

Intermediate Mathematics Provincial Assessment 2007

Last Name: _____ First Name: _____ MI: _____

Teacher: _____

School Name: _____ School District: _____

IMPORTANT

You will have to complete your name and school information in three places:

- (1) On this sheet (above)
- (2) On the bubble sheet
- (3) On the cover of your Student Booklet

Please ensure the information in each of these places is completed correctly and clearly. Your bubble sheet will be placed inside this Section 1 Insert for mailing so pay particular attention that the bubble sheet and Insert information are correct.

Section 1: Non-Calculator Section

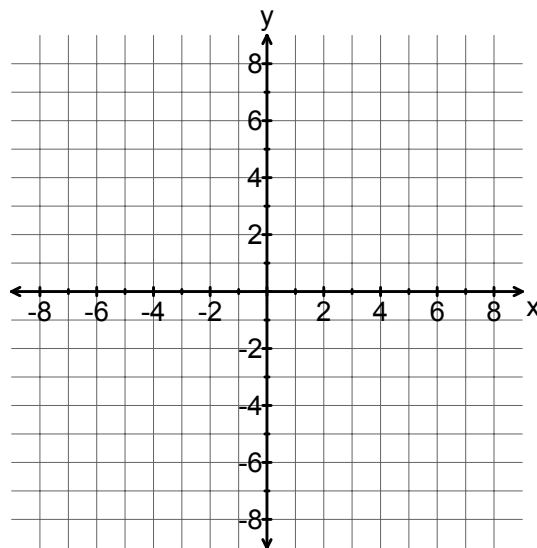
You will need a pencil, paper, and ruler for this section but you are not permitted the use of a calculator.

Questions, 1-7 require you to write, draw, or graph your responses in the space provided in this booklet. Do not use your bubble sheet for these questions. Section 1 should take about 20 minutes.

Your teacher will collect Section 1 when everyone is finished and will then give you Section 2. You will need your bubble sheet for Section 3 only.

Section 1 Insert

4. Using the axes provided, graph the line having slope of 2 and a y-intercept of -3 .



5. Expand and simplify: $(2x + 3)^2$

6. Solve: $4x + 12 = -2x - 6$

7. Calculate: $\frac{1}{2} + \frac{4}{3} \times \frac{-1}{3}$

Intermediate Mathematics Provincial Assessment 2007

Last Name: _____ First Name: _____ MI: _____

Teacher: _____

School Name: _____ School District: _____

IMPORTANT

You will have to complete your name and school information in four places:

- (1) On Section 1 and 2
- (2) On the bubble sheet
- (3) On the cover of your Student Booklet

Please ensure the information in each of these places is completed correctly and clearly. Your bubble sheet will be placed inside the Section 1 Insert for mailing so pay particular attention that the bubble sheet and Insert information are correct.

Section 2: Written Response Questions

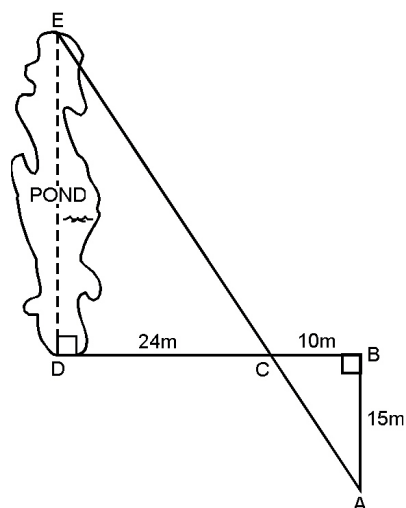
You will need a pencil, paper, and ruler for this section. You are permitted the use of a calculator.

Questions, 8-11 require you to write, draw, or graph your responses in the space provided in this booklet. Do not use your bubble sheet for these questions. Section 2 should take about 20 minutes.

Your teacher will collect Section 2 when everyone is finished and will then give you Section 3 (a larger work booklet containing the rest of the questions). You will need your bubble sheet for Section 3.

Section 2 Insert

8. Look at the diagram below.



a) Which triangles are similar?

b) Explain why the triangles are similar.

c) Use your knowledge of similar triangles to create and solve an equation to determine the distance across the pond from D to E.

9. Your school is planning a field trip to Gros Morne National Park. The cost of the trip is a flat fee of \$500 plus \$50 per student.

a) Complete the table below.

