

Science 10 Earth and Space Science Item-level Response Report - Multiple Choice (Provincial Level)

British Columbia All Schools June /2005

Provincial Science 10 Item-Level Response Reports include data for all BC students who wrote the exam in June 2005. Both public and independent schools are included. The Science 10 June 2005 (Earth and Space Science) provincial Item-Level Response Report displays the proportion of students who made errors on each test item and a description of the misconception.

Form	Item #	Question type	Number of Students who Responded to the Item	Percentage of Students who Answered Incorrectly	Specific Curricular Aspect that Needs Attention [$>20\%$ selected incorrect response]
A	91	MC	10118	41	*
A	92	MC	10117	34	*
A	93	TF	10117	21	<ul style="list-style-type: none"> Students incorrectly answered that the Earth's mantle does not have convection currents.
A	94	TF	10117	49	<ul style="list-style-type: none"> Students incorrectly answered that continental crust was less dense than oceanic crust.
A	95	MT	10112	13	N/A
A	96	MT	10123	17	N/A
A	97	MT	10122	12	N/A
A	98	MT	10116	12	N/A
A	99	MT	10119	10	N/A
A	100	MC	10111	37	<ul style="list-style-type: none"> Students likely did not refer to the data booklet; did not understand how to interpret when extinctions occur on the geological time scale.
A	101	MC	10119	33	<ul style="list-style-type: none"> Students likely did not refer to the data booklet; did not understand how to interpret the geological time scale.

A	102	TF	10124	16	N/A
A	103	MC	10114	22	*
A	104	MC	10108	39	*
A	105	MC	10115	45	*
A	106	MC	10122	36	*
A	107	MC	10120	29	<ul style="list-style-type: none"> Students did not understand the concept of a divergent plate boundary.
A	108	MC	10120	55	<ul style="list-style-type: none"> Students chose the answer opposite to a divergent plate boundary.
A	109	MC	10103	57	<ul style="list-style-type: none"> Students likely did not refer to the data booklet; chose the answer opposite to the movement of the plates.
A	110	MC	10078	30	*
A	111	TF	10119	25	<ul style="list-style-type: none"> Students likely did not refer to the data booklet; confused a transform plate boundary for a convergent boundary.
A	112	TF	10114	70	<ul style="list-style-type: none"> Students likely did not refer to the data booklet; did not understand where ocean trenches are found.
A	113	MC	10109	71	<ul style="list-style-type: none"> Students answered incorrectly that the Hawaiian Islands would not change or move over time.
A	114	TF	10107	24	<ul style="list-style-type: none"> Students did not understand the relationship between mid-ocean ridges and divergent plate boundaries.
A	115	TF	10102	41	<ul style="list-style-type: none"> Students did not understand the plate movement that occurs at transform plate boundaries.
A	116	TF	10108	27	<ul style="list-style-type: none"> Students did not understand how glaciers can be used to support the theory of continental drift.

A	117	TF	10116	45	<ul style="list-style-type: none"> Students did not understand that the movement of plate tectonics is not the result of earthquakes and volcanic eruptions.
A	118	TF	10104	31	<ul style="list-style-type: none"> Students did not understand that earthquakes become progressively deeper as you move towards volcanoes in a subduction zone.
A	119	MC	10090	69	<ul style="list-style-type: none"> Students likely did not refer to the data booklet; correctly answered for three of the boundaries, but incorrectly thought that mountains were found at one of the boundaries, not volcanoes. Students likely did not refer to the data booklet; correctly identified three of the plate boundaries in a cross-sectional diagram, but incorrectly thought that volcanoes were found at a fourth boundary.
A	120	MC	10097	28	*
B	91	TF	10247	22	<ul style="list-style-type: none"> Students did not understand the properties of the Earth's mantle.
B	92	TF	10247	11	N/A
B	93	MT	10217	49	<ul style="list-style-type: none"> Students confused P-waves with surface waves.
B	94	MT	10211	47	<ul style="list-style-type: none"> Students confused S-waves with surface waves
B	95	MT	10227	65	<ul style="list-style-type: none"> Students confused the term "seismogram" with "seismograph machine."
B	96	MT	10230	18	N/A
B	97	MT	10238	66	<ul style="list-style-type: none"> Students confused P-waves with surface waves. Students confused a seismogram with surface waves.

B	98	MC	10237	20	*
B	99	TF	10247	15	N/A
B	100	TF	10251	23	<ul style="list-style-type: none"> Students likely did not refer to the data booklet; did not know how to interpret the relationship between the formation of red iron oxide deposits and the presence of oxygen in the Earth's atmosphere from the chart.
B	101	MC	10248	48	<ul style="list-style-type: none"> Students confused the term "relative age" with the Law of Superposition.
B	102	TF	10250	45	<ul style="list-style-type: none"> Students did not understand that the Law of Superposition can only be used to find the relative age of rock layers.
B	103	TF	10251	21	<ul style="list-style-type: none"> Students likely did not refer to the data booklet; read the chart backwards when comparing the age of two events.
B	104	MC	10243	30	*
B	105	MC	10229	44	*
B	106	MC	10246	46	<ul style="list-style-type: none"> Students correctly identified a cross-section of a subduction plate boundary, but mistook a map view of a transform plate boundary with a subduction plate boundary.
B	107	MC	10236	46	<ul style="list-style-type: none"> Students answered for how much of the decay product would be produced after 80 years, not 100.
B	108	MC	10207	54	<ul style="list-style-type: none"> Students likely did not refer to the data booklet; incorrectly calculated the age of the fossil using three half-lives, not four.
B	109	MC	10215	35	*
B	110	MC	10238	44	<ul style="list-style-type: none"> Students mistook a converging plate boundary for a

