



Helping With Math

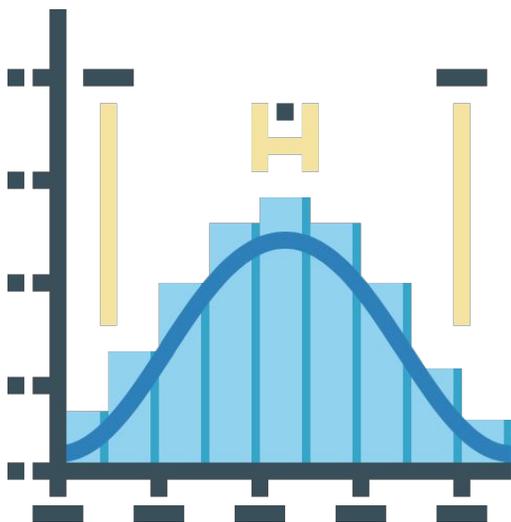
Examining Shapes of Distribution

GRADE 6



The shape of a distribution is characterized by its number of peaks and by its possession of symmetry, its possibility to skew, or its uniformity.

The shape of a statistical distribution can be ...



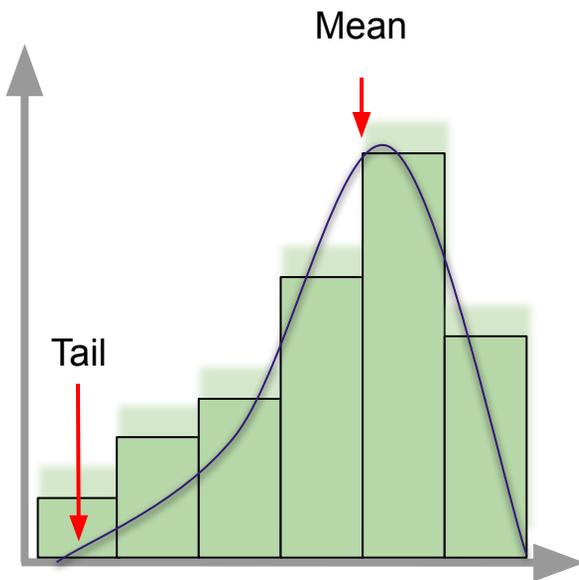
An example of Symmetrical Distribution

SYMMETRICAL

- A distribution that is not skewed.
- It is also known as the “Normal Distribution”.
- It is perfectly symmetrical.
- The mean, media, and mode are having the same value and located at the peak and center of the distribution.



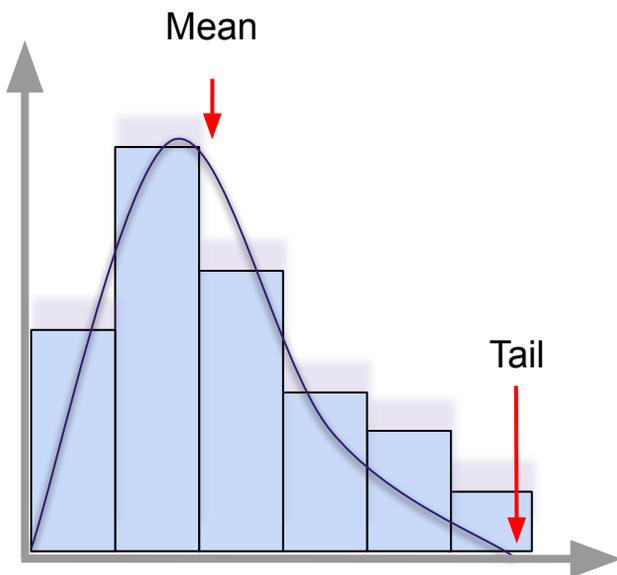
SKEWNESS



An example of Negatively Skewed Distribution

NEGATIVE SKEW

- The long tail of the curve falls on the negative side of the curve.
- It is also known as the “Skewed to the left distribution”.
- The mean of the distribution is located at the left side of the peak.



An example of Positively Skewed Distribution

POSITIVE SKEW

- The long tail of the curve falls on the positive side of the curve.
- It is also known as the “Skewed to the right distribution”.
- The mean of the distribution is located at the right side of the peak.

