

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

4	1	2	3
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

_____ commensalism _____ mutualism _____ mimicry _____ parasitism

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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

_____ reduce
 _____ reuse
 _____ recycle
 _____ restore

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0	0	0	0
1	1	1	1
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3	3	3	3
4	4	4	4
5	5	5	5
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8	8	8	8
9	9	9	9

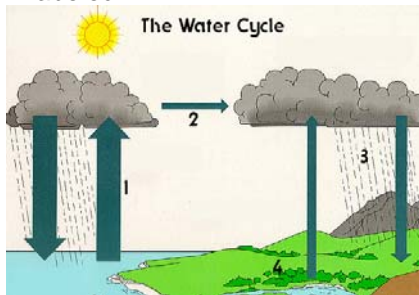
4. There are many different roles for organisms in an ecosystem. Match the role with its description.

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

_____ producer
 _____ consumer
 _____ carnivore
 _____ herbivore

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1	1	1	1
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3	3	3	3
4	4	4	4
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6	6	6	6
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8	8	8	8
9	9	9	9

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



_____ evaporation
 _____ condensation
 _____ transpiration
 _____ precipitation

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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

_____ Changes in weather
 _____ Quality of air, soil, and water
 _____ Changes in organisms
 _____ Changes in landscape

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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
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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 |

hemp	flax	cotton	wood pulp
------	------	--------	-----------

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0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
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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 |

- | | |
|-------|----------------|
| _____ | medicine |
| _____ | transportation |
| _____ | fuel |
| _____ | lubricant |

	.	.	
0	0	0	0
1	1	1	1
2	2	2	2
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4	4	4	4
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9	9	9	9

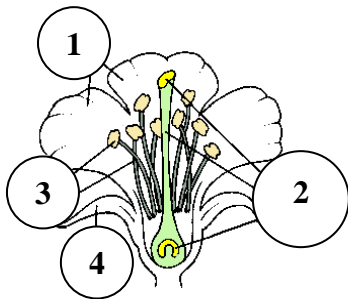
10. There are many different kinds of **stems**. Match the description with the type of stem it describes.

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

- | | |
|-------|------------------|
| _____ | corms |
| _____ | cacti |
| _____ | strawberry plant |
| _____ | cattails |

	.	.	
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
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8	8	8	8
9	9	9	9

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



- | | |
|-------|--------|
| _____ | sepal |
| _____ | stamen |
| _____ | pistil |
| _____ | petal |

	.	.	
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
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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 |

- | | |
|-------|----------------------------|
| _____ | leave stubble on the field |
| _____ | plant rows of trees |
| _____ | crop rotation (veg) |
| _____ | cultivate to control weeds |

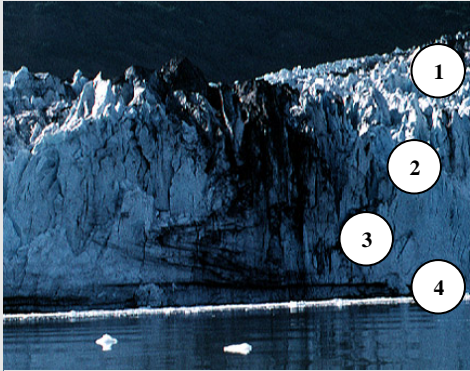
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2	2	2	2
3	3	3	3
4	4	4	4
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8	8	8	8
9	9	9	9

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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

_____ _____ _____ _____
 - 5°C 0°C 37°C 97°C

	.	.	
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

- _____ thermocouple
 _____ bimetallic strip
 _____ recording thermometer
 _____ infrared thermogram

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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
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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

- _____ evaporation
 _____ fusion
 _____ sublimation
 _____ solidification

	.	.	
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

- _____ solid
 _____ liquid
 _____ gas
 _____ space

	.	.	
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

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




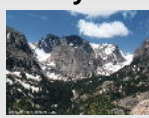
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1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
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6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

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

_____ _____ _____ _____
 yarn drywall aluminum foil reinforced concrete

	.	.	
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

_____ rivets
 _____ clothing hem
 _____ shoe lace
 _____ epoxy resin

	.	.	
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!

	.	.	
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




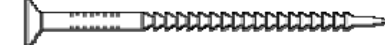
23. **Internal Forces** – are forces, which can be exerted on a structure from within. Match the type of internal force with its description.

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

_____ squeezing together
 _____ twisting and turning
 _____ tearing or ripping
 _____ pulling apart

	.	.	
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

- 1 
- 2 
- 3 
- 4 

_____ _____ _____ _____
 most friction -----> least friction





	.	.	
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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)

1	cubic	3	monoclinic
			
2	tetragonal	4	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

_____ _____ _____ _____
lustre streak cleavage hardness

.	.	.	.
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

_____ melted rock
_____ layered rock
_____ crystallized rock
_____ changed rock

.	.	.	.
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

_____ extreme change in temperature
_____ acid in plant roots
_____ frost wedging
_____ dissolving minerals

.	.	.	.
0	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
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6	6	6	6
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9	9	9	9

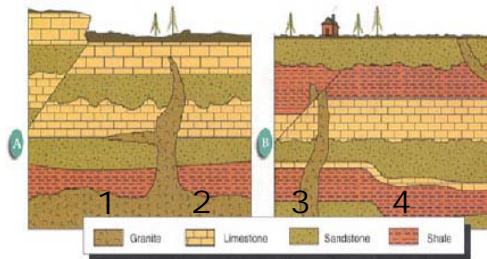
29. **Earthquakes** – are caused by the movement of rock where the crust has broken apart and the pieces move. Match the type of fault with each description

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

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

.	.	.	.
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.



_____ _____ _____ _____
oldest --- → --- → --- youngest

.	.	.	.
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

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