					diverging plate boundary.
B	111	MC	10242	54	<ul style="list-style-type: none"> • Students mistook a convergent plate boundary for a transform fault. • Students mistook a divergent plate boundary for a transform fault.
B	112	TF	10237	45	<ul style="list-style-type: none"> • Students did not understand the geological conditions needed for volcanic activity to occur.
B	113	TF	10241	38	<ul style="list-style-type: none"> • Students mistook the term “divergent” with “convergent”; did not understand how mountain ranges form.
B	114	MC	10228	60	<ul style="list-style-type: none"> • Students correctly answered that the Java Trench marks the convergence of two continental plate boundaries, but did not include the subduction of one of the plates as further explanation for its presence.
B	115	MC	10139	47	<ul style="list-style-type: none"> • Students incorrectly answered that hot spots are evidence for the location of subduction zones, instead of ocean trenches.
B	116	MC	10234	50	<ul style="list-style-type: none"> • Students did not understand the structure of hot spots and the mantle.
B	117	MC	10223	72	<ul style="list-style-type: none"> • Students answered incorrectly that volcanoes and deep earthquakes occur at transform plate boundaries, not shallow earthquakes. • Students mistook deep earthquakes for shallow earthquakes at a transform plate boundary.
B	118	TF	10234	62	<ul style="list-style-type: none"> • Students did not understand the term “subduction

					zone"; did not understand what causes volcanic activity.
B	119	TF	10231	18	N/A
B	120	MC	10227	25	*
C	91	MC	10133	40	*
C	92	TF	10139	10	N/A
C	93	MT	10109	49	<ul style="list-style-type: none"> Students confused S-waves for P-waves on a seismogram.
C	94	MT	10105	50	<ul style="list-style-type: none"> Students confused S-waves with surface waves.
C	95	MT	10089	63	<ul style="list-style-type: none"> Students confused the term "seismogram" with a part of a "seismograph machine."
C	96	MT	10119	17	N/A
C	97	MT	10115	68	<ul style="list-style-type: none"> Students confused P-waves with surface waves. Students confused a seismogram with surface waves.
C	98	MC	10129	27	*
C	99	TF	10132	13	N/A
C	100	TF	10132	25	<ul style="list-style-type: none"> Students likely did not refer to the data booklet; did not know how to interpret the relationship between the formation of red iron oxide deposits and the presence of oxygen in the Earth's atmosphere from the chart.
C	101	TF	10138	55	<ul style="list-style-type: none"> Students did not understand how to use the cross-cutting rule for comparing sedimentary rock layers.
C	102	TF	10134	43	<ul style="list-style-type: none"> Students did not understand that the Law of Superposition can only be used to find the relative age of sedimentary rock layers.

C	103	MC	10128	42	*
C	104	TF	10134	25	<ul style="list-style-type: none"> Students did not understand the term "relative dating."
C	105	MC	10117	64	<ul style="list-style-type: none"> Students did not understand how to use relative dating to compare the ages of two events. Students did not understand how to use relative dating to compare the ages of two rock formations.
C	106	MC	10132	27	*
C	107	MC	10132	44	*
C	108	MC	10132	40	*
C	109	MC	10126	33	<ul style="list-style-type: none"> Students did not understand the concept of a divergent plate boundary.
C	110	MC	10107	59	<ul style="list-style-type: none"> Students mistook a convergent plate boundary for a transform fault. Students mistook a divergent plate boundary for a transform fault.
C	111	MC	10131	61	<ul style="list-style-type: none"> Students likely did not refer to the data booklet; did not understand that volcanoes form at the convergence of two tectonic plates.
C	112	MC	10123	34	*
C	113	MC	10086	73	<ul style="list-style-type: none"> Students answered incorrectly that the Hawaiian Islands would not change or move over time.
C	114	TF	10116	14	N/A
C	115	TF	10113	26	<ul style="list-style-type: none"> Students did not understand that mid-ocean ridges form at divergent plate boundaries.
C	116	TF	10122	41	<ul style="list-style-type: none"> Students did not understand the type of tectonic plate

					movement that occurs at transform plate boundaries.
C	117	MC	10118	31	*
C	118	TF	10122	26	<ul style="list-style-type: none"> Students did not understand that earthquakes become progressively deeper as one moves towards volcanoes in a subduction zone.
C	119	MC	10121	36	<ul style="list-style-type: none"> Students did not understand that ashfall from a volcanic eruption can affect climate.
C	120	MC	10121	32	<ul style="list-style-type: none"> Students incorrectly answered that an increase in ocean temperature would first signal the beginning of a volcanic eruption in an area.

Note: 'N/A' represents that there were fewer than 20% of the students who incorrectly answered the item; '*' represents that there was no specific curricular aspect that needed attention since each of the incorrect answers has been chosen by less than 20% of the students.