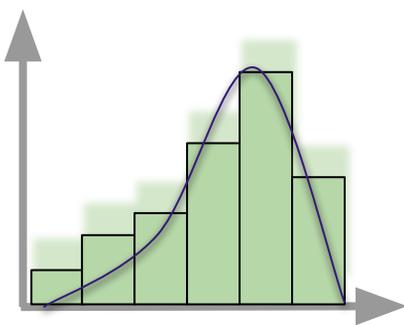


SKEWNESS

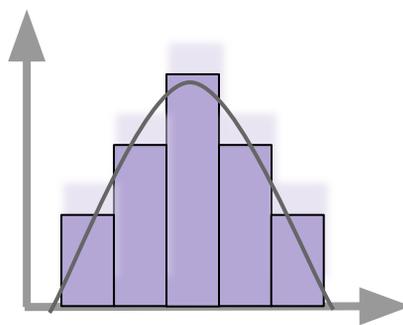
SKEWNESS

Skewness refers to distortion or asymmetry in a symmetrical bell curve, or normal distribution, in a set of data.

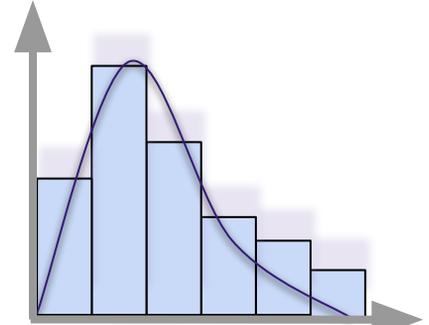
Remember that a shape of the distribution can be



Negative



Symmetrical



Positive

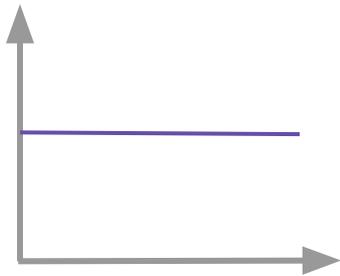
Why is it important for us to know the shape of a statistical distribution?

- It shows the graphical representation of the data.
- The trend/behavior of data can be easily seen.
- It can easily determine the location of the measures of central tendency.
- In terms of decision-making, understanding the shape of the distribution can be done more efficiently.



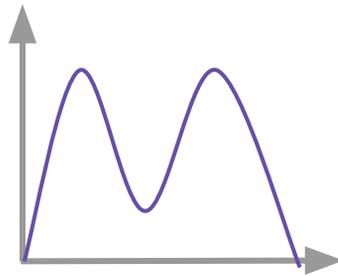
FLATNESS AND UNIFORMITY

A distribution can also be shaped depending on its flatness and/or uniformity.



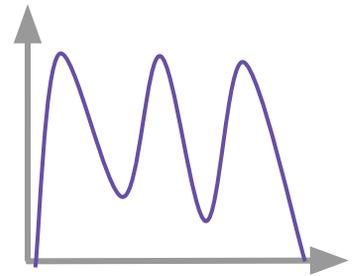
Flat

All scores are having equal frequency. Another type of symmetric distribution.



Bimodal

A distribution with two modal scores.



Multimodal

A distribution with more than two modal scores.

PRACTICE EXERCISES

Mario is interested to know the variation of the height, in cm, of his 12 classmates. His gathered data is listed below.

160 165 166 170 170 168 155 155 180 172 169 151

On a separate paper,

1. Compute for the value of mean.
2. Create a dot plot representation of this data.
3. Describe its shape distribution.

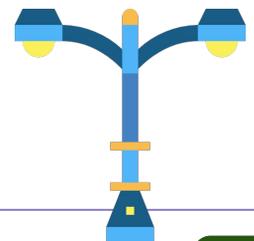


TABLE OF ACTIVITIES

1. Welcome to the City
2. The City Park
3. Fancy Commercial Buildings
4. The Busy Pedestrian
5. Direction Sign
6. Fun with Street Lights
7. Just a Normal City Life
8. Commercial Space For Rent
9. Relaxing Coffee Shop
10. City Life Experience



WELCOME TO THE CITY

Your friend, Joe, is a newbie in the city. Get him familiarized with your city by answering the following questions.

