Name: _____

## Practice Questions

1. A group of organisms that have the same structure and can reproduce with one another are considered to be ...
   - A. order
   - B. family
   - C. genus
   - D. species

D

2. *Biotic* and *abiotic* things interact within the same environment. An example of an abiotic part of an environment is ...
   - A. grass
   - B. flowers
   - C. water
   - D. insects

C

3. The entire collection of the many different types of organisms on the Earth is called ...
   - A. The Living Kingdoms
   - B. Biological Diversity
   - C. A World of Animals
   - D. The Living Ecosystem

B

4. When *populations* of different species live together within the same area, these populations form what is known as a ...
   - A. collection
   - B. congregation
   - C. community
   - D. ecosystem

C

5. Although the same species may have the same basic structure, variations exist within the same species. *Variations* among members of a population are referred to as ...
   - A. genetic diversity
   - B. biotic diversity
   - C. species diversity
   - D. living diversity

A

6. The distribution of species on the Earth is not even. The area around the equator is where the most diverse plant species exists. This makes for the greatest biological diversity in tropical ...
   - A. rainforests
   - B. tundra
   - C. deserts
   - D. grasslands

A

7. Closely related species have the same genus name, but different species names. This makes for identification based on ...
   - A. habitat
   - B. structure
   - C. coloring
   - D. names

B

8. The five-kingdom classification system used by scientists includes: ...
   - A. Animalia, Plantae, Fungi, Protista, Bacteria
   - B. Animalia, Plantae, Fungi, Virus, Bacteria
   - C. Animalia, Plantae, Fungi, Monera, Carnivore

D

Name: _____

- evaluate the success and limitations of various local and global strategies for minimizing loss of species diversity

  identify local projects that try to save endangered species

  - roles and functions of zoos

  identify global projects that work to save endangered species

  - CITES

  evaluate the success of these projects

- investigate and describe the use of biotechnology in environmental, agricultural or forest management; and identify potential impacts and issues

  provide an example of biotechnology and its application

  - environmental
  - agriculture
  - GM foods
  - forest management

Name: _____

D. Animalia, Plantae, Fungi, Protista, Monera

**9.** The system that is used to classify individual organisms is ordered from general classification to very specific identification. The correct order of this classification system is ...

C

A. phyla, class, order, kingdom, genus, species, family
B. family, order, phyla, genus, class, kingdom, species
C. kingdom, phyla, class, order, family, genus, species
D. species, class, family, order, kingdom, genus, phyla

**10.** These areas, like the rainforests of the equator, have diverse collections of species. They are known as the *"amazons of the oceans"* because of the richness of their diversity. These area are called ...

A

A. coral reefs
B. aspen parklands
C. serengeti plains
D. botanical gardens

**11.** Interdependence of species occurs because no species can survive by itself. Each species is dependent on many other species in its environment. One of the most obvious examples of this interdependence is the relationship known as ...

B

A. scavengers
B. predator-prey
C. herbivores
D. forage-food

**12.** Another type of interdependence is called *symbiosis*. There are several types of symbiosis. The differences between each type are determined by how beneficial or harmful the relationship is. When both species in the relationship benefit, it is called ...

A

A. mutualism
B. colonialism
C. parasitism
D. commensalism

**13.** A symbiotic relationship where one species benefits and the other species is harmed is called ...

C

A. commensalism
B. mutualism
C. parasitism
D. colonialism

**14.** Each organism in an ecosystem has a role. It includes what it eats, what food it provides for other organisms, its habitat, and its effect on the other organisms it shares space in the environment with. This role is called a ...

C

A. mycorrhizae
B. partition
C. niche
D. forager

**15.** Another type of interdependent relationship involves the sharing of resources within the same environment among different organisms. This sharing is called resource ...

A

A. partitioning
B. allocation
C. development
D. competition

Name: _____

**16.** *Barnacles* are organisms that attach themselves to whales to move throughout the different parts of the ocean. They benefit from their relationship with the whales, but the whales are not harmed, nor do they benefit. This type of symbiotic relationship is called ...

D

A. mutualism
B. mycorrhizae
C. parasitism
D. commensalism

**17.** Not every member of every species is exactly the same. There are differences, called *variations*, which make the individuals within a species unique. This variation within a species is called ...

