
Grade 12
Consumer Mathematics
Standards Test

Written Test Student Booklet

June 2009

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510.76 Grade 12 Consumer Mathematics Standards Test:
Written Test Student Booklet (June 2009)

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Websites are subject to change without notice.

Ce document est disponible en français.

Grade 12 Consumer Mathematics Standards Test Written Test Student Booklet (June 2009)

DESCRIPTION

Total Possible Marks: 40

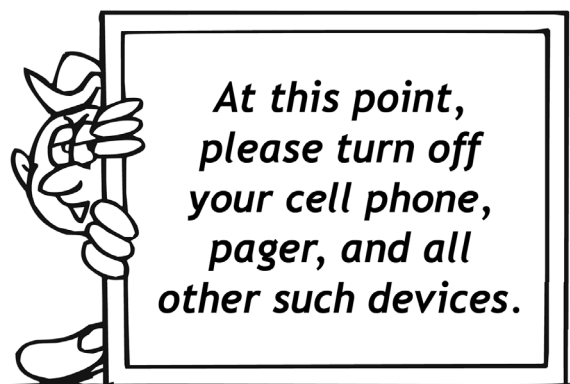
Maximum Time: 90 minutes

This component of the test consists of six parts:

Learning Unit	Suggested Time to Complete	Marks
Personal Finance	10–15 minutes	8
Government Finances	10–15 minutes	8
Statistics	10–15 minutes	7
Design and Measurement	10–15 minutes	2
Variations and Formulas	10–15 minutes	7.5
Investments	10–15 minutes	7.5

GENERAL DIRECTIONS

- ◆ You may use the *Grade 12 Consumer Mathematics Standards Test: Written Test Resource Package (2008/2009)* containing formulas and tables.
- ◆ Use of a scientific calculator and ruler may be necessary. Graphing calculators are not permitted.
- ◆ Read all instructions on the test carefully.
- ◆ If you need more space to answer a question, extra pages may be provided by your teacher. Write your booklet ID number and question number on any extra page(s) used and staple the additional pages into the booklet where your answer begins.



Remember to

- ◆ show all your work in this booklet
- ◆ use your *Written Test Resource Package*
- ◆ use a scientific (non-graphing) calculator
- ◆ use a ruler

DIRECTIONS

- ◆ Show **complete answers** in the space(s) provided in this booklet.
- ◆ Let the mark values for each question guide you in answering the question.
- ◆ Show all your work.
- ◆ Be sure to include units in your final answer.
- ◆ Use your *Written Test Resource Package*.
- ◆ Provide explanations and justifications.
- ◆ Use a well-organized method to communicate your answer.

Directing Words

Some questions may include directing words such as *explain*, *illustrate*, and *calculate*. These words are explained below.

The Word	The question is asking for...
identify/list/name/state	a label or title of an item, concept, or method
defend/justify/support	an explanation, information, or evidence that shows why your method, idea, or answer is good
describe/explain/express	words or symbols, diagrams, a chart or graph, or other methods that clearly show what you mean or what you are thinking
illustrate/sketch	a reasonably neat picture or diagram (not necessarily to scale) that shows or explains an idea or method
draw	a diagram to scale or graph that shows or explains an idea or method
calculate/convert/determine/find	a mathematical formula, an algebraic equation, or a numerical calculation to solve a problem
plot	placement of a point or points on a graph



PLEASE WAIT UNTIL THE TEACHER TELLS YOU TO TURN THE PAGE.

Personal Finance

2 Marks

1. Jen decides to purchase a tenant's insurance policy of \$30 000 to provide coverage for the contents of her apartment.