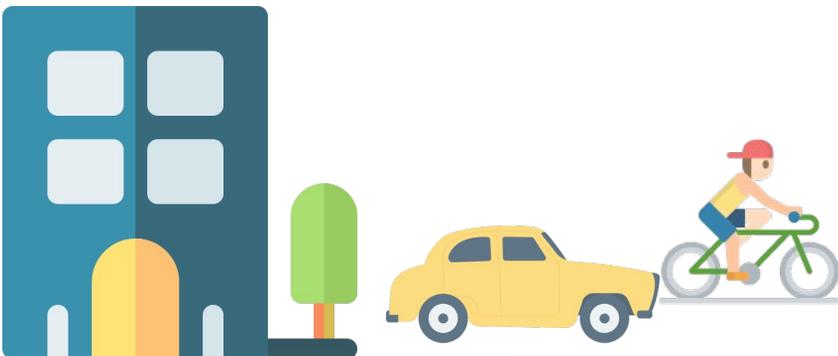
1. What type of distribution is considered as normal distribution?

2. What type of distribution has all scores are having equal frequency?

3. Which shape distribution possesses skewed to the left-property?

4. Which shape distribution possesses skewed to the right-property?

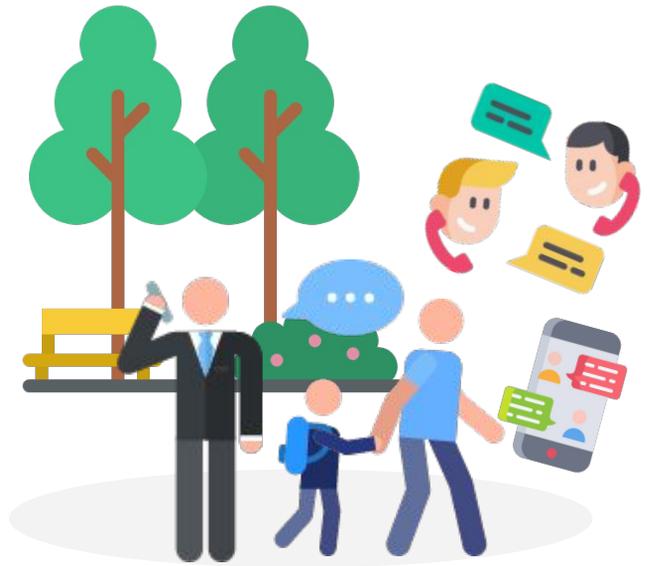
5. Which distribution is described if the mean, median, and mode coincide?



THE CITY PARK

The city park is filled with people who are busy on using their cellphones. Listed below is the age of their mobile phones in years. Answer the questions that follow.

Age of Mobile Phones (in years)			
5	1	0	2
0	0	4	4
5	2	3	6
6	1	3	3
5	2	1	1



1. Present the data using a dot plot.

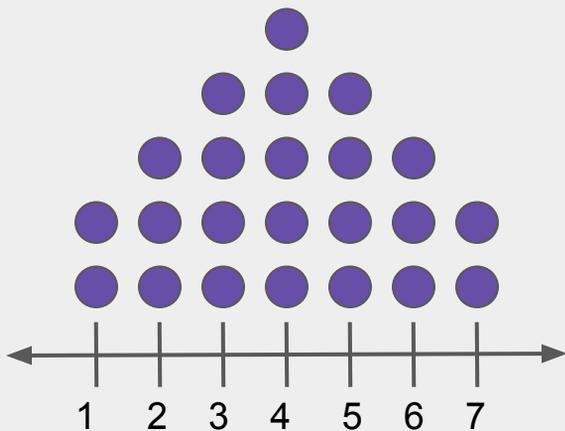
2. In your own words, how would you describe the shape of the distribution?



FANCY COMMERCIAL BUILDINGS

Reveal the beauty of these commercial buildings by doing the tasks below.

No. of Inquiry E-mails Received Daily



1. Construct a tabular representation of the data.

2. What is your general observation of the collected data?



3. Describe the shape of the distribution. Into what category does it fall?



THE BUSY PEDESTRIAN

Seems the pedestrian located at the heart of the city is busy as ever. Avoid people to bump each other by determining which type of skewness is more appropriate on the following real-life scenarios. Justify your answer.

1. The collected data of the household incomes of a region is studied, from values ranging between \$6,000 to \$255,000, where most of the citizens fall in the group between \$6,000 and \$105,000.