B

A. commonality
B. variability
C. selectivity
D. genetics

**18.** Variation within a species may not be something that is immediately noticeable. Often variability is a characteristic that may help or hinder a species' adaptation to a change in the environment. A species is more likely to survive when there is ...

C

A. little variation
B. common variation
C. great variation
D. no variation at all

**19.** Over time, some deadly organisms become resistant to antibiotics, that are designed to kill them. Scientists think this resistance is due to ...

B

A. species specialization
B. over prescription of antibiotics
C. resource partitioning
D. frequency specialization

**20.** The *banded snail* lives in a wide range of habitats. Its shell color has many variations, sizes and numbers of bands. Scientists explain the reason for this variation by referring to the ...

D

A. type of predator it has
B. locomotion ability it has
C. natural instincts it has
D. the changing of the seasons

**21.** When individuals within a species survive a change in the environment and other individuals do not survive, the process is known as ...

B

A. selective breeding
B. natural selection
C. artificial selection
D. interspecies breeding

**22.** To better understand variation; scientists explore the characteristics, which are passed on from generation to generation within a species. Those characteristics that are passed on from generation to generation are ...

B

A. genetic
B. inherited
C. non-inherited
B. non-genetic

Name: _____

**23.** An albino kangaroo is a kangaroo that is pure white. This characteristic is classified as a ...

C

A. non-inherited variation
B. continuous variation
C. discrete variation
D. singular variation

**24.** Those characteristics or variations that have a wide range of forms are ...

D

A. obnoxious
B. discrete
C. overbearing
D. continuous

**25.** Your height is considered to be a heritable characteristic, but is affected by ...

B

A. age
B. diet
C. bone mass
D. skin type

**26.** Variations caused by interactions with the environment are not heritable. Plants that are grown in dim lighting conditions would turn out to be ...

D

A. identical to their parents in all aspects
B. much like their parents
C. very different from their parents
D. similar to parent plants that were grown in dim light

**27.** In a class activity students recorded the results of Left Thumb on top vs Right Thumb on top. The data they collected indicated that 'hand-clasping preference' was ...

B

A. unrelated
B. discrete
C. isolated
D. continuous

**28.** There are different forms of reproduction in organisms. Asexual reproduction involves only one parent. A hydra reproduces asexually when it produces a smaller version of itself by ...

A

A. budding
B. binary fission
C. spore production
D. vegetative reproduction

**29.** Fungi, algae, moulds and non-flowering plants reproduce by producing ...

D

A. seeds
B. spores
C. buds
D. tubers

**30.** When a plant cutting produces a new individual, it does so without the formation of a seed. This type of asexual reproduction is called ...

B

A. budding
B. binary fission
C. spore production
D. vegetative reproduction

Name: _____

**31.** Suckers (which are miniature identical forms of the parent plant) can be formed in the roots of poplar trees. Each of these suckers can produce trees identical to the parent tree. This form of asexual reproduction is called ...

D

A. budding
B. binary fission
C. spore production
D. vegetative reproduction

**32.** Sexual reproduction in plants and animals relies on the union of 2 specialized cells called ...

C

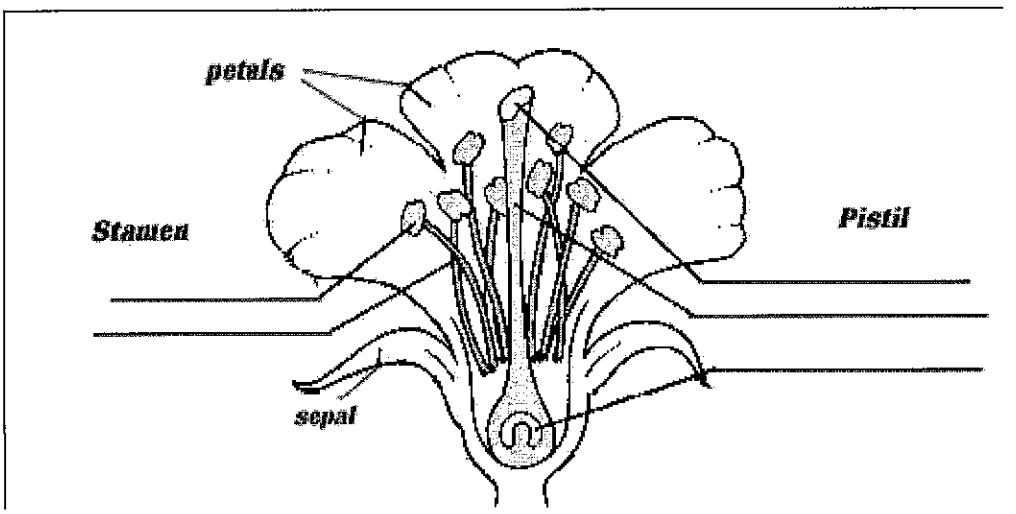
A. zygotes
B. embryos
C. gametes
D. stamens

