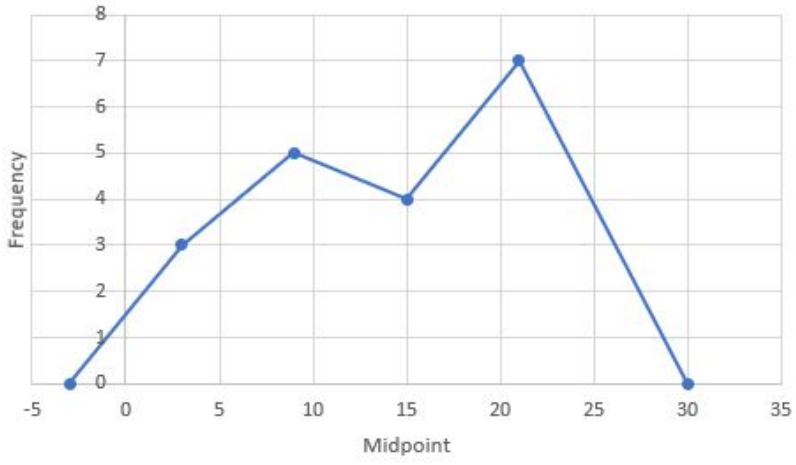
Frequency Polygon is a line graph of class frequency plotted against class midpoint. Frequency Polygon can be created from histogram.

Example :

Spent ($)	Frequency	Mid point	Total Class Value
0 < S < 6	3	3	9
6 < S < 12	5	9	45
12 < S < 18	4	15	60
18 < S < 24	7	21	147

Midpoint is calculated by adding the upper and lower boundary values and dividing the sum by 2.

Total Class Value is the product of frequency and midpoint.



STEPS IN CONSTRUCTING FREQUENCY POLYGON

Step 1 Make a table. **Step 2** Determine the frequency from the data.

Step 3 Determine the midpoint of the data ranges.

Step 4 Construct the frequency polygon against midpoint.

Sample Problem :
Use the group distribution data shown below to construct a frequency polygon using an interval width of 10 starting from 10.

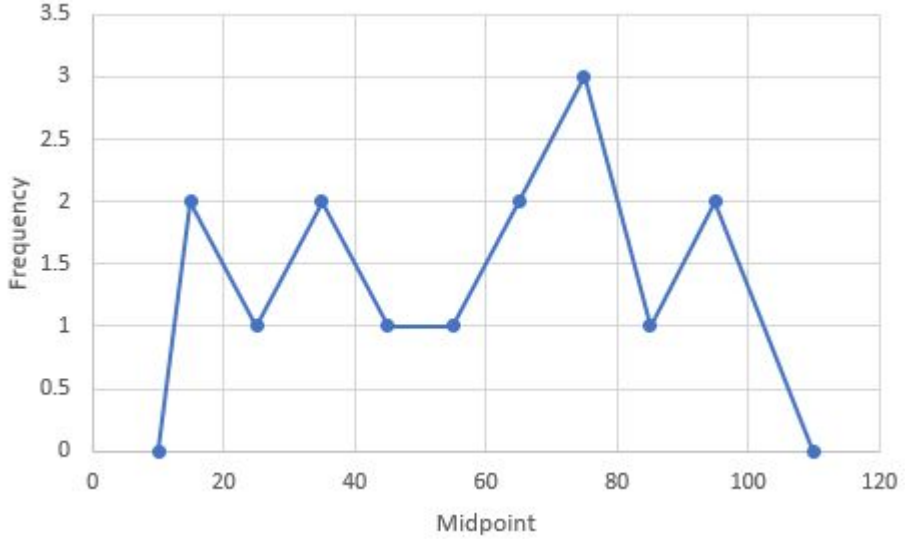
22, 51, 31, 33, 42, 61, 63, 71, 75, 91, 93, 68, 72, 88, 11, 18

Group	Frequency	Midpoint
10 – 20	2	15
20 – 30	1	25
30 – 40	2	35
40 – 50	1	45
50 – 60	1	55
60 – 70	2	65
70 – 80	3	75
80 – 90	1	85
90 – 100	2	95

NOTE!

* Frequency can be determined by counting the numbers between the range from the given group data.

- Midpoint can be calculated by (10 + 20) / 2 = 15

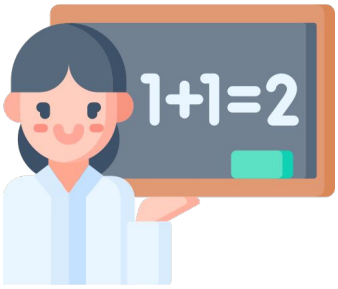


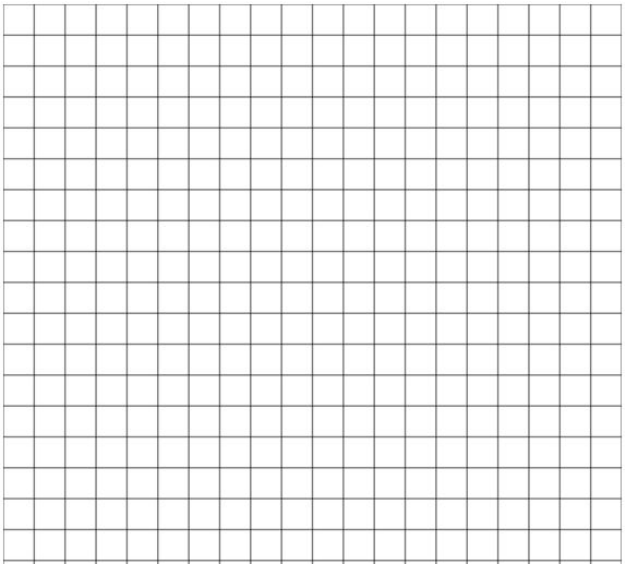
LET'S PRACTICE!

