CHAPTER TWO

SENSATION AND PERCEPTION

- *This chapter discusses the nature of sensation and perception as the first forms of human's intelligent life. It attempts to discuss the meaning and relationship of sensation and perception, the principles explaining how they work, and other related topics.*

- ✓ *Before anything else, psychological life begins with the activity of knowing what is happening around.*
- ✓ *Sensation and perception are the first important dimensions of this intelligent life.*
- ✓ *Starting points for all of your other psychological processes.*
- ✓ *They supply the data you use for learning and remembering, thinking and problem solving, communicating with others, and experiencing emotions and for being aware of yourself.*
- ✓ *Without access to the environment through sensation and perception, you would be like a person in a coma devoid of any thoughts or feelings.*

Once upon a time, there were couples in a village. They had a horse. One day they started a journey both of them sitting on the horse. When people see that, they get upset and criticized the couples as unkind to animals. Then, the husband sat on the horse leaving his wife walking on foot. Looking at this, people started to criticize the husband as selfish and disrespectful of his wife. Following the critics, the husband left the horse for his wife and walked on foot. People started laughing at the husband and labeled him as foolish. Finally, both the husband and his wife started walking on foot leaving the horse free. As usual, people started joking at the couples and considered them as stupid guys because they left the horse free.

1, what do you understand from this short story?

2, Do people have same perception about what is right and wrong?

3, In which scenario of the above story people's critics is right? How?

Learning Outcomes

At the end of this chapter, you are expected to understand the:

- ✓ *meaning of sensation and perception*
- ✓ *difference and similarities of sensation and perception*
- ✓ *factors affecting sensation and perception*

1

- ✓ *principles of sensation and perception, and*
- ✓ *Reasons for sensory and perceptual differences amount individuals.*

2.1. The meanings of sensation and perception

- ➢ *Psychologists have traditionally differentiated between sensation and perception*

questions

Have you heard of sayings like „you watch but you don't see"; „you hear but you don't listen", „you touch but you don't grasp…" What do these statements suggest to you? Which one do you think refers to sensation and which one refers to perception?

- ❖ *Sensation is the process whereby stimulation of receptor cells in the eyes, ears, nose, mouth, and surface of the skin sends nerve impulses to the brain.*
- ❖ *Sensations are closely tied to what is happening in the sensory systems themselves.*
- ❖ *Color, brightness, the pitch of tone or a bitter taste are examples of sensations.*
- ❖ *The starting of point of sensations is a stimulus.*
- ❖ *A form of energy (such as light waves or sound waves) that can affect sensory organs (such as the eye or the ear).*
- ❖ *Sensation is therefore the process that detects the stimulus from one's body or from the environment.*

What different d/t b/n sensation and perception?

- ✎ *In real life, you seldom experience simple sensations.*
- ✎ *We say largely because in everyday life, it is almost impossible to separate sensation from perception. As soon as the brain receives sensations, it automatically interprets or perceives them, and without sensations of some kind perception could not occur.*
- ✎
- ✎ *Sensations, perceptual processes are constantly at work to modify sensory input into what are actually experiences.*
- ✎ *Perception is the process that organizes sensations into meaningful patterns.*
- ✎ *Perception is the process whereby the brain interprets sensations, giving them order and meaning.*
- ✎ *hearing sounds and seeing colors is largely a sensory process, but forming a melody and detecting patterns and shapes is largely a perceptual process.*

examples showing the difference between sensation and perception

- *The black marks and letters in this page. Visual sensation lets you detect the black marks. Visual perception lets you organize the black marks into letters and works.*
- *Consider a case study presented by neurologist Oliver Sacks (1985) one of his patients suffered from brain damage that caused him to develop prosopagnosia, the inability to recognize human faces. The patient could recognize people by sound of their voices, but he could not recognize them by light. His disorder was so severe that he sometimes patted tire hydrants, thinking they were children's heads. He would even grab his wife's head mistaking it for a hat yet he was not nearsighted; he could easily see a pin on the floor. Thus he had people's facial features, but he could not organize them into recognizable face (visual perceptions).*

2.2. The sensory laws:

Questions

- ✓ *How much intense must a sound be for you to detect it? How much changes in light intensity must occur for you to notice it?*

Sensory thresholds and sensory adaption.