2. In a school normal day, if a school test is easy, then most of the students will perform well in it.

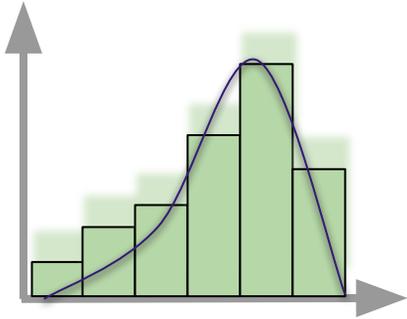


3. When comparison of human lifespans is done, most people live beyond their middle age, or even older.

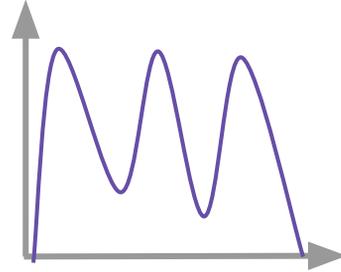


DIRECTION SIGN

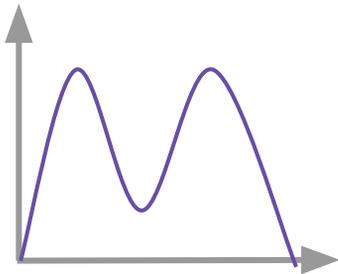
You are lost on your way at the nearby city. The direction sign will help you find your way back. But first, identify which type of distribution is being shown in each item.



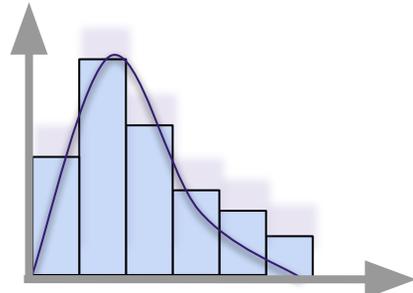
1.



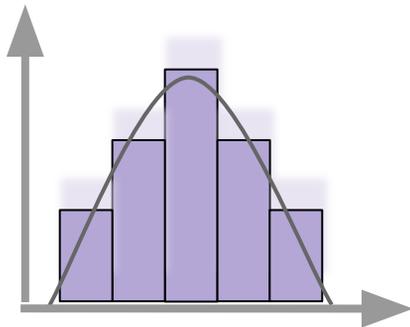
2.



3.



4.



5.

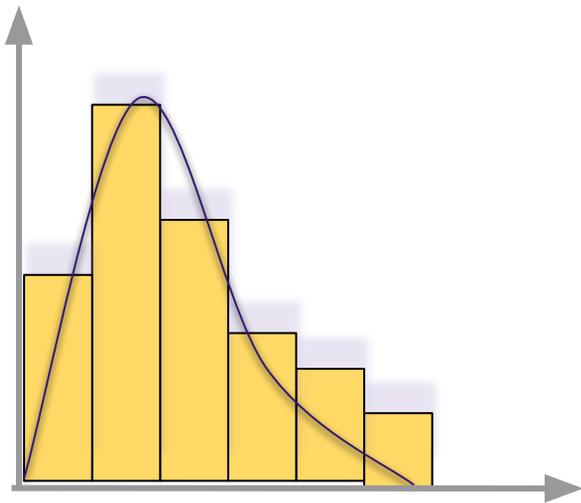


6.

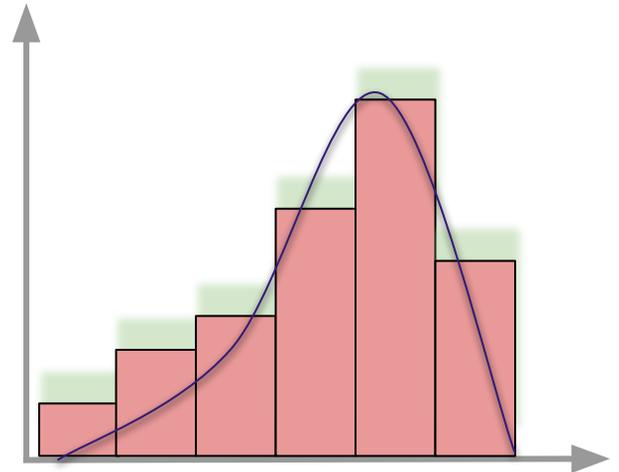


FUN WITH STREET LIGHTS

The city is filled with bright street lights every night! Make them more brighter by determining whether the given statements are TRUE or NOT. Write FACT if it is correct, otherwise FALSE.