Fill the table and draw the frequency polygon on the graph provided.

1.

Spent ($)	Frequency	Midpoint
0 < S < 8	4	
8 < S < 16	10	
16 < S < 24	6	
24 < S < 32	7	





2.

Spent ($)	Frequency	Midpoint
0 < S < 2	2	
2 < S < 4	10	
4 < S < 6	11	
6 < S < 8	8	

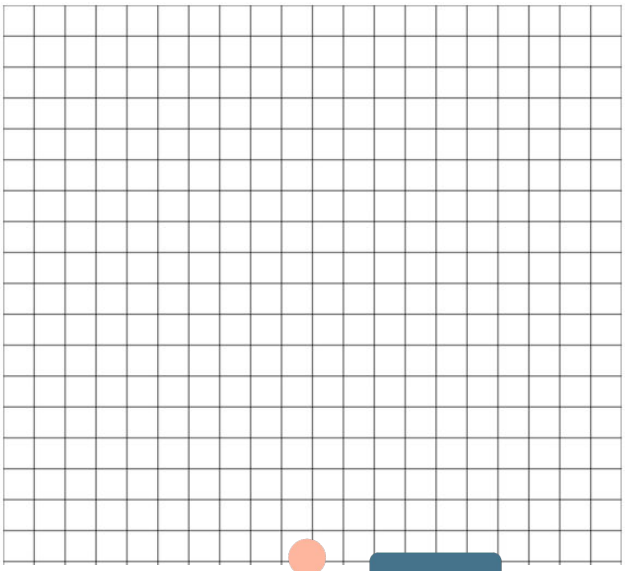


TABLE OF ACTIVITIES

Ages 11-12 (Basic)	7th Grade
1	Teacher On Duty
2	Class President
3	School Retreat
4	Quiz Bowl
5	School Choir
Ages 12-13 (Advanced)	8th Grade
6	Academic Excellence Award
7	Graduation Ceremony
8	Students' Day
9	Vacation Time!
10	School Canteen

TEACHER ON DUTY

G7 Basic

Help your teacher organize the class schedule by answering the following questions. Choose the correct answer and write it on the space provided.

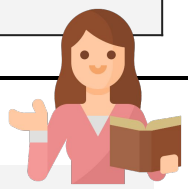
___1. A line graph of class frequency plotted against midpoint.

a. Frequency Polygon b. Graph Line
c. Graph Line d. Midpoint Line

___2. Given the income data, what are the midpoints?

a. 4 , 6 , 8 b. 20 , 25 , 10
c. 10 , 12.5 , 5 d. 3 , 5 , 7

Income	Frequency	Midpoint
2 <S< 4	20	
4 <S< 6	25	
6 <S< 8	10	



___3. Based from the problem number 2, what is the frequency of the
4 < S < 6?

a. 125 b. 25
c. 10 d. 5

___4. It is calculated by adding the upper and lower boundary values of the data and dividing the sum by 2.

a. Data b. Graph
c. Frequency d. Midpoint

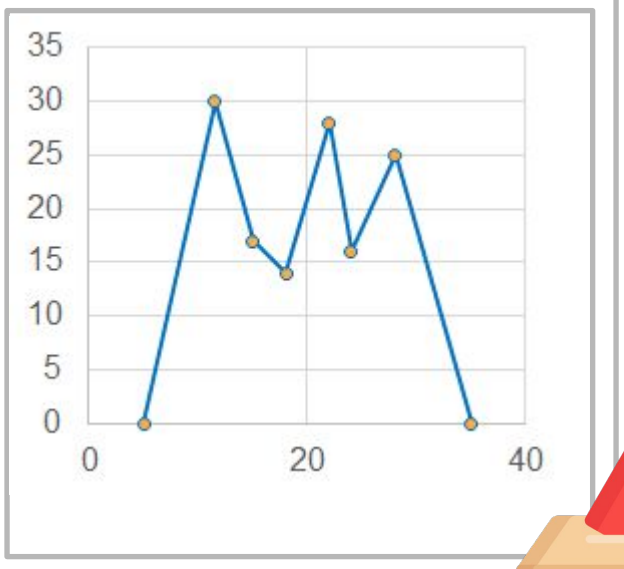
___5. The data usually goes on y-axis with the _____ being graphed on the x-axis.

