

Grade 7

Numerical Response

Practice Achievement Exam

&

ANSWER KEY

Questions developed for each Grade 7 Unit
based on the **General Learning Outcome's**
From Alberta Education for Science - Grade 7

Resources :

Science Focus 7

McGraw-Hill Ryerson Publishing

Science In Action 7

Pearson Education Canada

Developed for Teachers and Students by Edquest.ca

Numerical Response Practice Questions – Grade 7 Achievement Exam

Unit A – Interactions and Ecosystems

Sample ...

1. Plants and animals need to adapt to their surroundings in order to survive. Match the plant or animal with the appropriate adaptation.

- | | |
|---|-----------|
| 1 | curlew |
| 2 | robin |
| 3 | worm |
| 4 | sea otter |

- | | | | |
|----------|-----------|--------------|----------------------|
| <u>4</u> | <u>1</u> | <u>2</u> | <u>3</u> |
| flippers | long bill | special feet | breathe through skin |

4	1	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

2. Organisms depend on other organisms for survival. Match the interdependent relationship (**symbiosis**) with the description.

- | | |
|---|---|
| 1 | each organism benefits in the relationship |
| 2 | one organism benefits the other is harmed |
| 3 | one organism benefits and nothing happens to the other organism |
| 4 | one organism appears to be like another |

- | | | | |
|--------------|-----------|----------|------------|
| <u>3</u> | <u>1</u> | <u>4</u> | <u>2</u> |
| commensalism | mutualism | mimicry | parasitism |

3	1	4	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

3. Protecting the environment by reducing the size of our ecological footprint. Match the action with its waste reduction description.

- | | |
|---|-----------------------------|
| 1 | use it again |
| 2 | cut down on use |
| 3 | fix it |
| 4 | make it into something else |

- | | |
|----------|---------|
| <u>2</u> | reduce |
| <u>1</u> | reuse |
| <u>4</u> | recycle |
| <u>3</u> | restore |

2	1	4	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

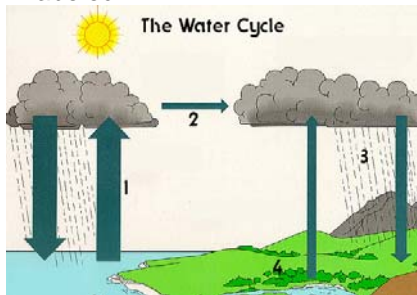
4. There are many different roles for organisms in an ecosystem. Match the role with its description.

- | | |
|---|------------------------------|
| 1 | are plant eaters |
| 2 | are meat eaters |
| 3 | are food for other organisms |
| 4 | eat other organisms |

- | | |
|----------|-----------|
| <u>3</u> | producer |
| <u>4</u> | consumer |
| <u>2</u> | carnivore |
| <u>1</u> | herbivore |

3	4	2	1
.	.	.	.
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

5. **Water Cycle** – the continuous movement of water through an ecosystem. Identify the parts as labeled.



- | | |
|----------|---------------|
| <u>1</u> | evaporation |
| <u>2</u> | condensation |
| <u>4</u> | transpiration |
| <u>3</u> | precipitation |

1	2	4	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

6. There are different kinds of **monitoring practices** that help us check the health of an ecosystem. Match the description with the type of monitoring it describes.

- | | |
|---|---------------|
| 1 | physical |
| 2 | environmental |
| 3 | chemical |
| 4 | biological |

- | | |
|----------|---------------------------------|
| <u>2</u> | Changes in weather |
| <u>3</u> | Quality of air, soil, and water |
| <u>4</u> | Changes in organisms |
| <u>1</u> | Changes in landscape |

2	3	4	1
.	.	.	.
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

Numerical Response Practice Questions – Grade 7 Achievement Exam

Unit B – Plants for Food and Fibre

Sample ...

7. From **plant to final product** was a topic you studied in this unit. There are plants that are used to produce certain products. Match the product with the plant it is derived from.

- 1 canola
- 2 cocoa tree
- 3 sugar beets
- 4 seaweed

4	1	2	3
ice cream	potato chips	chocolate	sugar crystals

4	1	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

8. From **plant to final product** was a topic you studied in this unit. There are plants that are used to produce certain products. Match the product with the plant it is derived from.

- 1 disposable diapers
- 2 sails
- 3 linen paper
- 4 plastics

2	3	4	1
hemp	flax	cotton	wood pulp

2	3	4	1
.	.	.	.
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

9. From **plant to final product** was a topic you studied in this unit. There are plants that are used to produce certain products. Match the plant with its use.

