
Grade 12
Consumer Mathematics
Standards Test

Written Test Student Booklet

January 2012

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Websites are subject to change without notice.

Disponible en français.

Available in alternate formats upon request.

Grade 12 Consumer Mathematics Standards Test Written Test Student Booklet (January 2012)

DESCRIPTION

Total Possible Marks: 40

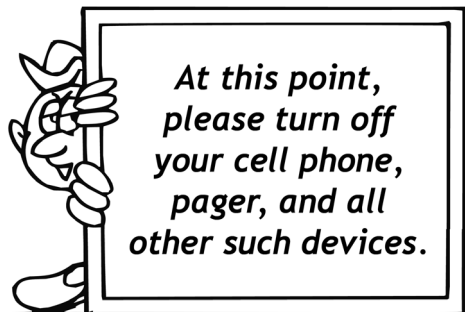
Maximum Time: 90 minutes

This component of the test consists of six parts:

Learning Unit	Suggested Time to Complete	Marks
Personal Finance	10–15 minutes	7.5
Government Finances	10–15 minutes	7
Statistics	10–15 minutes	8
Design and Measurement	10–15 minutes	3
Variation and Formulas	10–15 minutes	7
Investments	10–15 minutes	7.5

GENERAL DIRECTIONS

- ◆ You may use the *Grade 12 Consumer Mathematics: Written Test Resource Package (2011/2012)* 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

1 Mark

1. A married couple, both 25, have two children aged 3 and 4. They want to buy a life insurance policy with a face value of \$300 000.

A) State one benefit of buying 10-year term life insurance. (0.5 mark)

115

B) State one benefit of buying whole-life insurance. (0.5 mark)

116

1.5 Marks

2. Tracy purchased a whole-life insurance policy when she was 25. It has a face value of \$200 000 and the annual premium is \$1 340. After 35 years, at age 60, she decides to cancel the policy and cash it in.

A) Calculate the total amount paid to the insurance company over the 35 years. (0.5 mark)

117

B) Determine the amount of money she gets back as a cash surrender value after 35 years. (1 mark)

118

2 Marks

3. Gail is buying a home. She took out a 20-year mortgage for \$190 000 and makes monthly payments of \$1 400.

A) Calculate the total amount paid for the home over the 20-year period. (0.5 mark)

119

B) Calculate the total amount of interest paid over the 20-year period. (0.5 mark)

120

C) State two ways Gail could decrease the amount of interest she pays. (1 mark)

121

1 Mark

4. Explain why expenses like mortgage payments, heating bills, and groceries are not considered “initial or start-up costs in purchasing a home”.

122

5. Brian earns a gross monthly income of \$3 800. His monthly property taxes are \$150 and monthly heating is estimated at \$120. The bank offers him a mortgage rate of 9.5% per year. Determine the maximum affordable mortgage available to Brian. You may refer to the Maximum Affordability Calculator (Table 7) in your *Written Test Resource Package*.

Government Finances

2.5 Marks

6. While traveling in Switzerland (MFN), Diane purchased a watch for \$150 Canadian.
Calculate the following:

A) Customs Duties: (0.5 mark)

124

B) Excise Taxes: (1 mark)

125

C) GST: (1 mark)

126

1 Mark

7. David returns from a trip and goes to the bank to convert his money. Calculate the amount he will receive if he converts 300 Euros into Canadian funds.

127

1 Mark

8. Calculate the amount of Provincial Tobacco Taxes collected from a pack-a-day smoker (20 cigarettes per day) over a one-year period.

128

9. A home's portioned assessment is \$160 000. Calculate the homeowner's total property tax bill given the following information:

Municipal Mill Rate	19.5 mills
Provincial Education Mill Rate	6 mills
Local School Division Mill Rate	20 mills

Statistics

2 Marks

10. A science class built structures that were required to hold heavier and heavier weights until they broke. The table below shows the maximum weights that each structure could hold before it broke.

Weights in grams

135	144	151	155	158
159	160	163	166	168
171	175	175	182	196

- A) Calculate the percentile rank of the structure that could hold 175 grams. (1.5 marks)

130

- B) One structure had a percentile ranking of 50. State the amount of weight it could hold in grams. (0.5 mark)

131

2 Marks

11. The mean gross income for a company's employees is \$450 per week, with a standard deviation of \$50. The company gives each employee a raise of \$20 per week.