a. Midpoint b. Frequency
c. Slope d. Graph

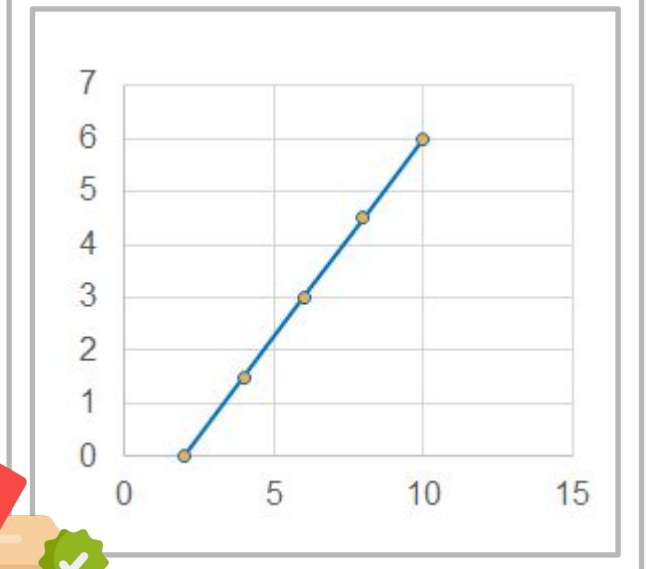
CLASS PRESIDENT

G7 Basic

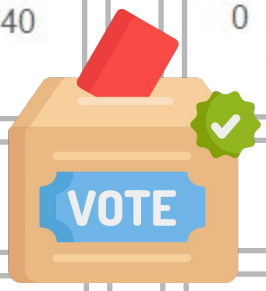
Your classmates will vote for you as the class president if you managed to answer the following. Identify whether the figures below is a frequency polygon or not. Write F if it is a frequency polygon and N if not on the space provided.

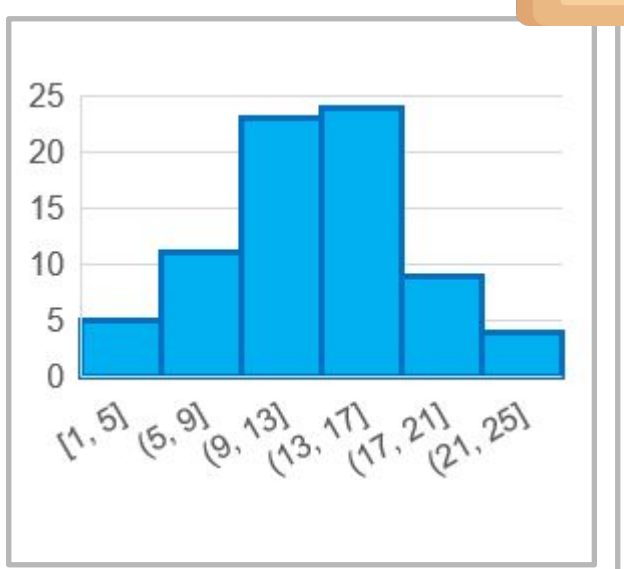


1. _____

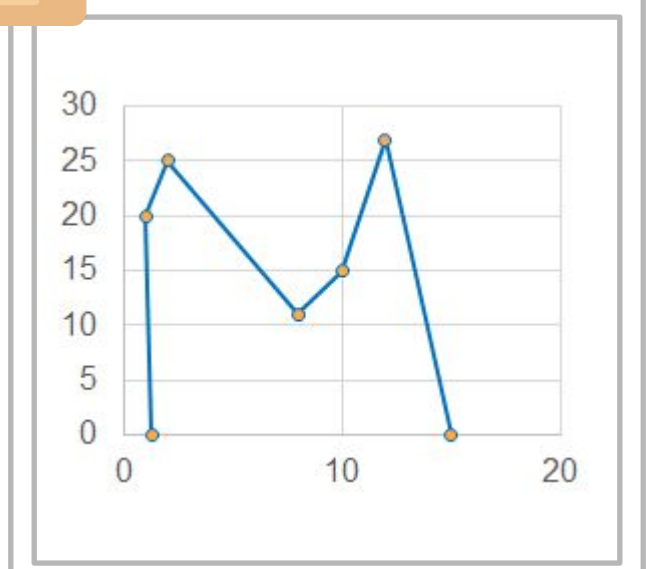


2. _____





3. _____



4. _____

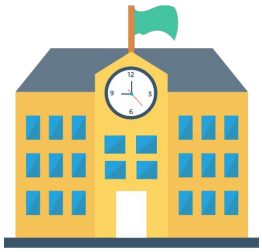
SCHOOL RETREAT

G7 Basic

Know the way to your retreat venue by answering the following. Write the steps on constructing frequency polygon that you have learned in the fact file section. Write your answers on the space provided.

1

School



2

Restaurant

3

Gasoline Station

4

Retreat House

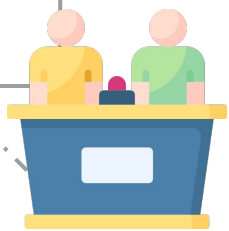
QUIZ BOWL

G7 Basic

Help Carlo in reviewing for the upcoming Quiz Bowl by analyzing the data and completing the tables below. Write your solution on the space provided.

1.) Class Data:
1, 2, 3, 4, 5, 9, 8, 7, 6

Class No.	Frequency
0<C<3	
3<C<5	
5<C<7	
7<C<9	



2.) Class Data:
1, 3, 5,13, 2, 6, 8, 9, 10,14, 11

Class No.	Frequency
1<C<4	
4<C<7	
7<C<11	
11<C<14	

3.) Class Data:
3, 2, 6, 5, 4, 10, 7, 6, 11, 13, 14

Class No.	Frequency
0<C<5	
5<C<10	
10<C<15	

4.) Class Data:
2, 4, 6, 8, 9, 10, 12, 14, 16, 18, 20

Class No.	Frequency
1<C<3	
3<C<10	
10<C<20	

SCHOOL CHOIR

G7 Basic

Join the school choir in the upcoming Christmas Party. You can join if you can solve the problems below. Show your solution on the space provided and write your answers on the table.

1.

Class No.	Midpoint
2<C<30	
30<C<58	
58<C<86	

2.

Class No.	Midpoint
10<C<20	
20<C<30	
30<C<40	

3.

Class No.	Midpoint
50<C<100	
100<C<150	
150<C<200	

4.

Class No.	Midpoint
25<C<30	
30<C<35	
35<C<40	

5.

