
Senior 4 Consumer Mathematics (40S) Standards Test

**Written Test
Student Booklet**

January 2006

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Senior 4 Consumer Mathematics (40S)
Standards Test—January 2006
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DESCRIPTION

Total Possible Marks: 39

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	7.5
Statistics	10–15 minutes	7.5
Variation and Formulas	10–15 minutes	7
Investments	10–15 minutes	7
Design and Measurement	10–15 minutes	2.5

GENERAL DIRECTIONS

- ◆ You may use the resource package 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 resource package;
- ◆ use a scientific (non-graphing) calculator; and
- ◆ use a ruler.

DIRECTIONS

- ◆ Show **complete answers** in the space(s) provided in your student 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 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 or algebraic equation or 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

DO NOT
USE

1.5 Marks

1. Bill Smith wishes to insure the contents of his apartment. His contents are valued at \$35 000. Calculate Bill's yearly premium for standard form coverage with a \$200 deductible.

115

2.5 Marks

2. John Dion decides to buy a house for \$38 000. He makes a down payment of 5% of the purchase price of the house. The mortgage is amortized over 15 years at a rate of 4.25%. John makes monthly mortgage payments. Calculate the total amount of the mortgage payments he makes in one year.

116

1.5 Marks

3. A couple earning \$4 500 a month (combined gross salary) is considering a mortgage payment of \$860 a month. Property taxes would be \$220 per month. Calculate the maximum they can afford to pay for heating when their Gross Debt Service Ratio (GDSR) is 32%.

117

2 Marks

4. In the table below, list and describe two initial costs (excluding the purchase price) that a person may have to pay when purchasing a home.

118

	INITIAL COST	DESCRIPTION
1.		
2.		

Government Finances

1.5 Marks

5. The following revenues were collected by the town of Jamesville for the year 2002. Calculate the percent of revenue collected in government grants.

119

Business taxes	\$ 600 000
Government grants	\$ 780 000
Permits, sale of goods	\$ 80 000
Property taxes	\$ 1 900 000
Transfers	\$ 140 000
Other taxes	\$ 500 000

2.5 Marks

6. A Brandon car dealership is importing five cars from Germany (MFN). Each car is worth \$50 000 Canadian.

A) Calculate the custom duties paid when importing these five cars. (1.5 marks)

120

B) Calculate the cost of one car in euros. (1 mark)

121

1 Mark

7. Leanne spent a year as an exchange student in Japan. Prior to leaving Canada she bought 180 000 yen. While in Japan, Leanne spent 150 000 yen. Calculate how much she spent in Canadian dollars.

122

- A) \$1 665.00
- B) \$1 755.00
- C) \$12 820 512.82
- D) \$13 513 513.51

Answer: _____

2.5 Marks

8. A municipality needs to raise \$75 900 in taxes. The total portioned assessed value of the properties in this municipality is \$3 000 000.

123

- A) Calculate the property tax rate in mills for the municipality. (1 mark)

- B) Calculate the amount of tax revenues generated from a property worth \$80 000, if the portioned percentage is 45%. (1.5 marks)

124

Statistics

**DO NOT
USE**

2.5 Marks

9. Judges for a talent show auditioned 1 200 people and scored their performances. Dave scored 87% for his performance. Nine other contestants scored 87%. A total of 805 contestants scored lower than Dave.

A) Find Dave's percentile rank. (1.5 marks)

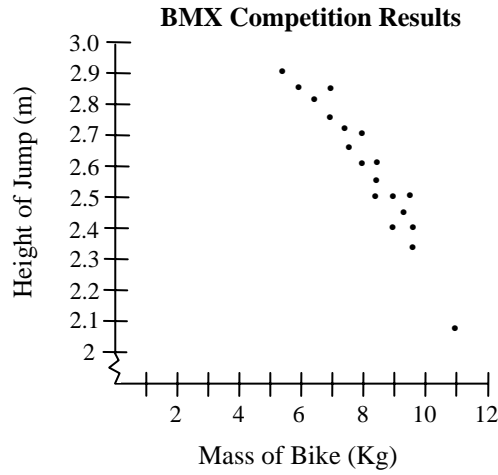
125

- B) Dave's friend, Tim, is the only person with a percentile rank of 90. The talent show uses the top 10 scores to determine the finalists. Determine whether Tim is a finalist and explain your answer. (1 mark)

126

2 Marks

10. The scatter plot below shows the relationship between the mass of a BMX bike and the height the bike can jump.



- A) Identify the type and strength of the correlation that exists between the mass of a bike and the height of a jump. (1 mark)

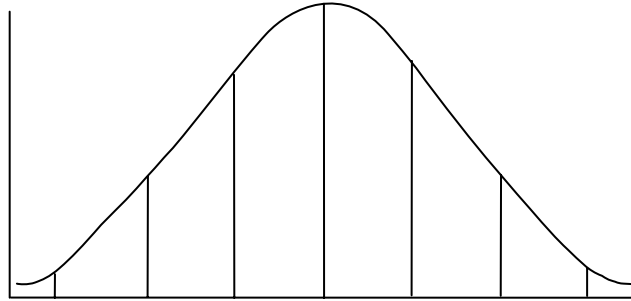
127

- B) Describe the relationship between the mass of a bike and the height of a jump. (1 mark)

128

1.5 Marks

11. A manufacturer produces televisions with an expected service-life that follows a normal distribution. The mean service-life is 13 years and the standard deviation is 1.5 years.