A) State the annual premiums of standard and comprehensive policies. (1 mark)

115

Standard Form	Comprehensive Form

B) Determine the amount Jen will pay if she chooses the comprehensive coverage with a \$200 deductible. (1 mark)

116

2 Marks

2. A parent wishes to buy a whole-life insurance policy for her 4-year-old son.

A) Find the annual premium for a policy with a face value of \$75 000 for her 4-year-old son. (1.5 marks)

117

B) Determine the monthly payment for this policy. (0.5 mark)

118

1 Mark

3. Premnath has a mortgage of \$75 000 with an interest rate of 7% amortized over 15 years. The monthly mortgage payment is \$669.75. Determine the interest he will pay over the life of the mortgage.

119

3 Marks

4. Lucie is looking at buying a new house. The house that she likes would have monthly mortgage payments of \$873, heating costs of \$215, and property taxes of \$232.

A) What is the minimum gross monthly income that she needs so that the bank will consider this purchase to be affordable? (2 marks)

120

B) Explain what would happen to her GDSR if Lucie's gross monthly income were to go below the amount calculated in Part A. (1 mark)

121

Government Finances

2 Marks

5. Examine the following statement:
“Currently, it is the government’s plan to increase revenue and decrease expenditures.”
Explain the difference between revenue and expenditures. (2 × 1 mark)

122

6. Shelby purchased ten costume necklaces from Norway for a total value of \$38.94 Canadian. Determine which Excise Tax calculation is correct and explain why it is correct.

Calculation A

$$\$38.94 \times 0.10 = \$3.89 \text{ Excise Tax}$$

OR

Calculation B

$$(\$38.94 - \$30.00) \times 0.10 = \$0.89 \text{ Excise Tax}$$

1 Mark

7. A local gas station purchases unleaded gasoline and gasohol for the same price. They sell both for 105.9¢ per litre. Justify which product gives the gas station a greater profit per litre.

124

8. Assume the population of Manitoba is 1 000 000 and that 20% of Manitobans smoke an average of three cigarettes a day and 80% do not smoke at all. Determine the amount of money the province would lose in cigarette tax revenue in one year if everyone quit smoking.

2 Marks

9. A factory in Minnedosa had a portioned assessment of \$1 200 000. A recent expansion increased its portioned assessment by 75%. Calculate the property taxes due this year if the town's mill rate is 27.

126

Statistics

1 Mark

10. Determine the type of correlation that exists in the following table.

127

Month	Average High Temperature (°C)	Average Monthly Precipitation (mm)
January	-6	10
February	-5	9
March	0	12
April	5	19
May	9	25
June	12	35
July	14	36
August	12	35
September	9	26
October	6	12
November	0	8
December	-5	5

2.5 Marks

11. Nemo and Sponge Bob individually entered a science contest with 148 other students. They each scored 91%. No one else scored the same as Nemo and Sponge Bob and 123 students scored lower.

A) Calculate Nemo's percentile rank. (1.5 marks)

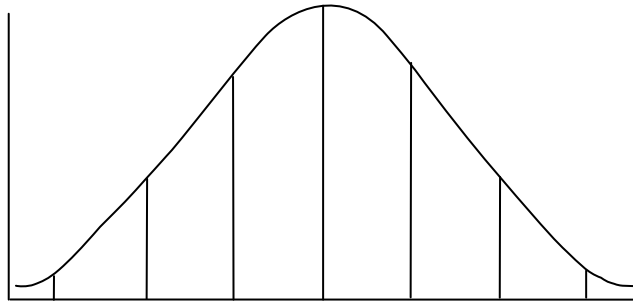
128

B) The top 20% received a certificate of excellence and the top 10% received a medal. What will Nemo receive? Justify your answer. (1 mark)

129

12. The results of a class test follow a normal distribution with a mean of 65 and a standard deviation of 7.5.

Class Test Scores



- A) What percentage of the students scored 50 or higher? (1 mark)

130

- B) What is Chad's score if he is told that 84% of the students scored lower than he did? (0.5 mark)

131

13. St. Herbert High School's scores on a test were:

40, 60, 64, 64, 66, 66, 68, 68, 72, 92

A) Determine the mean (\bar{x}) score. (0.5 mark)

132

B) Determine the standard deviation on the test. (1.5 marks)