Data 1



Data 2

1. Data 1 is an example of negatively-skewed distribution.

2. The tail of Data 2 is located at the left side of its peak.

3. The median of Data 1 can be found on the right side of its peak.

4. The tail of both data is where the outliers can be found.

5. Both distribution are not symmetrical.

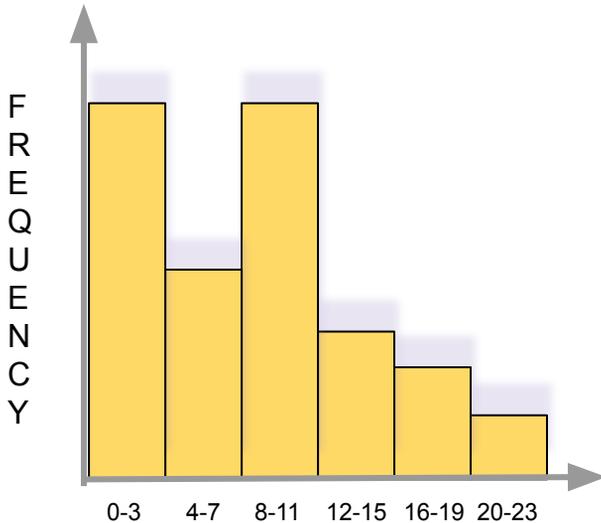
6. Data 1 is unimodal while Data 2 is bimodal.



JUST A NORMAL CITY LIFE

It's just a usual day for James today in the city. Look at his common errands while writing the interpretation of the given distributions.

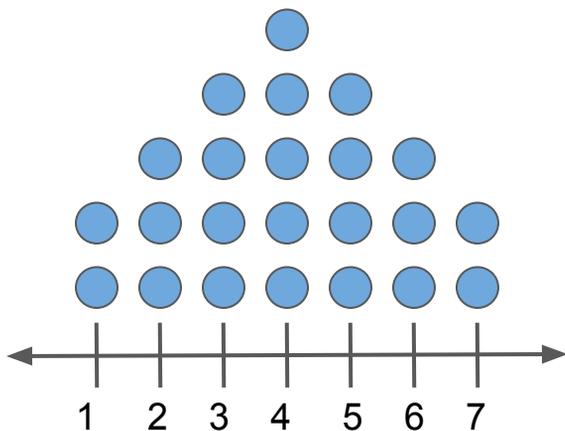
Number of Food Orders in a Week



1. Location of the tail:
2. Location of the mean:
3. Number of modes:
4. Shape of the distribution:
5. Flatness/Uniformity:



No. of Walk-in Visitors in a Week



1. Location of the tail:
2. Location of the mean:
3. Number of modes:
4. Shape of the distribution:
5. Flatness/Uniformity:

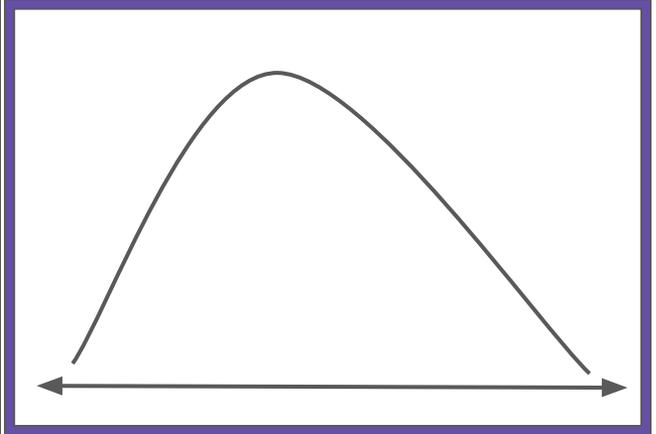


COMMERCIAL SPACE FOR RENT

Grab the special offer of this commercial space when complete the tasks below.



Distribution A



Distribution B

1. Examine the two distributions. Write a general observation of the two distributions in terms of their shape and narrowness.