Class No.	Midpoint
5<C<15	
15<C<25	
25<C<35	

6.

Class No.	Midpoint
9<C<16	
16<C<23	
23<C<30	

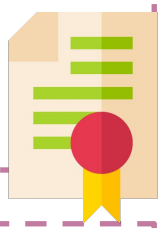
ACADEMIC EXCELLENCE AWARD

G8 Advanced

Ben is aiming to get the Academic Excellence Award. Help him by answering the following problems below. Show your solution on the space provided.

1.)

Spent ($)	Frequency	Midpoint	Total Class Value
0<S<2	10		
2<S<4	20		
4<S<6	25		



2.)

Spent ($)	Frequency	Midpoint	Total Class Value
3<S<9	3		
9<S<15	5		
15<S<21	4		

3.)

Spent ($)	Frequency	Midpoint	Total Class Value
10<S<20	10		
20<S<30	15		
30<S<40	20		

4.)

Spent ($)	Frequency	Midpoint	Total Class Value
50<S<100	3		
100<S<150	6		
150<S<200	9		

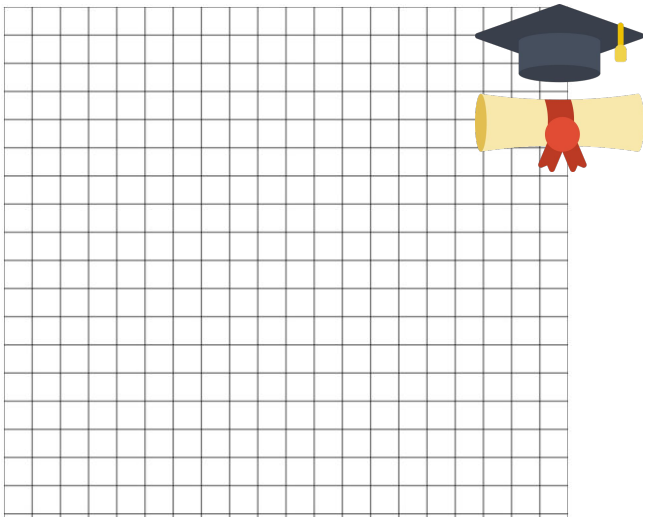
GRADUATION CEREMONY

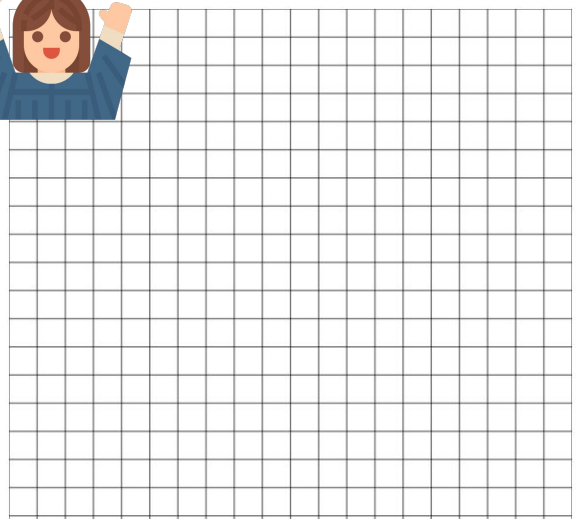
G8 Advanced

To attend the graduation ceremony, you need to answer the following problems first. Write your answers on the space provided and draw the frequency polygon on the graph.

1.)

Spent ($)	Frequency	Midpoint
0<S<2	4	
2<S<4	6	
4<S<6	7	



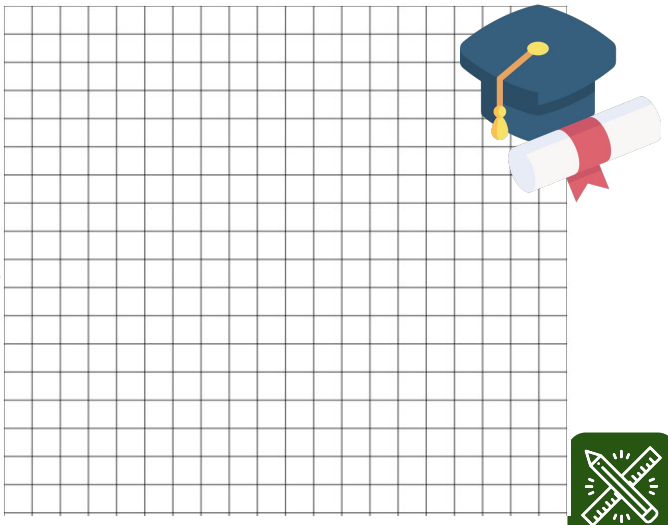


2.)

Spent ($)	Frequency	Midpoint
3<S<7	20	
7<S<11	12	
11<S<15	14	

3.)