**33.** When a female cell (egg) is penetrated by a male cell (sperm) this occurs ...

A

A. fertilization
B. cleavage
C. pollination
D. specialization

*This diagram illustrates the parts of a flower.*




**34.** The stamen is the ...

B

A. female part
B. male part
C. seed producing part
D. zygote producing part

**35.** The pistil is made up of the following parts ...

D

A. ovary, filament, stigma
B. stamen, stigma, ovary
C. anther, ovary, stigma
D. stigma, style, ovary

**36.** Cross-fertilization occurs when a pollen grain ...

A

A. from one plant fertilizes a different plant
B. from one plant fertilizes the plant it belongs to
C. is not able to pollinate another plant
D. is carried by the wind, water or animal to another plant

Name: _____

**37.** Sexual reproduction is very advantageous because it provides lots of ...

B

- **A.** identical organisms
- **B.** variation among the species
- **C.** energy for the species to survive
- **D.** similar copies of the parent

**38.** Asexual reproduction is very advantageous because it provides lots of ...

A

- **A.** identical organisms
- **B.** variation among the species
- **C.** energy for the species to survive
- **D.** similar copies of the parent

**39.** Scientists researched and studied the genetic code that is passed on from parent to offspring from generation to generation. By knowing what makes up this genetic code, scientists are able to be more selective in what is passed on from parent to offspring during the breeding process. The *genetic code* is the ...

A

- **A.** blueprint
- **B.** species-plan
- **C.** illustration
- **D.** specification

**40.** The inherited material that is responsible for variation in all organisms is DNA, which stands for

D

- **A.** donornucleic acid
- **B.** delicate nucleus assist
- **C.** denitro acetaminaphen
- **D.** deoxyribonucleic acid

**41.** All living cells contain DNA. In the cells of plants and mammals, DNA is located in the ...

B

- **A.** cytoplasm
- **B.** nucleus
- **C.** vacuoles
- **D.** mitochondria

**42.** DNA was first identified in 1969. In 1944 Canadian scientist Oswald Avery confirmed that the DNA was the material of ...

A

- **A.** inheritance
- **B.** variation
- **C.** restructure
- **D.** character

**43.** To solve the structural questions that DNA posed, two scientists revealed that the same chemical building blocks could carry a wide range of instructions needed for diversity. The scientists were ...

D

- **A.** Emery and Avery
- **B.** Avery and Crick
- **C.** Watson and Holmes
- **D.** Crick and Watson

**44.** Paired chemicals make up the *'rungs'* of the *'spiral ladder'* that represents the model of DNA. The four chemicals that are paired in different combinations, making up the 'rungs', are ...

A

- **A.** cytosine, adenine, thymine, guanine
- **B.** cryptosine, adenine, thalamine, guanine
- **C.** cytosine, adonine, thalamine, quanine
- **D.** cryptosine, adonine, thymine, quanine

Name: _____

**45.** The varied arrangement of the four chemicals forms the code that the cell can read. Each pairing along the ladder provides specific instructions for making each unique individual. The DNA in each cell is arranged in packages known as ...

B

A. globules
B. chromosomes
C. nuclei
D. helical

**46.** In organisms such as plants and animals, the *chromosomes* are located in the nucleus. Each human nucleus has this many chromosomes ...

C

A. 18
B. 24
C. 46
D. 72

**47.** The chromosome numbers vary from organism to organism. Dogs have 78 chromosomes and cats have 38. The different pairings of chromosomes outlines the blueprints, which are the source of ...

B

A. heredity
B. diversity
C. pigmentation
D. sexuality

**48.** A single *gene* is an uninterrupted segment of DNA, which contains coded instructions for the cell. Genes are located in the ...

D

A. helical strands
B. cytoplasm
C. globules
D. chromosomes

**49.** Offspring inherit genes from both parents. Most genes in most species exist in an array of possible forms known as ...