- ➢ *Sensory threshold and sensory adaptation are the two general laws of sensation.*
- ➢ *They explain how sensation works.*
- ➢ *Sensory threshold is the minimum point of intensity a sound can be detected.*

There are two laws of sensory threshold

The law of absolute threshold and the law of difference threshold.

The absolute threshold

- ✓ *The minimum amount of stimulation a person can detect is called the absolute threshold.*
- ✓ *Limen, for example, a cup of coffee would require a certain amount of sugar before you could detect a sweet taste.*
- ✓ *The absolute threshold for a particular sensory experience varies.*
- ✓ *Psychologists operationally define the absolute threshold as the minimum level of stimulation that can be detected 50 percent of the time when a stimulus is presented over and over again.*
- ✓ *if you were presented with a low intensity sound 30 times and detected it 15 times, that level of intensity would be your absolute threshold for that stimulus*
- ✓ *The absolute threshold is also affected by factors other than the intensity of the stimulus;*
- ✓ *The detection of a stimulus depends on both its intensity and the physical and psychological state of the individual.*
- ✓ *Most important psychological factors is the response bias-how ready the person is to report the presence of a particular stimulus.*

Example:- Imagine that you are waking down a street at night. Your predisposition to detect a sound depends, in part, on your estimate of the probability of being mugged, so you would be more likely to perceive the sound of footsteps on a neighborhood you believe to be dangerous than in a neighbor-hood you believe to be safe.

The difference threshold

- ✓ *The difference threshold is the minimum change in stimulation that can be detected 50 percent of the time by a given person.*
- ✓ *This difference in threshold is called the just noticeable difference (jnd).*
- ✓ *Weber's law states that the amount of change in intensity of stimulation needed to produce a jnd is a constant fraction of the original stimulus.*
- ✓ *. weber's law holds better for stimuli of moderate intensity than stimuli of extremely low or high intensity*

For example:- because the jnd for weight is about 2% and you held a 50 ounce for weight you would notice a change only if there was at least one ounce change in it. But a person holding a 100 ounce weight would require the addition or subtraction of at least 2 ounce to notice a change.

- ✎ *It is minimum amount of change that can be detected.*
- ✎ *In addition to detecting the presence of a stimulus, you also detect changes in the intensity of a stimulus..*

For example, a cup of coffee would require a certain amount of additional sugar before you could detect an increase in its sweetness. Similarly, you would have to increase the intensity of the sound from your tape recorder a certain amount before you could detect a change in its volume.

- ✓ *Like the absolute threshold, the difference threshold for a particular sensory experience varies from person to person and from occasion to occasion.*

Sensory Adaptation

- ⇨ *It is tendency of our sensory receptors to have decreasing responsiveness to unchanging stimulus.*
- ⇨ *Sensory adaptation is detecting potentially important change in your environment while ignoring unchanging aspects of psyit*

questions

- ✓ *Given that each of your senses is constantly bombarded by stimulation, why do you notice only certain stimuli?*

- *One possible reason is that if a stimulus remains constant in intensity, you will gradually stop noticing it.*

For example

1, after diving into a swimming pool, you might shiver. Yet a few minutes later you might invite someone to join you saying, —The water is fine‖ on entering a friend's dormitory room.

But you will not adapt completely to extremely intense sensations, such as severe pain or freezing cold.

- *This is **adaptive,** because to ignore such stimuli might be harmful or even fata*

2, you might be struck by the repugnant stench of month-old garbage. Yet a few minutes later you might not notice the odor at all.

Practice the following questions?

1. *Indicate the three conditions under which you may not be able to sense a stimulus.*
2. *Consider the concepts —Sensitization‖ and —habituation to which of the three sensory laws do they relate? Why?*
3. *Indicate the conditions under which sensory difference occur among people.*
4. *Give at least 5 major differences and similarities between sensation and perception.*
5. *What does sensing involve?*
6. *Compare and contrast —Limen‖ and —jnd‖ with examples*
7. *How does sensory adaptation occurs*

2.3.Perception

- ✓ *Perception is a meaning making process.*
- ✓ *Knowing meaning making process helps you to understand the major characteristics of the perceptual process: selectivity of perception, from perception, depth perception, perceptual constancy, and perceptual illusion.*

2.3.1.Selectivity of perception

- ⇨ *Selective perception is called attention. Attention is therefore the term given to the perceptual process that selects certain inputs for inclusion in your conscious experience,*

or awareness, at any given time, ignoring others.