Spent ($)	Frequency	Mid point
1<S<3	11	
3<S<5	5	
5<S<7	8	



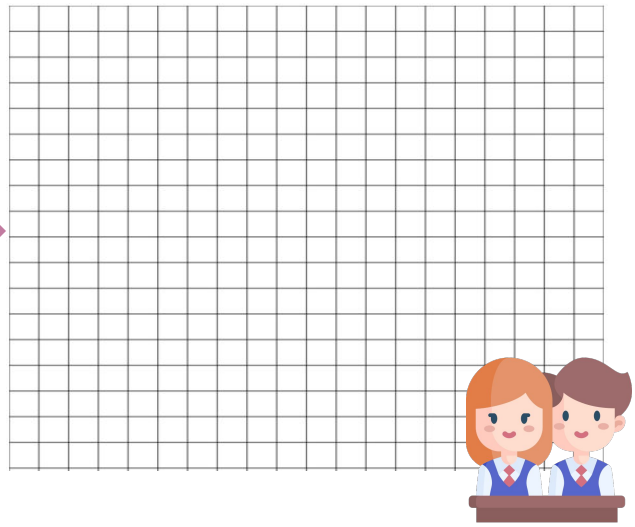
STUDENTS' DAY

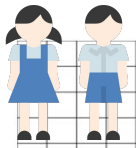
G8 Advanced

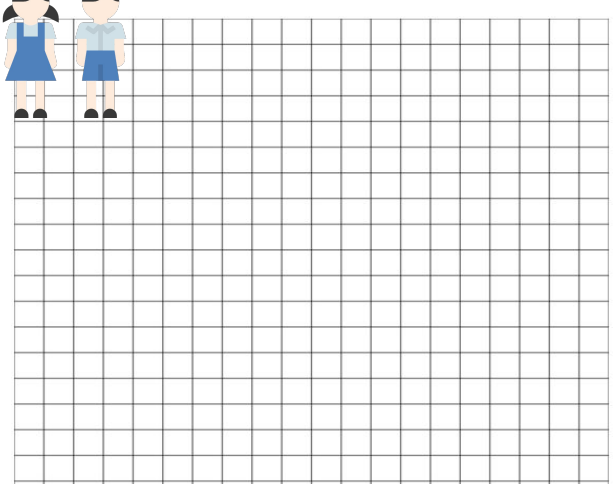
The school will be giving "Student of the year" award to anyone who can answer the problems below. For you to get that award, finish the problems below correctly. Analyze the data given then draw the frequency polygon on the graph provided.

1.)

Class No.	Frequency	Midpoint
3<S<10	20	6.5
10<S<17	5	13.5
17<S<24	7	20.5





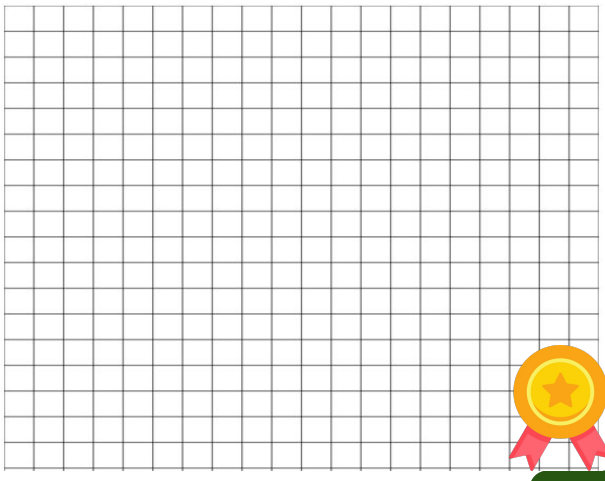


2.)

Class No.	Frequency	Midpoint
2<S<4	15	3
4<S<6	8	5
6<S<8	10	7

3.)

Class No.	Frequency	Mid point
0<S<5	13	2.5
5<S<10	6	7.5
10<S<15	9	12.5



VACATION TIME!

G8 Advanced

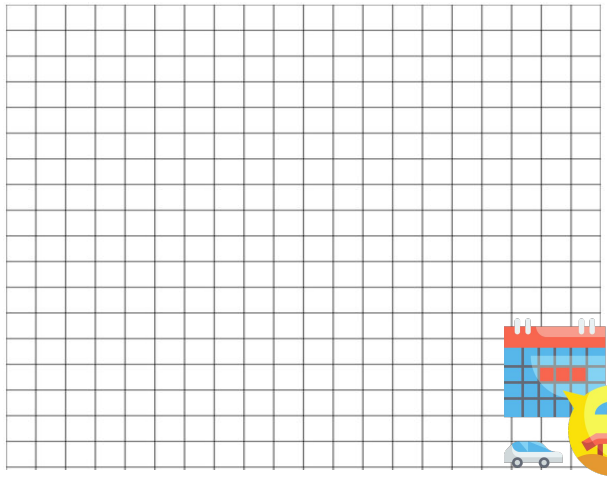
To enjoy your vacation, you need to answer the following problems as soon as possible. Analyze the given data in each number and solve the frequency and midpoint on the space provided. Draw the frequency polygon on the graph provided.

1. Given Data:

2, 10, 12 , 3, 1, 4, 7, 9, 11, 13, 15 , 14

Class No.	Frequency	Midpoint
1<C<6		
6<C<11		
11<C<16		

What is the total no. of student in the class? _____

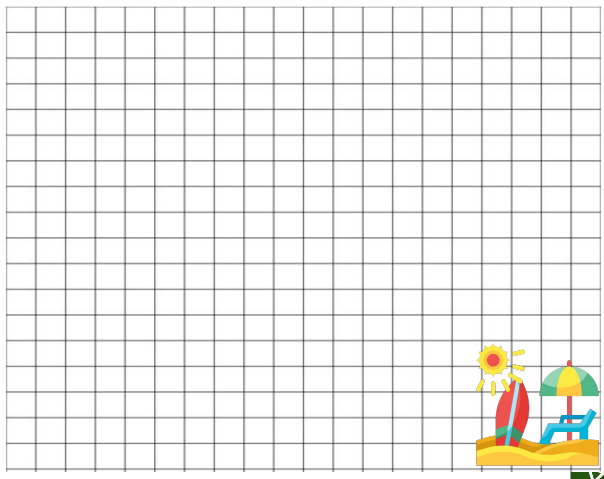


2.) Given Data:

2, 4, 10, 12, 16, 20, 3, 5, 7, 11, 13, 21, 22, 17, 8, 18, 9, 1, 6, 24

Faculty No.	Frequency	Midpoint
0<C<5		
5<C<10		
10<C<15		
15<C<20		
20<C<25		

What is the total no. of faculty members? _____



SCHOOL CANTEEN

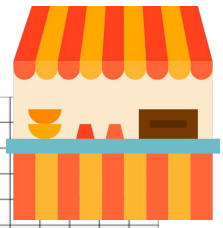
G8 Advanced

The school canteen will be giving a 10% discount if each student can analyze the word problem and draw the frequency polygon. Show your solution and write your answers on the space provided.