A

A. alleles
B. genomes
C. traits
D. chromosomes

**50.** To understand how genes, chromosomes and alleles are linked to inherited characteristics, inferences are made. For each characteristic there must be ...

B

A. a single gene pair involved
B. more than one gene pair involved
C. 2 alleles are present for each gene
D. several alleles for each chromosome

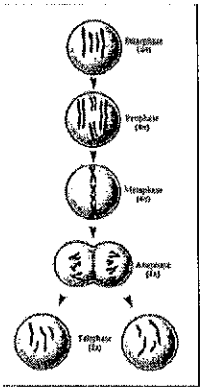
**51.** The process that produces two new cells with the same number of chromosomes is called ...

B

A. meiosis
B. mitosis
C. pollination
D. fertilization

Name: _____

*Use the illustration to help you answer this question*



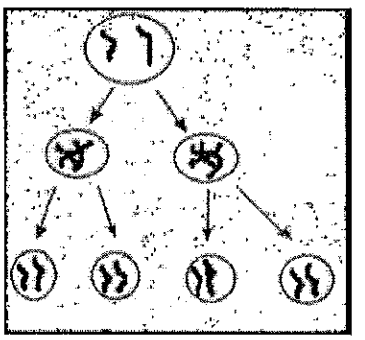
**52.** Mitosis produces two offspring cells with the same number of chromosomes as the parent cell. Meiosis is associated with

D

- **A.** Pollination
- **B.** Photosynthesis
- **C.** Sexual reproduction
- **D.** Asexual reproduction

*Use the illustration to help you answer this question*

**53.** Meiosis produces four sex cells that have half the number of chromosomes of the parent cell. Meiosis is different from mitosis because it involves



B

- **A.** Only one cell dividing into two
- **B.** Two cell divisions, instead of one
- **C.** Unique chromosomes
- **D.** Duplication – making an exact copy

**54.** A breeder who wishes to produce a certain breed of animal that displays the characteristics that are desired should choose only ...

C

- **A.** hybrid offspring
- **B.** hybrid parents
- **C.** purebred parents
- **D.** purebred offspring

**55.** A trait that will always be visible in the offspring of purebred parents despite the apparent difference in the parents is called a ...

D

- **A.** hybrid trait
- **B.** recessive trait
- **C.** observable trait
- **D.** dominant trait

**56.** Other patterns of inheritance include examples like when a purebred plant bearing one color of flower is crossed with another purebred with a different color flower, all the offspring have an intermediate color which is known as ...

B

- **A.** offspring unlike either parent
- **B.** incomplete dominance
- **C.** environmental factors
- **D.** hybrid recessive traits

**57.** The decline in biological diversity around the world is being stressed by all of the following human activities EXCEPT ...

D

- **A.** urbanization
- **B.** agriculture
- **C.** forestry

D. politics

**58.** The reduction of biological diversity is due to degradation of ecosystems, the extinction of some species and the decrease in other species populations. Strategies to preserve important habitats and the species that depend on them include ...

A

A. nature preserves and national parks
B. amusement parks and zoos
C. wild animal farms and animal shelters
D. nature trails and off-road recreation areas

**59.** Extirpation is a local extinction, or the disappearance of a species from a particular area. Of the species that are listed below, only one was extirpated completely from Canada. It was the ...

A

A. Swift Fox
B. Snowy Owl
C. Grizzly Bear
D. Woodland Caribou

**60.** If a species is at risk to be endangered, and it is particularly vulnerable to natural events or human activities its status is regarded as ...

C

A. Illegal
B. Threatened
C. Of Special Concern
D. Extirpated

**61.** Natural selection is usually a slow process. When the environment changes drastically – making it difficult for a species to adapt, the species may not survive. All of the following are naturally occurring events that have caused extinctions or extirpations, EXCEPT for ...

D

A. disease
B. volcanic eruptions and forest fires
C. lack of food due to overpopulation
D. pollution of the atmosphere

**62.** Sometimes organisms have adaptations that suit them only to a very specific set of environmental conditions. Biologists call this natural cause of extinction ...

B

A. inter-specialization
B. overspecialization
C. super-specialization
D. adaptive specialization

**63.** Humans can also affect the populations of species. When human activities change the environment, extinctions and extirpations can occur. The burning of the rainforests in South America is a good example of ...

