



Commission scolaire English-Montréal
English Montreal School Board

Mathematics — 565-426

Secondary IV

May 2014

May Practice Exam

Competency Two *Uses Mathematical Reasoning*

Science Option



Question Booklet

Instructions

1. There are three parts to this evaluation situation.
 - Part A consists of six multiple choice questions.
 - Part B consists of four short answer questions.
 - Part C consists of six application tasks.

Part A and Part B questions are found in this *Question Booklet*.
Part C tasks are found in the *Student Booklet*.
2. Answer the questions in Parts A and B of the examination on page 3 of the *Student Booklet*.
3. Answer the questions in Part C of the examination in the *Student Booklet*
4. You are permitted to use a calculator (with or without graphic display), a geometry set (ruler, compass, set square, protractor) and additional graph paper.
5. You may refer to the memory aid you prepared on your own before the examination. The memory aid must consist on one **handwritten** letter-sized sheet of paper (8 ½ x 11). Both sides of the sheet may be used. The use of any other reference materials is strictly forbidden.
6. This *Question Booklet* must be returned at the same time as the *Student Booklet*, the memory aid and any graph paper used.

Note: Figures are not necessarily drawn to scale.

All the data and programs stored in your calculator's memory must be **erased** before the examination.

Calculators with a computer algebra system (CAS) are permitted only if this system is **disabled** before the examination.

PART A

This part of the examination consists of Questions 1 to 6.

Each question in this part of the examination is worth 4 marks.

On page 3 of your *Student Booklet*, fill in the box under the letter that corresponds to your answer.

1. The equation of line ℓ is $\frac{x}{m} + \frac{y}{p} = 1$, where $m \neq 0$, $p \neq 0$ and $m \neq p$.

Which of the following equations represents a line perpendicular to line ℓ ?

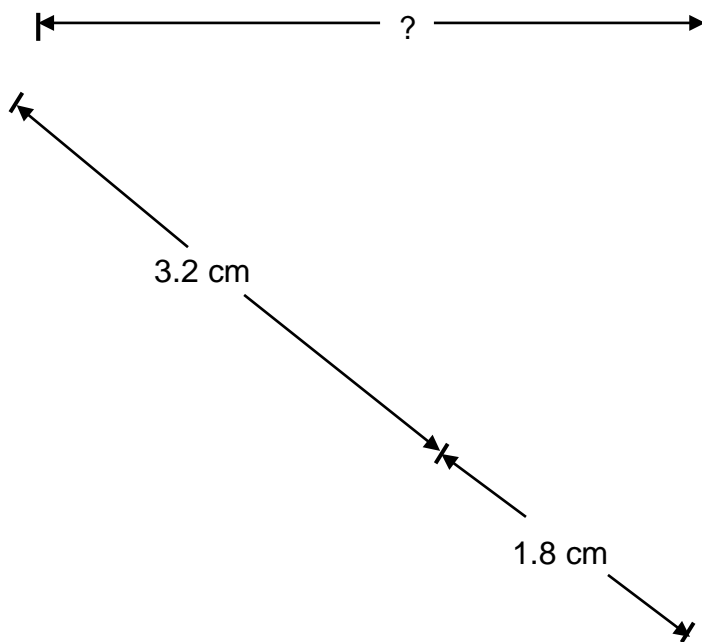
A) $y = \frac{m}{p}x$

C) $y = -\frac{m}{p}x$

B) $y = \frac{p}{m}x$

D) $y = -\frac{p}{m}x$

2. Altitude TW was drawn in right angle triangle STU represented below.



What is the length of line segment TW?

A) 2.4 m

C) 5.76 m

B) 4.0 m

D) 16.0 m

3. Functions f_1 and f_2 are represented in the Cartesian plane below.

The rules of functions f_1 and f_2 are of the form $f(x) = a(x - h)^2 + k$.

Which of the following pairs of statements is true?

- A) In the rules of functions f_1 and f_2 ,
- ◆ the value of parameter a is the same
 - ◆ the value of parameter h is the same
- B) In the rules of functions f_1 and f_2 ,
- ◆ the value of parameter a is the same
 - ◆ the value of parameter h is different
- C) In the rules of functions f_1 and f_2 ,
- ◆ the value of parameter a is different
 - ◆ the value of parameter h is the same
- D) In the rules of functions f_1 and f_2 ,
- ◆ the value of parameter a is different
 - ◆ the value of parameter h is different

4. A statistician recorded the number of years of experience playing soccer of 50 soccer players as well as their ages. The following table shows the data gathered.