- 1 wood alcohol
- 2 castor bean oils
- 3 latex
- 4 poppy seed pod

4	3	1	2
medicine	transportation	fuel	lubricant

4	3	1	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

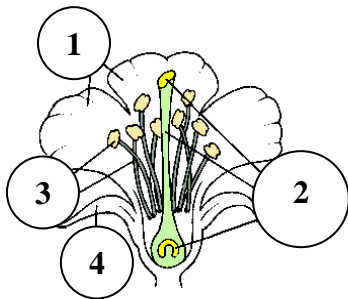
10. There are many different kinds of **stems**. Match the description with the type of stem it describes.

- 1 grows horizontally on the ground (runner)
- 2 underground stems
- 3 fleshy horizontal stems
- 4 flattened stems

2	4	1	3
corms	cacti	strawberry plant	cattails

2	4	1	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

11. **Flower Parts** - identify each correct part



- 4 sepal
- 3 stamen
- 2 pistil
- 1 petal

4	3	2	1
.	.	.	.
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

12. There are many different kinds of **farming practices** that help to save the soil. Match the description with the type of farm practice it describes.

- 1 shelter belts
- 2 summer fallow
- 3 zero-tillage
- 4 forages

3	1	4	2
leave stubble on the field	plant rows of trees	crop rotation (veg)	cultivate to control weeds

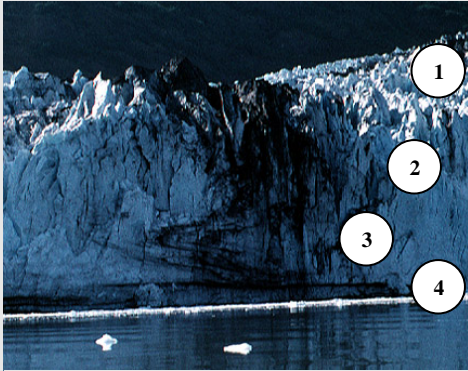
3	1	4	2
.	.	.	.
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

Numerical Response Practice Questions – Grade 7 Achievement Exam

Unit C – Heat and Temperature

Sample ...

13. Identify the parts of a glacier.
(As outlined on p. 194 in SF7)



1	2	3	4
loose snow	firm	glacial ice	plastic ice

1	2	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

14. Match the description with the relative temperature it represents.

- 1 normal body temperature
- 2 freezing point of water
- 3 boiling point of water in Calgary
- 4 temperature of ice cream

4 2 1 3
 - 5°C 0°C 37°C 97°C

4	2	1	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

15. Which device would you use for each of the following situations.

- 1 To record heat loss in a building
- 2 To measure temperature changes over a month
- 3 To create an electrical current
- 4 To control an electric switch by expanding and contracting

- 3 thermocouple
4 bimetallic strip
2 recording thermometer
1 infrared thermogram

3	4	2	1
.	.	.	.
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

16. Match the change in state with the term that is used to describe it.

- 1 solid to liquid
- 2 liquid to gas
- 3 solid to gas
- 4 liquid to solid

- 2 evaporation
1 fusion
3 sublimation
4 solidification

2	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

17. **Energy Transfer** – energy can be transferred from place to place depending on the medium it goes through. Match the type of energy transfer with each medium.

- 1 radiation
- 2 convection
- 3 conduction

- 3 solid
2 liquid
2 gas
1 space

3	2	2	1
.	.	.	.
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

18. There are different sources of **thermal energy**. Match the source with its description.

- 1 chemical
- 2 electrical
- 3 geothermal
- 4 solar

- 2 falling water generates energy
4 the sun provides energy
3 heat below the Earth's surface
1 burning of wood and fossil fuels



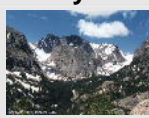
2	4	3	1
.	.	.	.
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

Numerical Response Practice Questions – Grade 7 Achievement Exam

Unit D – Structures and Forces

Sample ...

19. Classify each structure

1		2	
	feather		bicycle
3		4	
	dam		mountain

4	1	3	2
Natural Mass	Frame	Manufactured Mass	Frame

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

20. Match the description with the type of **material** it represents.

- 1 made from more than one type of material
- 2 putting layers of materials together to make them stronger
- 3 interlocking to make the material stronger
- 4 melting and dissolving substances together

3	2	4	1
yarn	drywall	aluminum foil	reinforced concrete

3	2	4	1
.	.	.	.
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

21. Match the type of **rigid joint** with the example that illustrates it.

- 1 fastener
- 2 tie
- 3 interlocking shape
- 4 adhesive

3	rivets
1	clothing hem
2	shoe lace
4	epoxy resin

3	1	2	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

22. **Gravitational Force** on the Earth is equal to approx. 10 Newtons for each kilogram of mass. How much force does 125 grams have?