- *At any time your sense organ is bombarded by many stimuli.*
  - ✓ *the noise in your room*
  - ✓ *input from the environment was coming into your ears and others*

But you perceive a few of them.

What does this selectivity of perception imply?

- ⇨ *The selectivity of perception implies, among other things, that our field of experience is divided into what is known as Focus and Margin.*
- ⇨ *Events or stimuli that you perceive clearly are the focus of your experience*
- ⇨ *Items or stimuli that you perceive dimly or vaguely are in the margin of your attention. You may be aware of items in the marginal field but only vaguely or partially.*
- ⇨ ***.** Attention shifts constantly. What is in the focus of your attention one moment may be in margin; and what is in the margin may become in your focus*

Example:-

Focus and margin consider that your perceptual field is a football game. While you are dimly aware of the tangle of players and the activity of the blockers during the play, it is the ball carrier and his movement that stands out clearly to you your attention is mainly focused on him. But at the same time, sensory inputs are coming in from your cold feet, from your stomach as a result of the last uncomfortable food you ate, and from the fellow behind you whi is smoking a cigar. The crowd is also shouting. While the play is going on, you are probable not aware of any of these sensory inputs. Only when the play is finished or time is called that you perceive how cold your feet are, and how noisy the crowd is. The fact that you perceive how cold your feet are, and how noise the crowd is when the play is finished or time is called illustrates another characteristics of attention, that it is ***constantly shifting.***

Paying attention is in general a function of two factors

What factors determine your attention?

What aspects of the environment get your attention at a given time?

1, factors external to the perceiver and

2, factors internal to the perceiver.

⇨ *External factors refer to factors that are generally found in the objects or stimuli to be perceived.*

⇨ *Some of the external characteristics of objects that determine whether you are going to attend them or not are size and intensity, repetition, novelty (newness) and movement.*

⇨ *bigger and brighter stimuli are more likely to capture your attention than smaller and dimmer objects.*

✓ *That is why announcements and notice are written in big and block letters.*

⇨ *People who dress bright colored clothes tend to capture your attention.*

Repetition

⇨ *it is **attention getting***

✎ *Repetition is the second facto we are more likely to attend to stimuli that repeatedly or frequently occur in your perceptual field.*

✎ *A misspelled word is more likely to be detected if it occurs many times in a paragraph than when it occurs only once or twice.*

✎ *This is why slogans, advertisings, and announcement are repeated continuously to audiences and spectators*

✎ *No matter how big or bright a stimulus is, how frequently it may occur, you may not give it attention as if it occurs in the same way all the time. Because you are likely to adapt to it and then stop responding to it called sensory adaptation.*

✎ *Habituation it is the tendency to ignore a stimulus that occurs continuously in the same way.*

novelty

❖ *It is the extent to which a stimulus creates a contrast with the rest objects in the environment.*

❖ *Novel or new objects create a sharp contrast with the environment and hence tend to capture your attention.*

❖ *This is why you are given a special attention as a guest and first-born children*

get more attention from parents etc.

movement

- ✓ *Moving objects tend to get your attention more than non-moving or stagnant objects.*
- ✓ *Our eyes are involuntarily attracted to movement the way butterflies are attracted to light. B/moving objects are instinctually felt dangerous or threatening and you are reflexively responding to them to defend yourself.*
- ✓ *Moving objects bring with them changes in stimulation or newness in their presentation.*

. nb:

1, stimuli in the environment that are bigger and brighter, more frequently occurring, newer and moving are likely to get your attention.

2, Even when a stimulus is bigger, brighter, new frequent, moving, you may not give it attention if you are not psychologically ready to attend to it.

3, attention giving also depends on your psychological states as an observer.

What are some of the internal psychological states of the observer that affect as to which stimulus on pays attention to or ignore?