A

A. habitat destruction
B. non-native species
C. over-hunting
D. regional diversity

**64.** The process that selects and breeds individuals of a species to survive in a particular environment without human intervention is called ...

C

A. artificial selection
B. natural selection
C. survival of the strongest
D. inter-species genetics

Name: _____

**65.** When humans intervene in the reproduction of specific individuals of a species by selecting and breeding specific desirable characteristics the process is called ...

A

**A.** artificial selection
**B.** natural selection
**C.** survival of the strongest
**D.** inter-species genetics

**66.** Biotechnology is the process of selecting specific traits and enabling those traits to develop in future generations. There are many different biotechnologies that have worked successfully thus far. The technology, which uses a single cell of an organism to reproduce an identical organism in the laboratory, is called ...

A

**A.** cloning
**B.** insemination
**C.** in vitro fertilization
**D.** genetic engineering

**67.** Another biotechnology involves inserting a gene from one organism into the cell of another organism. An example of this is the production of life-saving medicines, such as insulin, by using bacteria to produce it. This technology is called ...

D

**A.** cloning
**B.** insemination
**C.** in vitro fertilization
**D.** genetic engineering

**68.** International recognition of biological diversity was achieved at the Earth Summit in Rio de Janeiro in 1992. The United Nations Convention on Biological Diversity outlined the importance of preserving diversity on a global scale. This document is a ...

B

**A.** law
**B.** treaty
**C.** arrangement
**D.** proclamation

**69.** Conservation of biological diversity arounbd the world requires the elimination or reduction of adverse impacts to biological diversity resulting from human activity. The Canadian Biodiversity Strategy focus on ...

C

**A.** ex-situ and out-situ management
**B.** in-situ and out-situ conservation
**C.** in-situ and ex-situ conservation
**D.** ex-situ and in-situ management

**70.** The maintenance of populations of wild organisms in their own functioning ecosystems, allowing for the ecological processes of an area to continue undisturbed is called ...

A

**A.** in-situ conservation
**B.** ex-situ conservation
**C.** sustainability
**D.** resource partitioning

**71.** Wetland areas, where habitat - nesting areas - is vital to the continued diversity of organisms living in these areas is supported by this group who promote through their CARE program, the restoration or improvement of available cover in wetland areas ...

A

**A.** Ducks Unlimited
**B.** Trout Unlimited Canada
**C.** The Green Team

D. Alberta Fish & Game Association

**72.** The identification of species-at-risk in Canada is made by ...

A. WWE
B. WWF
C. ESCC
D. COSEWIC

D

**73**. As a result of **Natural Selection**, species develop adaptations that suit their habitat. Sandy observed organisms high on the mountainside near the Research Center and recorded some of the adaptations she observed:

padded paws **1.** | thick fur **2.** | quick reflexes **3.** | acute hearing **4.**

Match the number of the adaptation observed by Peter with the corresponding condition within the natural habit of these organisms.

2 **cold climate**

1 **rocky terrain**

3 **sparse vegetation**

4 **landscape enhances echoes**

**74**. Interdependence of species within the environment is necessary for survival. **Symbiosis** is an association between members of different species.

**1- one organism benefits the other doesn't**
**2- one organism benefits, the other is harmed**
**3- one organism appears to be like another organism**
**4- both organisms benefit**

**75**. The reduction of diversity has resulted in species being listed on **Protection Lists**. Match the threat to a species population with the term it describes

**1. none in a local area**

**2. none in the world**

**3. few left in a local area**

**4. numbers are being reduced**

| *commensalism* | *mutualism* | *parasitism* | *mimicry* |
|---|---|---|---|
| 1 | 4 | 2 | 3 |

| Endangered | Extirpated | Threatened | Declining |
|---|---|---|---|
| 3 | 1 | 2 | 4 |

# Numerical Response Practice Questions – Grade 9 Achievement

## Unit A - Biological Diversity

**Symbiosis** is an association between members of different species.

**Match** the description to the type of symbiosis.

1 – only one organism benefits
2 – one organism benefits, one is harmed
3 – one appears like the other
4 – both organisms benefit