NUMBER OF YEARS OF EXPERIENCE PLAYING SOCCER ACCORDING TO THE AGES OF THE PLAYERS

AGE (YEARS)	NUMBER OF YEARS OF EXPERIENCE				
	[0, 2[	[2, 4[	[4, 6[	[6, 8[	[8, 12[
[0, 4[	2	1	0	0	0
[4, 8[	1	7	0	0	0
[8, 12[	0	1	11	1	0
[12, 16[	0	0	1	13	1
[16, 20[	0	0	0	1	10

Which one of the following statements best describes the linear correlation between the ages of the players and their years of experience?

- A) The linear correlation is negative and weak.
- B) The linear correlation is negative and strong.
- C) The linear correlation is positive and weak.
- D) The linear correlation is positive and strong.
5. In the following algebraic expression, the denominators are not equal to zero.

$$\frac{7x-84}{x^2-24x+144} + \frac{x^2+12x}{x^2-144}$$

Which of the following expressions is equivalent to this algebraic expression?

A) $\frac{7}{12}$

C) $\frac{x+7}{x-12}$

B) $x+7$

D) $\frac{x+7}{(x-12)^2}$

6. Consider tri

Which of the tr

A)

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B)

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C)

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D)



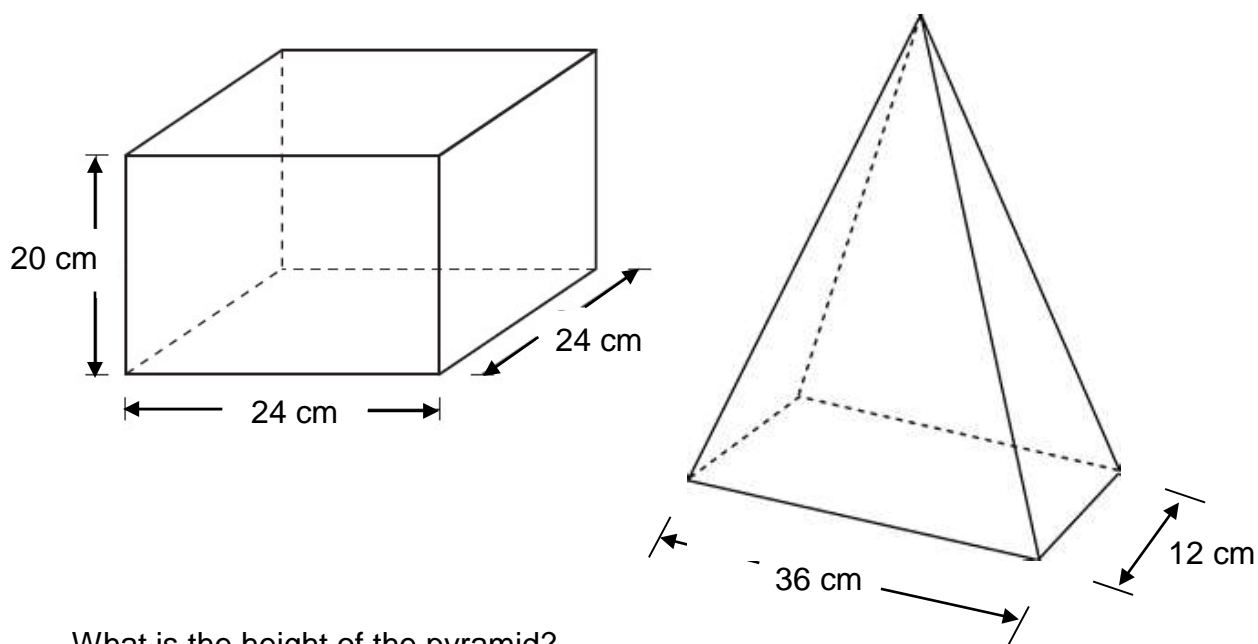
PART B

This part of the examination consists of Questions 7 to 10.

Each question in this part of the examination is worth 4 marks.

Write each of your answers in the space provided on page 3 of your *Student Booklet*.

7. The right prism with a square base and the right pyramid with a rectangular base represented below are equivalent.



What is the height of the pyramid?

8. Given that the divisor is not equal to zero, what binomial represents the result of the following division?

$$(32x^2 - 16x - 6) \div (4x + 1)$$

9. The cost of mailing a package depends on the weight of the package.

The cost is calculated using the function described below.

$$f(x) = -0.5[-3(x + 1)] + 3$$

where x : weight of the package, in kilograms.
 $f(x)$: cost of mailing a package, in dollars.

What is the cost of mailing a package weighing 4.7 kilograms?

10. What are the solutions of the inequality $4(x + 10)^2 + 25 \geq 125$?