There are two most important internal factors

A, Set or expectancy *and*

*B,**motives** or **needs.***

- ❖ *Set refers to the idea that you may be ready and primed for certain kinds of sensory input.*
- ❖ *Set or expectancy varies from person to person.*
- ❖ *It is important not only in the selection of sensory input for inclusion is the focus of your attention.*
- ❖ *It is also important in organizing the selected sensory input.*

Example: - the husband who is expecting an important phone call. He will hear the telephone ring in the night while his wife does not. The wife, on the other hand, May more likely to hear the baby crying than the telephone ringing. Of course, if the wife is expecting an important cell, the reverse may be true.

What other examples, do you think, illustrate the role of set or expectancy in perception?

Motives and needs

- ⇨ *There are differences between you and your friend in what you select to perceive as a result of differences in your motives and needs.*

- ⇨ *You and your friend attend to and organize the sensory input in ways that match your respective needs.*
- ⇨ *People who are hungry, thirst, or sexually aroused are likely to pay attention to events in the environment, which will satisfy these needs.*

Practice the following questions?

1. Give examples showing how motives and needs in the example mentioned previously about perceptions of a football game affect your attention.
2. Assume that you are in your room with your friend listening to music. But your friend is rather listening to people talking outside. Why do you think you and your friend differed while you both were in the same place?
3. Look at the symbol 13 in the following two raw of symbols: a raw of letters and a raw of numbers.
A 13 C D E F G
12 13 14 15 16 17 18

1,what does the symbol 13 refer to in the first row?
2,what does the same symbol refer to in the second row?
3,why did you give a different meaning to the same symbol in the two rows?
4, which factor of attention getting is/are explaining these phenomena?

2.3.2. From perception

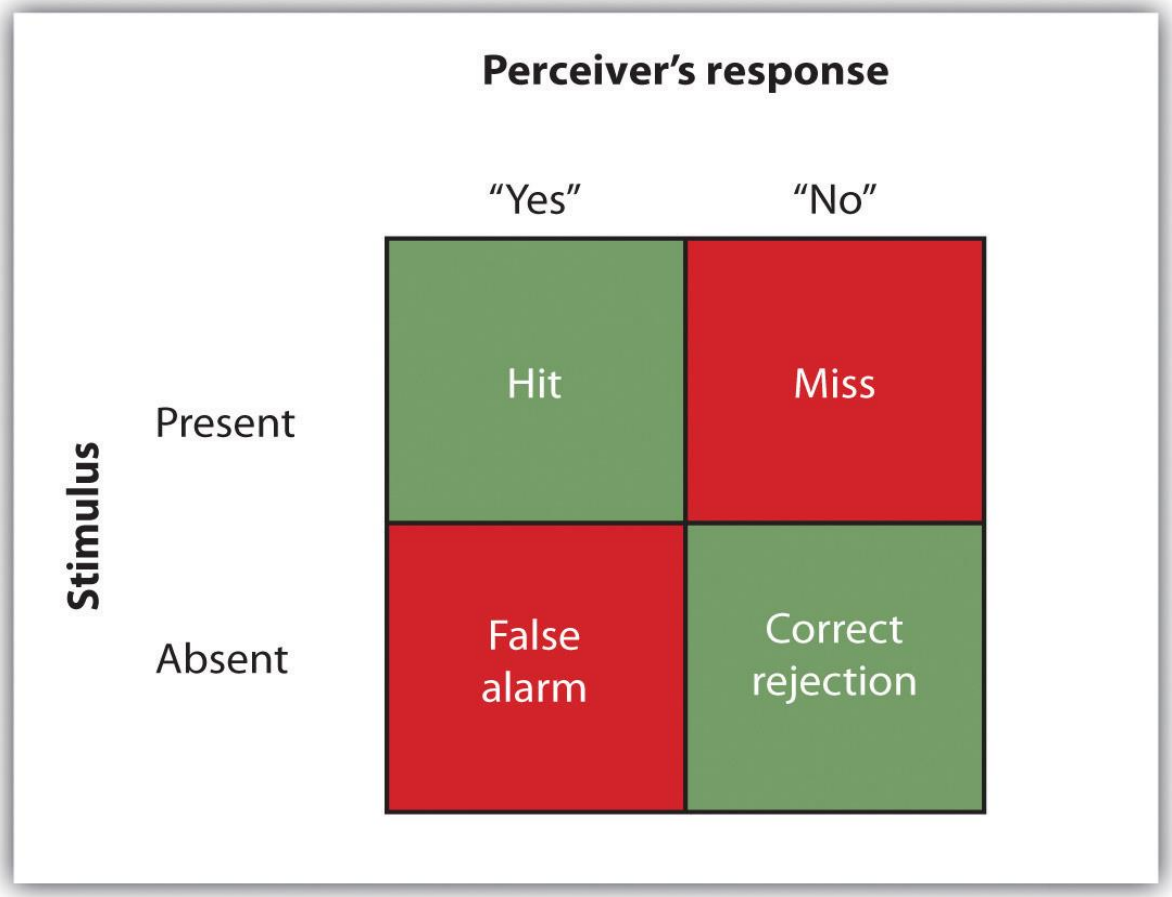
- ✓ *Visual sensations provide the raw materials that are to be organized into meaningful patterns, shapes, forms, and concepts or ideas or form perception.*
- ✓ *The meaningful shapes or patterns or ideas that are made perhaps out of meaningless and discrete or pieces and bites of sensations refer to form perception.*
- ✓ *To perceive forms (meaningful shapes or patterns), you need to distinguish a **figure** (an object) from its **ground** (or its surrounding).*