1 commensalisms
4 mutualism
2 parasitism
3 mimicry

| 1 | 4 | 2 | 3 |
|---|---|---|---|
| | . | . | |
| 0 | 0 | 0 | 0 |
| 1 | 1 | 1 | 1 |
| 2 | 2 | 2 | 2 |
| 3 | 3 | 3 | 3 |
| 4 | 4 | 4 | 4 |
| 5 | 5 | 5 | 5 |
| 6 | 6 | 6 | 6 |
| 7 | 7 | 7 | 7 |
| 8 | 8 | 8 | 8 |
| 9 | 9 | 9 | 9 |

**Match** the type of **Asexual Reproduction** with its description.

1 – an exact copy of the parent
2 – parent splits into two
3 – reproduction not involving seeds
4 – reproduction similar to seed, but produced by cell division

1 vegetative reproduction
4 spore production
2 binary fission
3 budding

| 1 | 4 | 2 | 3 |
|---|---|---|---|
| | . | . | |
| 0 | 0 | 0 | 0 |
| 1 | 1 | 1 | 1 |
| 2 | 2 | 2 | 2 |
| 3 | 3 | 3 | 3 |
| 4 | 4 | 4 | 4 |
| 5 | 5 | 5 | 5 |
| 6 | 6 | 6 | 6 |
| 7 | 7 | 7 | 7 |
| 8 | 8 | 8 | 8 |
| 9 | 9 | 9 | 9 |

Organisms of the same species have the same number of **chromosomes**.

What is the number of chromosomes that all humans have?

| | | 4 | 6 |
|---|---|---|---|
| | . | . | |
| 0 | 0 | 0 | 0 |
| 1 | 1 | 1 | 1 |
| 2 | 2 | 2 | 2 |
| 3 | 3 | 3 | 3 |
| 4 | 4 | 4 | 4 |
| 5 | 5 | 5 | 5 |
| 6 | 6 | 6 | 6 |
| 7 | 7 | 7 | 7 |
| 8 | 8 | 8 | 8 |
| 9 | 9 | 9 | 9 |

The reduction of diversity has resulted in species being listed on **Protection Lists**.

**Match** the description of how the species is affected to the term it describes.

1 - none in a local area
2 - none in the world
3 - few left in a local area
4 - numbers are being reduced

3 endangered
1 extirpated
3 threatened
4 declining

| 3 | 1 | 3 | 4 |
|---|---|---|---|
| | . | . | |
| 0 | 0 | 0 | 0 |
| 1 | 1 | 1 | 1 |
| 2 | 2 | 2 | 2 |
| 3 | 3 | 3 | 3 |
| 4 | 4 | 4 | 4 |
| 5 | 5 | 5 | 5 |
| 6 | 6 | 6 | 6 |
| 7 | 7 | 7 | 7 |
| 8 | 8 | 8 | 8 |
| 9 | 9 | 9 | 9 |

**Variation** can be either discrete or continuous.

For the following list of variations, mark it

1 if it is discrete, and

2 if the variation is continuous.

2 body mass
1 earlobes
2 human height
2 pigmentation

| 2 | 1 | 2 | 2 |
|---|---|---|---|
| | . | . | |
| 0 | 0 | 0 | 0 |
| 1 | 1 | 1 | 1 |
| 2 | 2 | 2 | 2 |
| 3 | 3 | 3 | 3 |
| 4 | 4 | 4 | 4 |
| 5 | 5 | 5 | 5 |
| 6 | 6 | 6 | 6 |
| 7 | 7 | 7 | 7 |
| 8 | 8 | 8 | 8 |
| 9 | 9 | 9 | 9 |

**Biotechnology** is the science of speeding up artificial selection to get an organism with the desired combination of traits.

**Match** the technology with the description of how it is achieved.

1 – grow a cutting from a plant
2 – sperm from one is used to fertilize the egg of another
3 – DNA is altered
4 – eggs and sperm are combined in a laboratory environment

4 in vitro fertilization
1 cloning
3 genetic engineering
2 artificial insemination

| 4 | 1 | 3 | 2 |
|---|---|---|---|
| | . | . | |
| 0 | 0 | 0 | 0 |
| 1 | 1 | 1 | 1 |
| 2 | 2 | 2 | 2 |
| 3 | 3 | 3 | 3 |
| 4 | 4 | 4 | 4 |
| 5 | 5 | 5 | 5 |
| 6 | 6 | 6 | 6 |
| 7 | 7 | 7 | 7 |
| 8 | 8 | 8 | 8 |
| 9 | 9 | 9 | 9 |