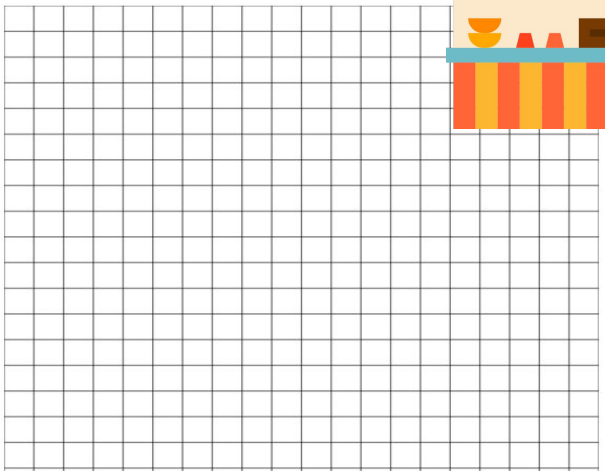
1.) A school canteen records the amount of each student spends over a day and groups the data as shown below.

a. Use the data to plot a frequency polygon.

b. How many customers were there in total?

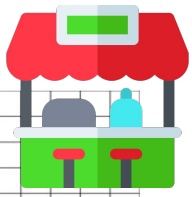


Spent ($)	Frequency	Midpoint
0<S<3	25	
3<S<6	11	
6<S<9	15	
9<S<12	30	

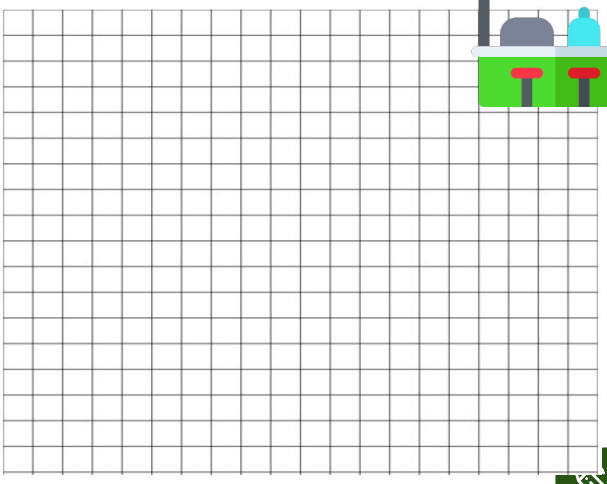


2.) The following table shows information about the time it takes a no. of students to complete a puzzle, in seconds.

a. Use the data to plot a frequency polygon.



Time (sec)	Frequency	Midpoint
0<T<25	35	
25<T<50	25	
50<T<75	30	
75<T<100	13	
100<T<125	15	



ANSWER GUIDE

Activity 1

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

Activity 2

1. F 2. N 3. N 4. F

Activity 3

1.) Make a table.
2.) Determine the frequency from the data.
3.) Determine the midpoint of the data ranges.
Construct the frequency polygon against midpoint

Activity 4

1.)

Frequency
2
2
2
3

2.)

Frequency
3
2
3
3

3.)

Frequency
3
4
4

4.)

Frequency
1
4
6

Activity 5

1.)

Midpoint
(2+30) ÷ 2=16
(30+58) ÷ 2=44
(58+86) ÷ 2=72

2.)

Midpoint
(10+20) ÷ 2=15
(20+30) ÷ 2=25
(30+40) ÷ 2=35

3.)

Midpoint
(50+100) ÷ 2=75
(100+150) ÷ 2=125
(150+200) ÷ 2=175

4.)

Midpoint
(25+30) ÷ 2=27.5
(30+35) ÷ 2=32.5
(35+40) ÷ 2=37.5

5.)

Midpoint
(5+15) ÷ 2=10
(15+25) ÷ 2=20
(25+35) ÷ 2=30

6.)

Midpoint
(9+16) ÷ 2=12.5
(16+23) ÷ 2=19.5
(23+30) ÷ 2=26.5

ANSWER GUIDE

Activity 6

1.)

Midpoint	Total Class Value
(0+2) ÷ 2=1	1 x 10 = 10
(2+4) ÷ 2=3	3 x 20 = 60
(4+6) ÷ 2=5	5 x 25 = 125

2.)

Midpoint	Total Class Value
(3+9) ÷ 2=6	6 x 3 = 18
(9+15) ÷ 2=12	12 x 5 = 60
(15+21) ÷ 2=18	18 x 4 = 72

3.)