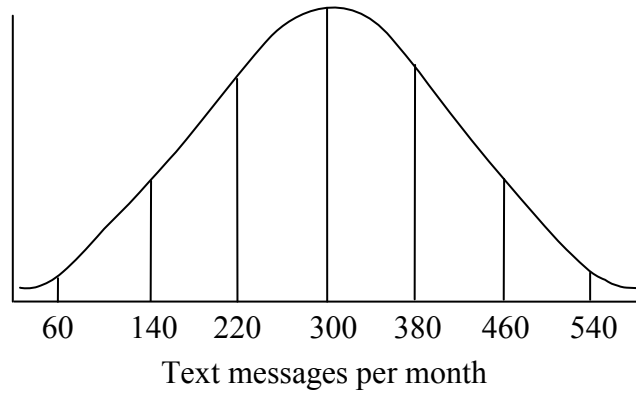
A) State the new mean income. (1 mark)

132

B) State the new standard deviation. (1 mark)

133

12. A group of customers sends text messages at a rate that follows a normal distribution, as shown on the curve below.



- A) State the mean and standard deviation of text messages sent each month. (1 mark)

134

Mean: _____

Standard Deviation: _____

- B) There are 144 000 customers. Calculate the number of customers that will send 220 messages or less per month. (1 mark)

135

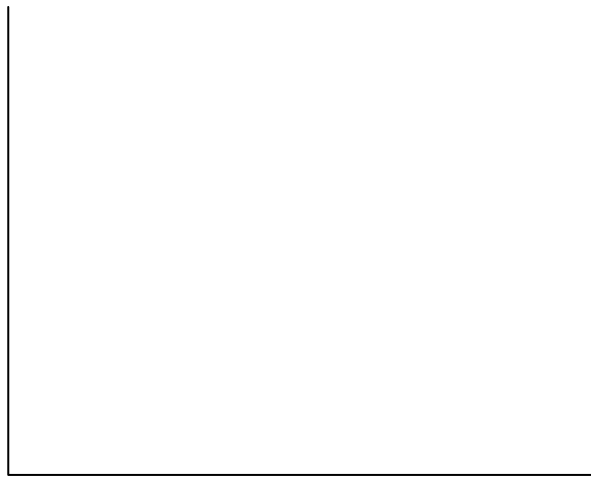
13. Correlation is the measure of the relationship (or lack of) between two sets of data.

A) Identify the strength and type of a correlation that has a correlation coefficient (r -value) of 0.2. (1 mark)

136

B) Plot 5 points on the following graph that would demonstrate an r -value of -1.0 . (1 mark)

137



Design and Measurement

3 Marks

14. Air Manitoba will allow a suitcase with a maximum total of 155 cm for its length, width, and height dimensions (length + width + height).

A) Determine the dimensions of two (2) different suitcases which will each meet the maximum requirement. (1 mark)

138

B) Determine the volume of each suitcase in cm^3 . (2 marks)

139

Variation and Formulas

1.5 Marks

15. Angela uses her car to deliver pizza. She is paid \$9.50 for a 25 km distance. Determine the amount she is paid for 90 km if her pay varies directly with the distance driven.

140

2 Marks

16. Erwin earns a salary that varies partially with the number of magazine subscriptions he sells in one week. If he sells 10 subscriptions he will earn \$45. If he sells 40 subscriptions he will earn \$105.

A) Calculate the amount Erwin earns for each subscription. (1 mark)

141

B) Calculate the amount he earns as a flat fee (if he does not sell any subscriptions). (1 mark)

142

17. Jim borrows money from his brother and has set up a repayment schedule based on the formula:

$$a = 4\,200 - 175n$$

where n is the number of monthly payments made
where a is the amount still owing

- A) State the initial amount of money that Jim borrowed from his brother. (0.5 mark) 143

- B) Determine what Jim will owe his brother after one year. (1 mark) 144

- C) Determine the number of payments Jim has made if he still owes \$1 575. (1 mark) 145

1 Mark

18. You are planning a trip to Florida. The average temperature is predicted to be 77°F . Calculate what the average temperature would be in Celsius.

146

Investments

1 Mark

19. Dominic is meeting with his financial advisor to plan for future investments. State a factor that his financial advisor may consider when determining an appropriate choice of investments, and describe why it might provide useful information to the advisor.

147

20. Crystal is a 28-year-old that has started building an investment portfolio. Below is a list of her investments.

Canada Savings Bonds	\$5 000
Stocks	\$3 000
Savings Account	\$2 000
Collectibles	\$1 000

- A) Identify one investment that has high liquidity. (0.5 mark)

148

- B) Identify one investment that has high risk. (0.5 mark)

149

- C) State the total amount of debt investments in Crystal's portfolio. (0.5 mark)

150

21. Jared has asked his stockbroker to purchase 1 500 shares of InkBlot Inc. The shares are worth \$2.50 per share and the stockbroker charges a fee based on the graduated fee schedule shown below.

Fee Schedule		
Base charge of \$40, plus	8 ¢ per share	for 1 to 1 000 shares
	6.5 ¢ per share	for 1 001 to 2 500 shares
	5 ¢ per share	for over 2 500 shares

Calculate the total cost of buying the shares.

3 Marks

22. Liz has liabilities totalling \$70 000 and her Debt-Equity Ratio (DER) is 50%. Her liabilities include a mortgage of \$50 000.

A) Determine Liz's net worth. (1.5 marks)

152

B) Liz would like to borrow money to place \$2 000 in a Retirement Savings Plan (RSP). Explain how this would generally affect her assets, liabilities, and net worth. (1.5 marks)

153