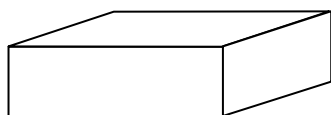
133

x score	$x - \bar{x}$	$(x - \bar{x})^2$
40	-26	676
60	-6	36
64		
64		
66		
66		
68		
68		
72	6	36
92	26	676
$\Sigma(x - \bar{x})^2$		

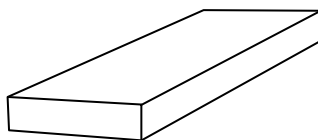
Design and Measurement

2 Marks

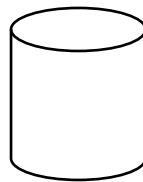
14. Bubba has entered a cake building contest. The quantities and surface areas of each of the shapes he needs are:



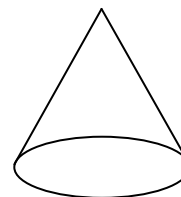
SA: 216 in^2
Quantity: 3



SA: 56 in^2
Quantity: 2



SA: 170 in^2
Quantity: 2



SA: 245 in^2
Quantity: 2

- A) One batch of icing covers 800 in^2 . How many batches of icing must Bubba make to cover the total surface area of the shapes? (1 mark)

134

- B) Determine Bubba's cost to ice the cakes. (1 mark)

135

Ingredients List (per batch of icing)	
Butter	4 cups
Eggs	2 dozen
Milk	1 litre
Colouring	1 jar
Sugar	500 grams

Price List (taxes included where applicable)		
Butter	2 cups	\$4.28
Eggs	1 dozen	\$1.99
Milk	1 litre	\$1.40
Colouring	1 jar	\$2.30
Sugar	500 grams	\$3.40

Variations and Formulas

1 Mark

15. Homer works in a car dealership. Describe how he is paid if his earnings are an example of a partial variation.

136

16. The cost of a long distance plan varies directly with the number of minutes used. Sharon was charged \$1.24 for 15.5 minutes used.

A) Determine the constant of variation and write the formula for this direct variation. (1.5 marks)

137

B) Sharon talks on the phone for 5 hours each month. She has an option of a second plan with unlimited minutes that is \$30 per month. Determine the cheaper option and defend your answer. (1.5 marks)

138

17. The mechanical advantage (M.A.) gained by a piston system is given by:

$$\text{M.A.} = \frac{\text{load force}}{\text{effort force}}$$

There are no units for mechanical advantage.

- A) An effort force of 10 N (Newtons) is applied and a load force of 20 N results. Calculate the mechanical advantage of the system. (1 mark)

139

- B) A system is known to have a mechanical advantage of 12.5. Calculate the load force if an effort force of 200 N is applied. (1 mark)

140

1.5 Marks

18. A rectangular solid has a length of 30 cm, a width of 8 cm and a height of 8 cm. Calculate the surface area of the solid.

141

Investments

1 Mark

19. Clarence has found a box of hockey cards in the attic. He decides to keep the cards as an investment. Classify this investment as a debt or equity investment. Explain your answer.

142

20. State one advantage and one disadvantage of participating in a low-liquidity investment.

Advantage: _____

Disadvantage: _____

1.5 Marks

21. Allesandra purchased 40 shares in Canmore Global. She paid a total of \$489.60 for these shares, which included a \$9.60 commission fee.

A) Calculate the price of each share. (1 mark)

144

B) What rate of commission did she pay? (0.5 mark)

145

22. Tavener's financial situation is:

House	\$140 000
Vehicle	\$25 000
Loan	\$18 000
Cash in Bank	\$8 000
Furnishings	\$12 000
Mortgage	\$120 000
Credit Card Debt	\$6 000
Investments	\$40 000

A) Calculate Tavener's Net Worth. (1.5 marks)

146

B) Calculate Tavener's Debt Equity Ratio. (1.5 marks)

147

No marks will be awarded for work done on this page.

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