

**Science 10: Physical Science
Item-Level Response Report (Provincial Level)**

British Columbia

All Schools

June/2009

Provincial Science 10 Item-Level Response Reports include data for all BC students who wrote the exam in June 2009 (about 33,678 students). Both public and independent schools are included. The Science 10 June 2009 (Physical Science) provincial Item-Level Response Report displays the proportion of students who made errors on each test item and a description of the misconception.

Click [here](#) to view the Prescribed Learning Outcomes

Form	Item #	Question type	Prescribed Learning Outcomes	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	22	MC	C1	33529	14%	<ul style="list-style-type: none"> N/A
A	23	MC	C1	33467	61%	<ul style="list-style-type: none"> Students did not understand how to identify a covalently bonded molecule when given an element's name; incorrectly answered that helium is a covalently bonded molecule, not bromine.
A	24	MC	C1	33511	42%	<ul style="list-style-type: none"> Students did not understand how to interpret a Bohr diagram; chose the correct element but incorrectly answered that the diagram was an atom, not an ion; likely did not refer to the data booklet.
A	25	MC	C1	33497	33%	<ul style="list-style-type: none"> *
A	26	MC	C1	33499	52%	<ul style="list-style-type: none"> Students did not understand how to interpret a Lewis diagram of an unknown element; correctly chose an atom of an element with eight outer

						electrons, but chose an atom with only seven outer electrons for the second atom, not eight.
A	27	MC	C1	33489	43%	<ul style="list-style-type: none"> Students did not understand the term "valence electrons"; incorrectly answered that lone pairs and bonding pairs of electrons both form covalent bonds, instead of answering that both are valence electrons.
A	28	MC	C2	33516	22%	*
A	29	MC	C2	33528	13%	<ul style="list-style-type: none"> N/A
A	30	MC	C2	33349	67%	<ul style="list-style-type: none"> Students did not understand that non-metal oxides produce acidic solutions; incorrectly answered that alkali metals will produce an acidic solution when dissolved in rainwater, not non-metal oxides. Students did not understand that non-metal oxides produce acidic solutions; incorrectly answered that metal oxides will produce an acidic solution when dissolved in rainwater, not non-metal oxides.
A	31	MC	C2	33527	32%	*
A	32	MC	C2	33510	36%	*
A	33	MC	C2	33524	15%	<ul style="list-style-type: none"> N/A
A	34	MC	C2	33494	31%	*
A	35	MC	C2	33482	14%	<ul style="list-style-type: none"> N/A
A	36	MC	C3	33503	44%	*

A	37	MC	C4	33523	34%	<ul style="list-style-type: none"> Students did not understand how to balance a chemical reaction when given a diagram representing molecules of reactants and products; correctly balanced the hydrogen atoms, but did not balance the oxygen atoms correctly.
A	38	MC	C4	33510	22%	*
A	39	MC	C4	33485	35%	*
A	40	MC	C4	33512	37%	*
A	41	MC	C4	33508	48%	<ul style="list-style-type: none"> Students were unable to predict the chemical formulae of the products of a neutralization reaction when given the names of the reactants; incorrectly answered the question for the formulae of the reactants of the reaction, not the products.
A	42	MC	C4	33520	36%	<ul style="list-style-type: none"> Students did not understand the factors that speed up a chemical reaction; could not correctly interpret a picture showing an increase in surface area when baking; incorrectly answered that increased concentration was the factor that accounted for the shorter cooking time in a picture, not an increased surface area.
A	43	MC	C5	33507	18%	<ul style="list-style-type: none"> N/A
A	44	MC	C5	33453	44%	*
A	45	MC	C5	33474	30%	*
A	46	MC	C5	33472	51%	<ul style="list-style-type: none"> Students did not understand how to interpret a fusion reaction when given the chemical formulae of the reactants and products; chose the correct

						elements and symbols for the reactants in the equation with the atomic mass and atomic number in the correct positions, but incorrectly chose the symbol for one of the products by using the element's atomic mass to determine the element's symbol, instead of using the element's atomic number.
A	47	MC	C6	33507	47%	<ul style="list-style-type: none"> Students did not understand the term "displacement"; incorrectly answered for the largest distance and the smallest displacement, not the greatest displacement.
A	48	MC	C6	33518	40%	<ul style="list-style-type: none"> Students did not understand the terms "speed" and "velocity"; incorrectly compared speed to acceleration, not velocity.
A	49	MC	C6	33507	20%	*
A	50	MC	C6	33507	6%	<ul style="list-style-type: none"> N/A
A	51	MC	C6	33513	30%	*
A	52	MC	C6	33509	38%	<ul style="list-style-type: none"> Students did not understand the term "displacement"; did not understand the unit associated with displacement in motion formulae; incorrectly answered that "m/s" is associated with displacement, not "m".
A	53	MC	C6	33516	25%	*
A	54	MC	C6	33499	47%	<ul style="list-style-type: none"> Students were unable to calculate distance when given speed and time; correctly multiplied speed by time, but did not convert time from minutes into seconds.

A	55	MC	C7	33498	15%	<ul style="list-style-type: none"> N/A
A	56	MC	C7	33500	46%	<ul style="list-style-type: none"> Students were unable to calculate final velocity when given initial velocity, acceleration and time; incorrectly added acceleration to the initial velocity, instead of calculating final velocity; likely did not refer to the data booklet.
A	57	MC	C7	33525	22%	*
A	58	MC	C7	33514	22%	*
A	59	MC	C7	33499	48%	*

Note:

'*' indicates that there were fewer than 20% of the students who selected any of the possible incorrect answers to the item, hence, no curricular note is reported;

'N/A' indicates that there were fewer than 20% of the students who incorrectly answered the item, hence, no curricular note is reported.

Question Type: Multiple Choice (MC).