Midpoint	Total Class Value
(10+20) ÷ 2=15	15 x 10 = 150
(20+30) ÷ 2=25	25 x 15 = 375
(30+40) ÷ 2=35	35 x 20 = 700

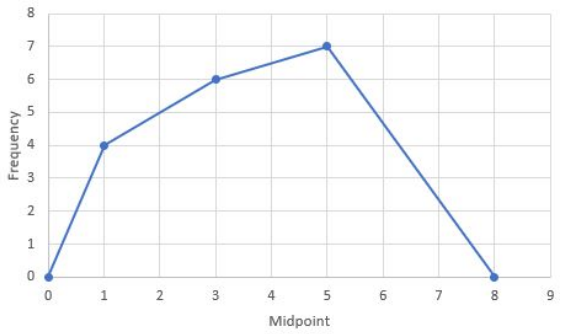
4.)

Midpoint	Total Class Value
(50+100) ÷ 2=75	75 x 3 = 225
(100+150) ÷ 2=125	125 x 6 = 750
(150+200) ÷ 2=175	175 x 9 = 1575

Activity 7

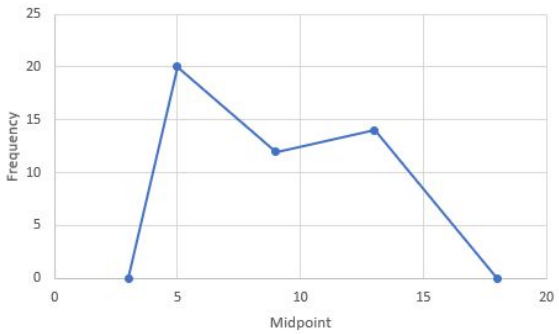
1.)

Midpoint
(0+2) ÷ 2=1
(2+4) ÷ 2=3
(4+6) ÷ 2=5



2.)

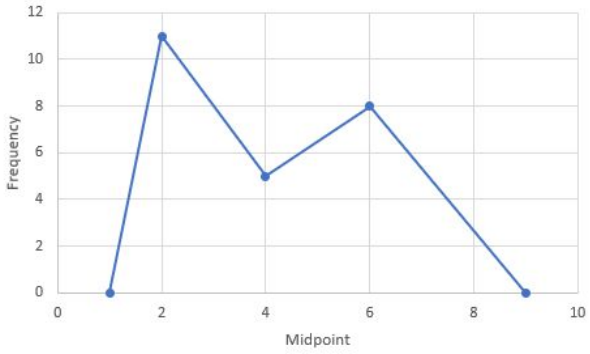
Midpoint
(3+7) ÷ 2=5
(7+11) ÷ 2=9
(11+15) ÷ 2=13



ANSWER GUIDE

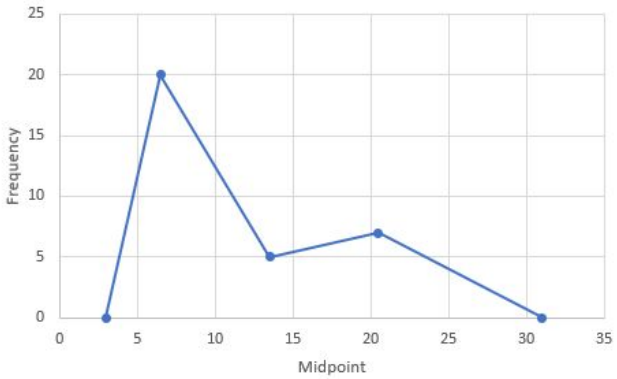
3.)

Midpoint
(1+3) ÷ 2=2
(3+5) ÷ 2=4
(5+7) ÷ 2=6

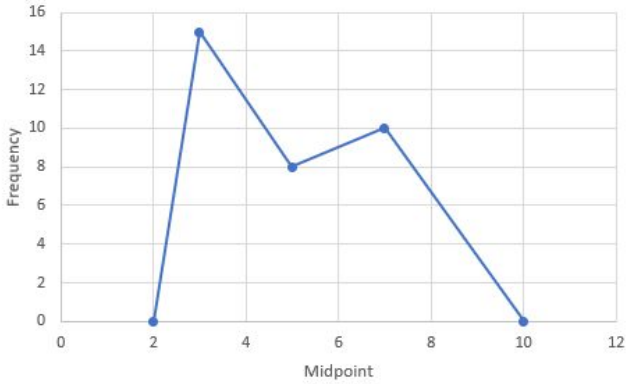


Activity 8

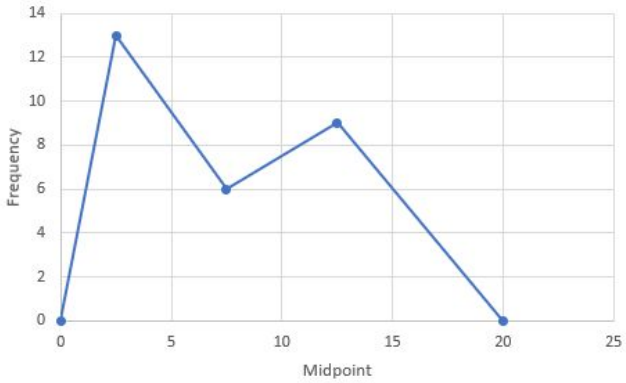
1.)



2.)



3.)

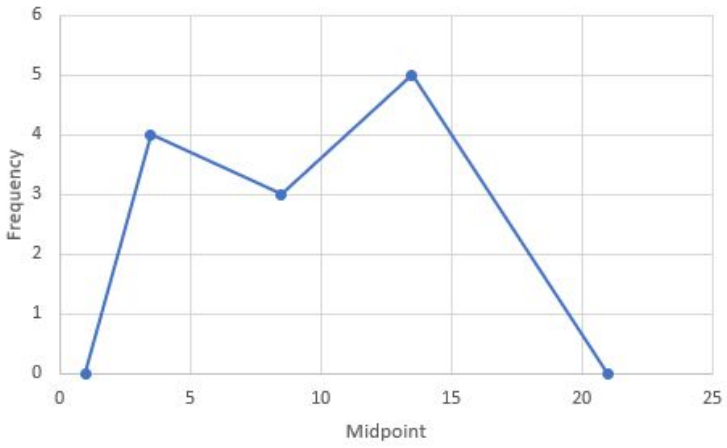


ANSWER GUIDE

Activity 9

1.)