2. Which measure is responsible on their differences? Explain your answer.



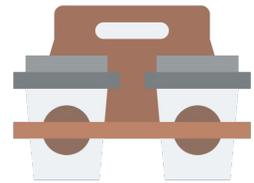
RELAXING COFFEE SHOP

Complete these challenging tasks while you are relaxing in your favorite coffee shop.

Number of Coffee Orders per Customer



5	3	4	4	5	2	1
3	7	6	6	1	2	2
2	2	3	3	1	2	2



Compute for the values of mean, median, and mode. Then, sketch the shape of the distribution using a curve. Make sure to construct it based on the computed values of measures of central tendency.



CITY LIFE EXPERIENCE

Interview 12 persons about the time they spent doing an errand whenever they go to the nearby mall in the city.

1. List down your date here.

2. Construct a dot plot based on the gathered data.

3. Is the distribution skewed or symmetrical? Explain the reason why it has that shape.



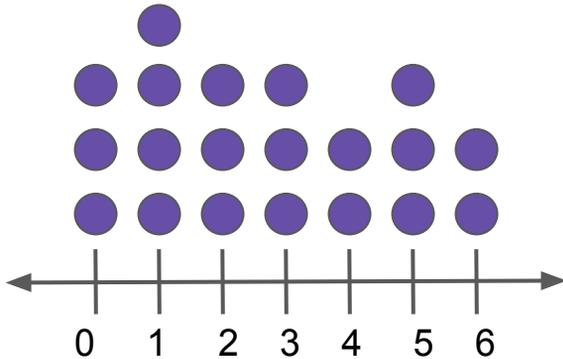
ANSWER GUIDE

Activity 1

1. Symmetrical
2. Flat
3. Negative skew
4. Positive skew
5. Normal distribution

Activity 2

**Age of Mobile Phones
(in years)**



2. The distribution is a unimodal distribution. The shape of the distribution is a bit skewed and almost flat.

Activity 3

Day	1	2	3	4	5	6	7
No. of emails	2	3	4	5	4	3	2

2. Some days received the same number of emails. On day 4, it is considered as the peak. All in all, there were 23 emails received.



ANSWER GUIDE

3. The distribution is symmetrical and normal. Since it is symmetrical, its mean, median, and mode are just the same and that is 5.

Activity 4

1. This distribution is positively skewed. Since the range is from \$6,000 to \$225, 000 and most of the citizens belongs to \$6,000-\$105,000 range, it means that the concentration of the data is more on the left side and the tail is located on the right side of the peak.

2. This is a negatively-skewed distribution. Since the test is easy, most of the students will get a higher score. Thus, the tail of the curve is on the left side of the curve.

3. This is an example of negatively skewed distribution. Since the value of the data gets higher as you go to the right, the bulk of the data is also found there---resulting to having its tail located on the left side of the peak.

Activity 5

- | | | |
|------------------|------------------------|------------|
| 1. Negative skew | 2. Multimodal | 3. Bimodal |
| 4. Positive skew | 5. Normal distribution | 6. Flat |



ANSWER GUIDE

Activity 6

- | | | |
|----------|---------|----------|
| 1. FALSE | 2. TRUE | 3. TRUE |
| 4. TRUE | 5. TRUE | 6. FALSE |

Activity 7

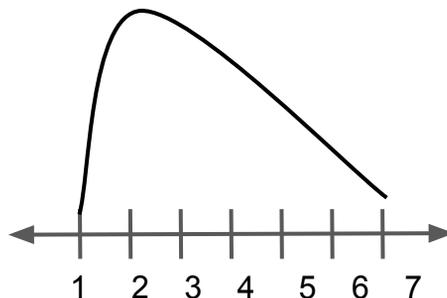
- | | |
|---------------------------|------------------------------------|
| 1. Right side of the peak | 1. Both sides--left and right ends |
| 2. Right side of the peak | 2. At the peak |
| 3. Two modes | 3. One |
| 4. Positive skew | 4. Symmetrical |
| 5. Bimodal | 5. Unimodal |

Activity 8

1. Distribution A has a higher peak than distribution B. Both of them are unimodal. A is narrower than B.
2. The measure of variability is the one responsible for the differences of the two distributions. A narrower distribution has less variation and a less narrowed one has more variation or more scattered.

Activity 9

Mean: 3.14
Median: 3 Mode: 2



Activity 10: Answers may vary.



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