Show how you figured it out!

$$125 \text{ grams} = 0.125 \text{ kg}$$

$$0.125 \times 10 = 1.25 \text{ N/kg}$$

1	.	2	5
.	.	.	.
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

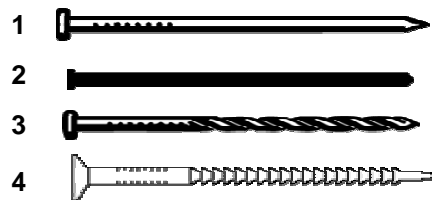
23. **Internal Forces** – are forces, which can be exerted on a structure from within. Match the type of internal force with its description.

- 1 tension
- 2 compression
- 3 shear
- 4 torsion

2	squeezing together
4	twisting and turning
3	tearing or ripping
1	pulling apart

2	4	3	1
.	.	.	.
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

24. Different nails are used for different purposes. Put the following nail types in order of their **fastening ability**. Most friction to least friction



4	3	1	2
most friction	----->	least friction	





4	3	1	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

Numerical Response Practice Questions – Grade 7 Achievement Exam

Unit E – Planet Earth

Sample ...

25. Match the mineral with the type of crystal it makes.
(As outlined on p. 355 in SF7)

	cubic		monoclinic
1		3	
2		4	
	tetragonal		triclinic

<u> 1 </u>	<u> 2 </u>	<u> 3 </u>	<u> 4 </u>
halite	topaz	gypsum	albite

1	2	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

26. Match the description with the type of **mineral identification** it is describing.

- 1 this the mineral's scratchability
- 2 reflects light from its surface
- 3 breaks along smooth, flat planes
- 4 the colored powdered form of the mineral

 2 4 3 1
lustre streak cleavage hardness

2	4	3	1
.	.	.	.
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

27. Which category of **rock family** belongs with which rock type described?

- 1 Igneous
- 2 Sedimentary
- 3 Metamorphic
- 4 Magma

 4 melted rock
 2 layered rock
 1 crystallized rock
 3 changed rock

4	2	1	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

28. Match the type of **weathering** with the description of what it is caused by.

- 1 mechanical
- 2 chemical
- 3 biological

 1 extreme change in temperature
 3 acid in plant roots
 1 frost wedging
 2 dissolving minerals

1	3	1	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

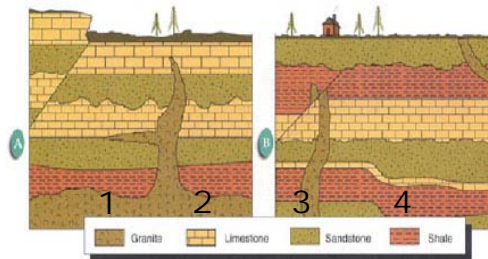
29. **Earthquakes** – are caused by the movement of rock where the crust has broken apart and the pieces move. Match the type of fault with each description

- 1 Normal Fault
- 2 Reverse Fault
- 3 Strike-slip Fault
- 4 Transform Fault

 2 plates squeeze together, rock above fault moves up and over
 3/4 plates move sideways, with sudden movements
 4/3 plates are jammed together, then move past each other
 1 plates move apart, rock above fault moves down

2	3	4	1
.	.	.	.
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

30. Using the **principle of superposition**, number the layers of rock in the correct order, beginning with the oldest.



 1 4 3 2
oldest --- → --- → --- youngest

1	4	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

Numerical Response Practice Questions – Grade 7 Achievement Exam

Answer Key for **Numerical Response**
Practice Questions – Version 2004

Unit A – Interactions and Ecosystems					
1	2	3	4	5	6
4123	3142	2143	3421	1243	2341
Unit B – Plants For Food and Fibre					
7	8	9	10	11	12
4123	2341	4312	2413	4321	3142
Unit C – Heat and Temperature					
13	14	15	16	17	18
1234	4213	3421	2134	3221	2431
Unit D – Structures and Forces					
19	20	21	22	23	24
4132	3241	3124	1.25	2431	4312
Unit E – Planet Earth					
25	26	27	28	29	30
1234	2431	4213	1312	2341 or 2431	1432

Find more Resources like these for Teachers
[Grade 7](#) – [Grade 8](#) – [Grade 9](#)

Find more Resources like these for [Students](#)

General Science Resources and Projects for Middle School at: Edquest.ca
Email Comments and Suggestions to: edquest@gmail.com