- A) Find the percent of televisions that last fewer than 10 years. (0.5 mark)

129

- B) If 22 000 televisions are manufactured in a particular year, find the number of televisions with a life expectancy greater than 11.5 years. (1 mark)

130

1.5 Marks

12. Margo marked ten Consumer Mathematics (40S) tests last night.

Scores		
x	$x - \bar{x}$	$(x - \bar{x})^2$
15	-24	576
18	-21	441
20	-19	361
22	-17	289
25	-14	196
34	-5	25
36	-3	9
66	27	729
74	35	1 225
80	41	1 681
Sum of squares $\sum (x - \bar{x})^2$		5 532

Use the above data to calculate the standard deviation. (1.5 marks)

131

Variation and Formulas

DO NOT
USE

1 Mark

13. Which one of the following choices represents a direct variation?

132

A) $y = 4x^2 + 3$

B) $xy = 4$

C) $y = 4$

D) $y = 4x$

Answer: _____

3 Marks

14. The Acme Advertising Company has the following rates:

- A fixed cost of \$500 to write and design an advertising flyer
- A cost of \$0.15 to print each flyer

A) Write the partial variation equation that relates the total cost (c) to the number of flyers printed (p). (1 mark)

133

B) Calculate the total cost of producing 60 000 flyers. (1 mark)

134

C) Determine how many flyers can be produced for a total cost of \$12 500. (1 mark)

135

1.5 Marks

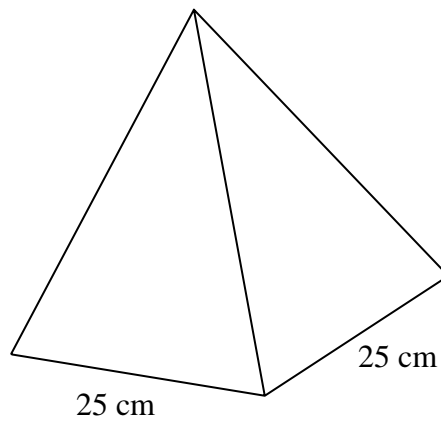
15. The cost of oil varies directly with the number of litres purchased. The cost of 15 litres of oil is \$22.50. Determine the cost (in dollars) of 350 litres of oil.

136

1.5 Marks

16. Billy has made a sand castle shaped like a square pyramid. Calculate the volume of sand in the castle if the castle is 36 cm high.

137



Investments

4 Marks

17. Rem purchased 1 000 shares of Wartel at \$7.50 per share. The commission for buying shares is 7% of the current price.

A) Calculate the total purchase price of the shares. (1.5 marks)

138

B) Six months later Rem sold the shares for \$8.50 per share. The commission to sell is 7% of the current price. Calculate the amount Rem will receive after selling his stocks. (1.5 marks)

139

C) Calculate Rem's gain or loss on the stock transaction. (1 mark)

140

2 Marks

18. Thor wants to invest \$3 000 for a 6-month period of time. List one advantage and one disadvantage for each investment option. Refer to either liquidity, risk or rate of return in your answer.

141

	<u>Advantage</u>	<u>Disadvantage</u>
G.I.C.		
Stocks		

1 Mark

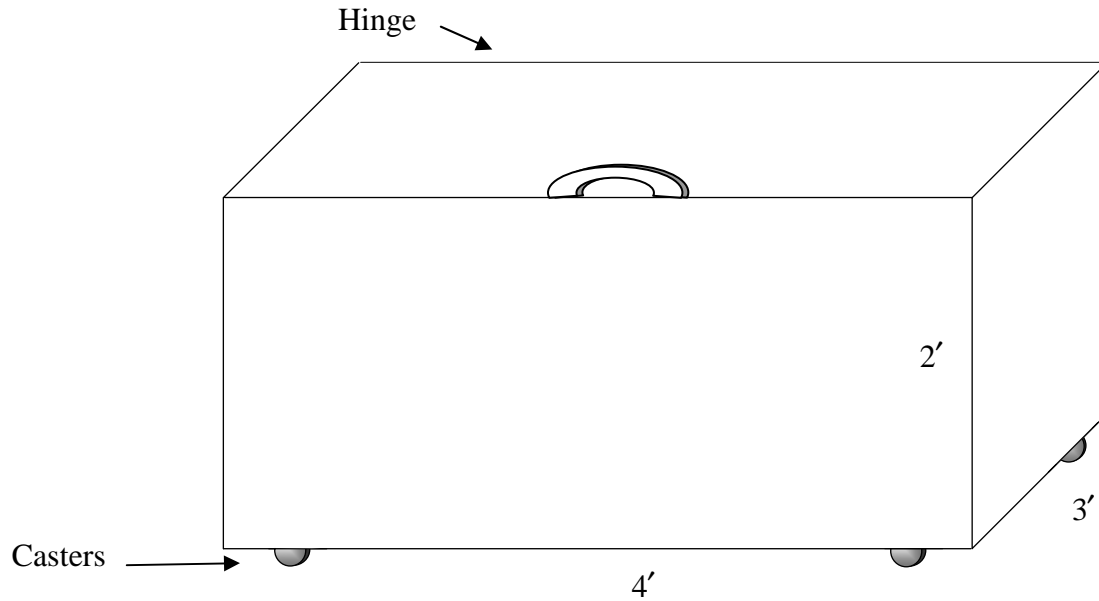
19. Juan is considering investing \$50 per month in a registered savings plan. Identify two advantages of registered savings plans that Juan should consider.

142

Design and Measurement

2.5 Marks

20. Zhinous is building a toy box for her nephew (see diagram).



- A) Determine the number of sheets of $4' \times 8'$ plywood needed to build the toy box.
(1 mark)

143

(continued on next page)

B) Calculate the number of square feet of plywood wasted. (0.5 mark)

144

C) If the cost of a $4' \times 8'$ sheet of plywood is \$38.53, calculate the cost of the wasted plywood. (1 mark)

145