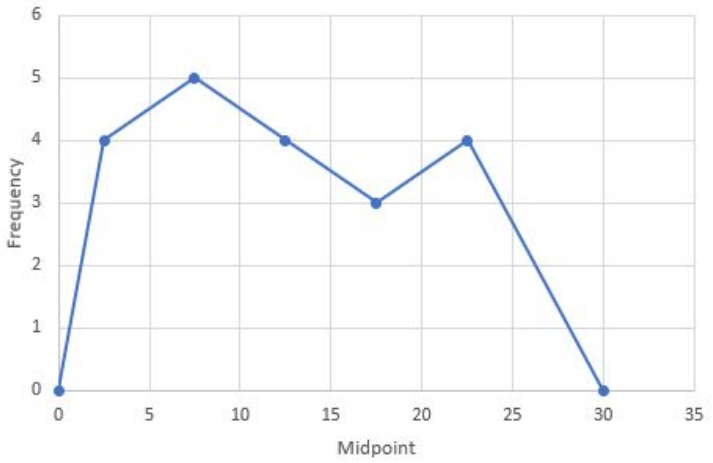
Frequency	Midpoint
4	(1+6) ÷ 2 =3.5
3	(6+11) ÷ 2 =8.5
5	(11+16) ÷ 2 =13.5



Total no. of students = 4+3+5=**12**

2.)

Frequency	Midpoint
4	(0+5) ÷ 2 =2.5
5	(5+10) ÷ 2 =7.5
4	(10+15) ÷ 2 =12.5
3	(15+20) ÷ 2 =17.5
4	(20+25) ÷ 2 =22.5



Total no. of faculty members = 4+5+4+3+4=**20**

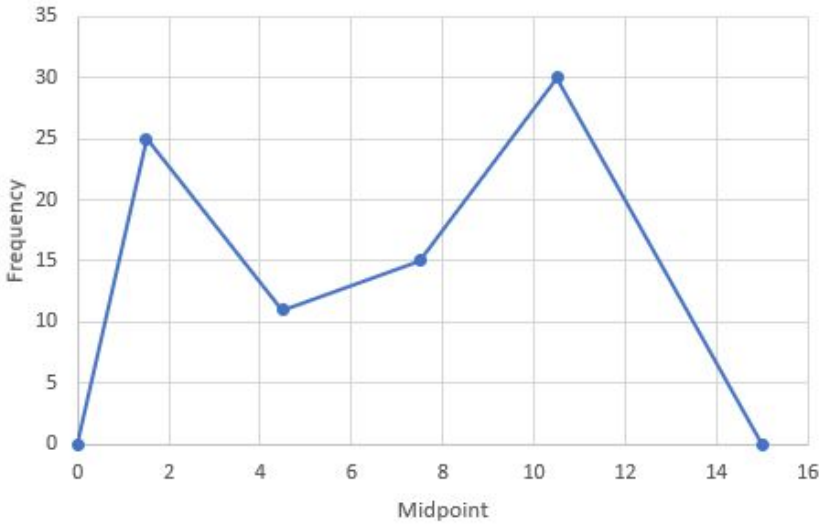
ANSWER GUIDE

Activity 10

1.)

Midpoint
(0+3) ÷ 2 =1.5
(3+6) ÷ 2 =4.5
(6+9) ÷ 2 =7.5
(9+12) ÷ 2 =10.5

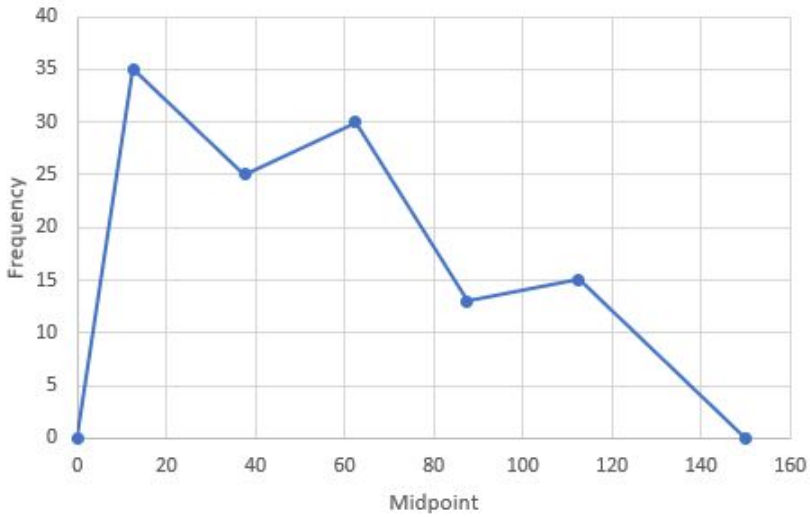
a.



b. Total no. of customers
25+11+15+30=**81**

2.)

Midpoint
(0+25) ÷ 2 =12.5
(25+50) ÷ 2 =37.5
(50+75) ÷ 2 =62.5
(75+100) ÷ 2 =87.5
(100+125) ÷ 2 =112.5



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