Figure-Ground Perception

- ⇨ *Figure-ground perception is the perception of objects and forms of everyday experience as standing out from a background.*

- ⇨ *Pictures (figure) hang on a wall (ground), words (figure) are seen on a page (ground), and melody (figure) stands out from the repetitive chords in the musical background (ground), the pictures, words, and the melody are perceived as the figure, while the wall, the page, and the chords are the ground.*
- ⇨ *The ability to distinguish an object from its general background is basic to all form perception.*
- ⇨ *Gestalt psychologists stress that form perception in an active, rather than a passive, process like selectivity of perception. Hence, there can be a shift in you perception of figure and ground such that the figure may become the ground and vice versa.*
- ⇨ *Factors that determine your attention equally determine what should become the figure and what should become the ground.*
    - ✓ ***What helps you in general to separate the figure from the general around in your visual perception?***
- ✓ ***Blurriness:*** *Objects in the foreground tend to be crisp and distinct while those in the background are blurry or hazy.*
- ✓ ***Contrast:*** *The high contrast between objects can lead to the perception of figure and ground. The Rubin vase is one example.*
- ✓ ***Size:*** *Images that appear to be larger will be perceived as closer and part of the figure while those that are smaller will seem further away and part of the background.*

- ✓ ***Separation:*** *An object isolated from everything else in a visual scene is more likely to be se*



en as a figure versus background

- ✓

Contours in Form Perception

- ⇨ *You are able to separate forms from the general ground only because you can perceive contours.*
- ⇨ *Contours are formed whenever a marked difference occurs in the brightness or color of the background.*

*for**instance**:- look at a piece of paper that varies continuously in brightness from white at one border to black at the opposite border, you will perceive no contour. The paper will appear uniform, and if you are asked to say where the sheet stops being light and starts to become dark, you can only guess.*

- ⇨ *If the change is marked rather than gradual-suppose several shades are skipped-you will see the paper as divided in to two parts. In perceiving the division at the place where the brightness gradient changes abruptly, you have perceived a contour.*
- ⇨ *Contours give shape to the objects in our visual world because they mark one object off from another or they mark an object off from the general ground.*
- ⇨ *When contours are disrupted visually, as in camouflage, objects are difficult to distinguish from the background.*

questions

1. Consider a reptile named chameleon. Explain why this reptile changes its color accordingly to the environment it is found using the idea of contours in form perception.
2. Why are soldiers dressed in green uniforms in almost all countries?
3. What will happen if you write with a charcoal on a blackboard?
4. What will again happen if you write with a pen or with white ink on a white piece of paper?
5. Do you advice a black man to dress a white cloth or a black cloth? Why?
6. What is the implication of all the above questions ***Organization in form Perception***

