

**Principles of Mathematics Grade 10: Numerical Response
An Item-Level Analysis (Provincial Level)**

British Columbia

All schools

June/2006

Provincial Principles of Mathematics 10 Item-Level Response Reports include data for all BC students who wrote the exam in June 2006 (about 26,450 students). Both public and independent schools are included. The Principles of Mathematics 10 June 2006 provincial Item-Level Response Report displays the proportion of students who made errors on each exam item (Number, Patterns and Relations, Shape and Space, Statistics and Probability) that require a Numerical Response. For each exam item, the report provides a description of the specific curricular aspects that need attention.

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

Form	Item #	Domain	Prescribed Learning Outcomes	Number of Students who Responded to the Item	Percentage of Students who Answered Incorrectly	Specific Curricular Aspect that Needs Attention
A	7	Number	B5	4022	77	Students did not know the properties of an equilateral triangle, did not recognize they should use Pythagoras theorem to compute the height, and/or made mistakes with radicals.
A	15	Number	B9	3667	68	Students did not know how to manipulate radicals and fractional exponents and/or did not notice that base and exponent match in an exponential equation.
A	20	Patterns and Relations	C2	3497	75	Students did not know the properties of an arithmetic sequence and/or made mistakes in solving a linear equation.
A	30	Patterns and Relations	C16	3876	68	Students did not know the meaning of an x-intercept of a graph and/or made mistakes solving a linear equation.
A	33	Patterns and Relations	C5	3887	69	Students did not know how to use the formula for a binomial squared.

A	41	Patterns and Relations	C11	3444	82	Students likely made mistakes in solving an equation involving rational expressions that led to a linear equation for x .
A	49	Shape and space	D4	4069	39	Students made mistakes in using the calculator to solve a trigonometric equation.
A	55	Shape and space	D8	3221	80	Students likely did not know the definition of the slope of a line and/or made a mistake in solving a linear equation for an unknown parameter.
B	7	Number	B5	2998	78	Students did not know how to use coordinate geometry to calculate the base and height of a triangle, did not correctly apply the formula for area, and/or made mistakes with radicals.
B	15	Number	B5	3112	86	Students did not know how to manipulate fractional and negative exponents and/or made mistakes in using exponent laws.
B	20	Patterns and Relations	C2	3196	48	Students did not know the properties of an arithmetic sequence and/or made mistakes in solving a linear equation.
B	30	Patterns and Relations	C18	3130	63	Students did not know the meaning of an x -intercept of a graph and/or made mistakes solving a linear equation.
B	33	Patterns and Relations	C7	3222	58	Students made an error in dividing a polynomial by a binomial.
B	41	Patterns and Relations	C9	3520	43	Students did not know how to find values for which a rational expression was not defined and/or made mistakes in solving a linear equation.
B	49	Shape and space	D4	3109	61	Students did not know the properties of sine for obtuse angles.
B	55	Shape and space	D6	2714	80	Students likely did not know the meaning of x -intercepts and y -intercepts and/or made mistakes in using the formula for the distance between two points.
C	7	Number	B9	3991	55	Students did not know how to manipulate radicals and

						fractional exponents in solving an equation with exponents.
C	15	Number	B5	4113	55	Students made an error in solving for the radius of a sphere when given the volume.
C	20	Patterns and Relations	C4	4016	44	Students did not know the properties of a geometric sequence.
C	30	Patterns and Relations	C19	4239	58	Students did not understand a problem based on arithmetic sequence and/or did not know how to find the first term.
C	33	Patterns and Relations	C8	3773	54	Students made a mistake in factoring and simplifying a rational expressions and/or solving a linear equation.
C	41	Patterns and Relations	C7	3774	63	Students made a mistake in dividing a polynomial by a binomial and finding the remainder.
C	49	Shape and space	D3	3735	82	Students made an error in using trigonometric ratios to solve a problem involving right triangles.
C	55	Shape and space	D6	3949	47	Students did not recognize formula for the distance between two points (provided in Formulae Sheet), or made numerical mistakes in using it.
D	7	Number	B5	4537	21	Students made mistakes in evaluating an expression with radicals and exponents.
D	15	Number	B8	4376	62	Students did not know how to factor expressions with radicals and relate the ratio of sides to the ratio of areas of two rectangles.
D	20	Patterns and Relations	C4	4264	31	Students did not know the properties of a geometric sequence or did not know how to find the common ratio of a geometric term.
D	30	Patterns and Relations	C19	4389	46	Students did not understand a problem based on arithmetic sequence and/or did not know how to find the first term.
D	33	Patterns	C5	4471	18	Students made a mistake in multiplying two binomials

		and Relations				and/or solving a linear equation.
D	41	Patterns and Relations	C9	4115	49	Students did not know how to find values for which a rational expression was undefined, made mistakes in factoring a trinomial or solving linear equation(s).
D	49	Shape and space	D7	4181	33	Students made mistakes in using the midpoint formula or solving a linear equation.
D	55	Shape and space	D8	4184	40	Students likely did not know how to identify slope in the equation of a line.
E	7	Number	B5	3707	76	Students did not know the properties of an equilateral triangle, did not recognize they should use Pythagoras theorem to compute the height, and/or made mistakes with radicals.
E	15	Number	B9	3421	64	Students did not know how to manipulate radicals and fractional exponents and/or did not notice that base and exponent match in an exponential equation.
E	20	Patterns and Relations	C2	3435	71	Students did not know the properties of an arithmetic sequence or the sum of the angles in a triangle or made mistakes in solving a linear equation.
E	30	Patterns and Relations	C18	3609	48	Students likely did not know how to identify the slope of a linear equation.
E	33	Patterns and Relations	C6	3669	59	Students made mistakes in multiplying binomials, simplifying a trinomial and/or identifying its constant term.
E	41	Patterns and Relations	C7	3523	51	Students made a mistake in dividing a polynomial by a binomial.
E	49	Shape and space	D7	3332	50	Students made mistakes in using the midpoint formula and solving a linear equation.
E	55	Shape and space	D8	3428	52	Students likely did not know how to identify the slope of a linear equation.
F	7	Number	B2	4466	11	Students did not know how to find a closing balance

						using a table with data from previous years.
F	15	Number	B5	4245	35	Students made errors in using Pythagorean theorem.
F	20	Patterns and Relations	C2	3802	45	Students did not know the properties of an arithmetic sequence and/or made mistakes in solving a linear equation.
F	30	Patterns and Relations	C18	3882	56	Students did not know the meaning of an x-intercept of a graph and/or made mistakes solving a linear equation.
F	33	Patterns and Relations	C8	3828	48	Students made a mistake in factoring and simplifying a rational expressions and/or solving a linear equation.
F	41	Patterns and Relations	C7	3760	52	Students made a mistake in dividing a polynomial by a binomial and find the remainder.
F	49	Shape and space	D3	4141	48	Students made mistakes in using trigonometric ratios in two right angle triangles with a common side.
F	55	Shape and space	D10	3796	44	Students did not know how to identify the slope of a line and/or did not know that slopes of parallel lines are equal.