- ✓ *When several objects are present in the visual field, we tend to perceive them as organized into patterns or groupings.*
- ✓ *The Gestalt psychologists studied such organization intensively in the early part of this century.*
- ✓ *They emphasized that organized perceptual experience has properties, which cannot be predicated from a simple analysis of the components.*
- ✓ *Gestalt psychologist said the whole is more than the sum of its parts*
- ✓ *This simply means that what is perceived has its own new properties, properties that emerge from the organization, which takes place.*
- ✓ *Organization in perception partially explains our perception of complex patterns as unitary forms, or objects.*
- ✓ *We see objects as objects only because grouping processes operate in perception. Without them, the various objects and patterns we perceive-a face on a television screen, a car a tree, a book-would not hang together|| as objects or patterns., they*

would merely be so many disconnected sensations-dots, lines or blotches.

What are some of the laws of perceptual organization?

proximity

- ⇨ *One organizing principle is proximity or nearness.*
- ⇨ *According to the law of proximity, things that are close together seem more related than things that are spaced farther apart.*[4]

In the image at the top of the page, the circles on the left appear to be part of one grouping while those on the right appear to be part of another. Because the objects are close to each other, we group them together.

- ⇨ *The laws of proximity says that items which are close together in space or time tend to be perceived as belonging together or forming an organized group.*

  Similarity
  - ✓ *The principle of similarity states that* ***items which share a visual characteristic are perceived as more related than items that are dissimilar***
  - ✓ *The law of similarity states that similar things tend to appear grouped together. Grouping can occur in both visual and auditory stimuli.*

In the image at the top of this page, for example, you probably see two separate groupings of colored circles as rows rather than just a collection of dots.

- ⇨ *Another organizing principle of perception is* ***similarity.***
- ⇨ *Most people see one triangle formed by the dots with its apex at the top and another triangle formed by the rings with its apex at the bottom. They perceive triangle because similar items such as, the rings and the dots, tend to be organized together. Otherwise, they would see a hexagon or a six-pointed star, where all the dots are the same.*

- ⇨ *Grouping according to similarity, however, does not always occur.*
- ⇨ *A figure is more easily seen as a six-pointed star than as one figure composed of dots and another figure made up of rings. In this case, similarity is competing with the organizing principle of symmetry or* ***good figure.***
- ⇨ *Neither the circle nor the dots by themselves from a symmetrical pattern. The law of good figure says that there is a tendency to organize things to make a balanced or symmetrical figure that includes all the parts. In this case, such a balanced figure can*

achieved only by using all the dots and rings to perceive a six pointed star the law of good figure wins out over the law of similarity because the rings by themselves or the dots by themselves do not form symmetrical goods figures.

continuation

- ✓ *Still another principle or organization is continuation, the tendency to perceive a line that starts in one way as continuing in the same way.*
- ✓ *The law of continuity holds that points that are connected by straight or curving lines are seen in a way that follows the smoothest path. In other words, elements in a line or curve seem more related to one another than those positioned randomly*

For example, a line that starts out as a curve is seen as continuing on smoothly curved course. A straight line is seen as continuing on a straight course or, if it does change direction as forming an angle rather than a curve. We see the dots as several curved and straight lines. Even though the curved and straight lines cross and have dots in common, it is only with an effort that we can perceive a straight line suddenly becoming a curved line at one of these functions.

closure

- ⇨ *the law of closure makes our perceived world or form more complete than the sensory stimulation that is presented.*
- ⇨ *The law of closure refers to perceptual processes that organize the perceived world by filling in gaps in stimulation*
- ⇨ *According to the law of closure, we perceive elements as belonging to the same group if they seem to complete some entity.[1] Our brains often*

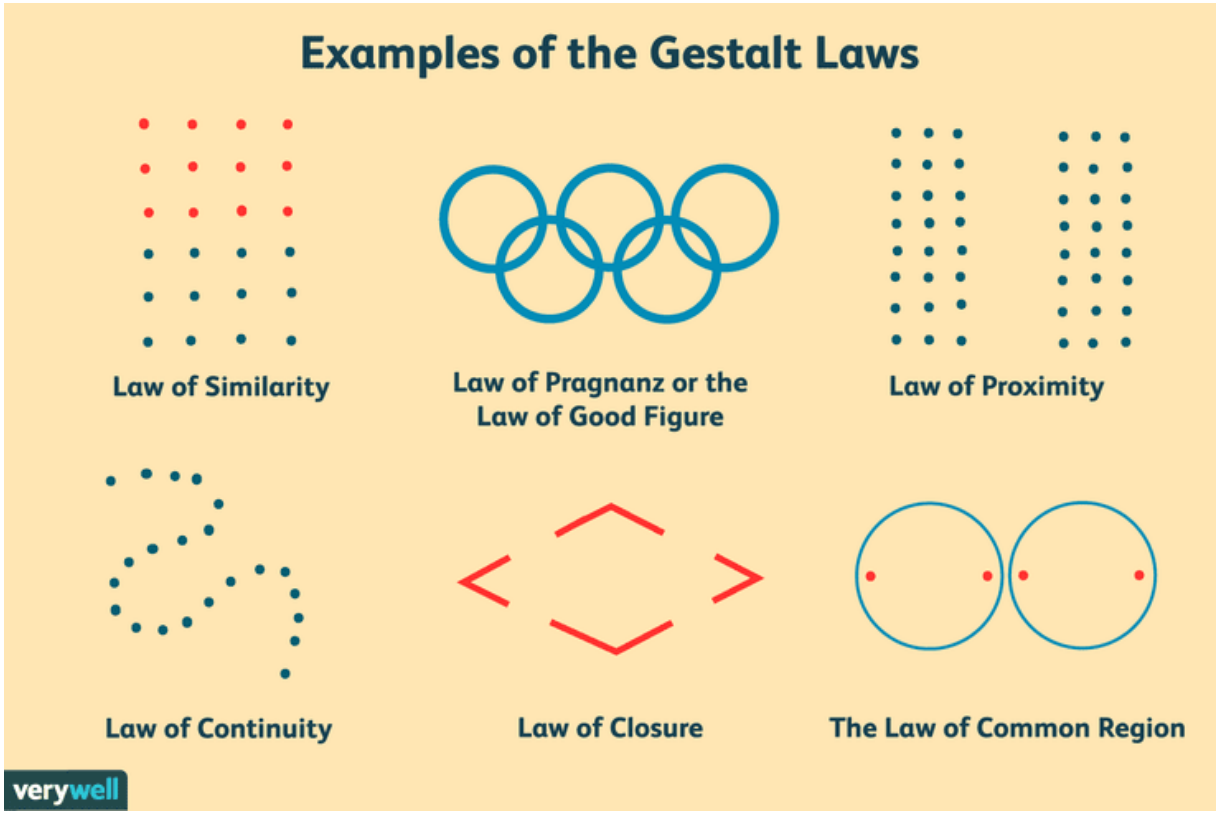
ignore contradictory information and fill in gaps in information.

- ⇨ *In the image at the top of the page, you probably see the shape of a diamond because your brain fills in the missing gaps in order to create a meaningful image.*

questions

1,Try to give a pictorial representation of the laws of perceptual organization.

2. Compare and contrast these laws of organization



2.3.3.Depth perception

- ✓ *If we live in a two-dimensional world, form perception would be sufficient. But because we live in a three-dimensional world.*
- ✓ *we have evolved depth perception-the ability to judge the distance of objects.*
- ✓ *Given that images on the retina are two dimensional, how can we perceive depth? That is, how can we determine the distance of objects (the distal stimulus) from the pattern of stimulation on our retinas (the proximal stimulus)?*

Depth perception depends on the use binocular cues and monocular cues.

There are two kinds of binocular cues:

- ✎ *retinal disparity and*

- *Both kinds of binocular cues require the interaction of both eyes.*
- *Retinal disparity is, the degree of difference between the images of an object that are focused on the two retinas.*
- *The closer the object, the greater is the retinal disparity.*

- *To demonstrate retinal disparity for yourself, point a forefinger vertically between*

- *your eyes. Look at the finger with one eye closed. Then look at it with the other closed. You will notice that the background shifts as you view the scene with different views of the same stimulus.*