Table A:

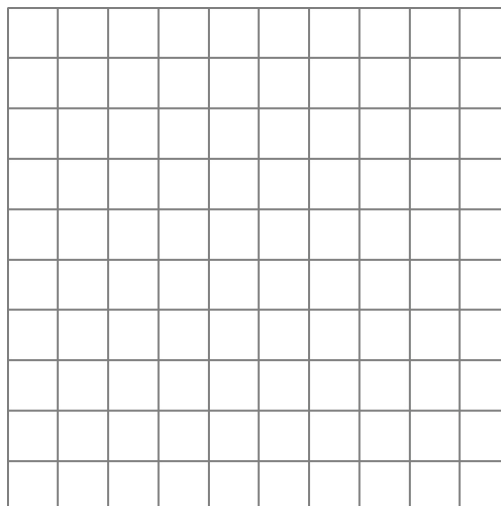
Number of Students	0	2	4	6	8
Cost of Trip					

b) If the total cost of the trip was \$1250, write and solve an equation to determine the number of students who went on the trip.

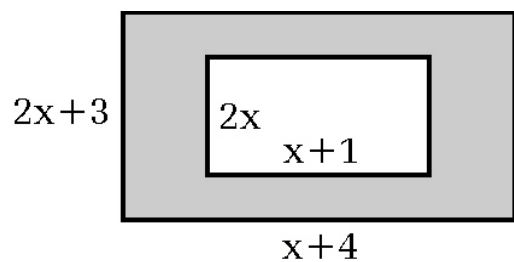
c = cost of the trip

n = number of students

c) Graph the information from Table A and extend the graph to confirm your answer in (b). Label your graph.

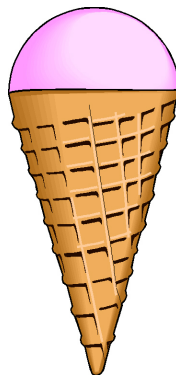


10. The shaded region represents a picture frame. Find an expression for the area of the shaded region in simplest form.





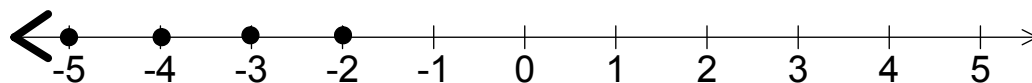
11. A spherical scoop of ice cream, as shown , melts into a cone. The sphere had a radius of 3 cm. The cone has a radius of 3 cm and a height of 10 cm.



Will the melted ice cream fit into the cone or will it overflow the cone?

Explain your answer using numbers and words.

12. Which set notation represents this graph?



- (A) $\{x \mid x < -1, x \in R\}$
- (B) $\{x \mid x < -1, x \in I\}$
- (C) $\{x \mid x > -1, x \in R\}$
- (D) $\{x \mid x > -1, x \in I\}$

13. Which is irrational?

- (A) $3 + \sqrt{9}$
- (B) $-\frac{1}{4}$
- (C) 3.5
- (D) $\sqrt{4+16}$

14. What is the product of the largest and smallest numbers in this set?

$$\left\{-\frac{2}{5}, -\frac{3}{4}, 1\frac{3}{5}, \frac{7}{4}\right\}$$

- (A) $-\frac{21}{16}$
- (B) $-\frac{14}{20}$
- (C) $-\frac{24}{20}$
- (D) $-\frac{16}{25}$

15. Simplify by removing the largest perfect square: $\sqrt{45}$

- (A) $3\sqrt{5}$
- (B) $9\sqrt{5}$
- (C) $5\sqrt{3}$
- (D) $5\sqrt{9}$

16. Teams earn 3 points for each win and 1 point for each tie. Which represents the point totals for teams X and Y for each year?

Wins		
Team	2004	2005
X. Oilers	14	6
Y. Canadiens	8	11

Ties		
Team	2004	2005
X. Oilers	5	15
Y. Canadiens	12	7

(A) $\begin{bmatrix} 57 & 63 \\ 60 & 54 \end{bmatrix}$

(B) $\begin{bmatrix} 47 & 33 \\ 36 & 40 \end{bmatrix}$

(C) $\begin{bmatrix} 29 & 51 \\ 44 & 32 \end{bmatrix}$

(D) $\begin{bmatrix} 22 & 24 \\ 23 & 21 \end{bmatrix}$

17. A dump truck can hold $3\frac{3}{4}$ tonnes of gravel. How many trips are needed to move 35 tonnes of gravel using this truck?

- (A) 9
- (B) 10
- (C) 131
- (D) 132

18. Calculate: $(9^4)^3 \div (9^7)$

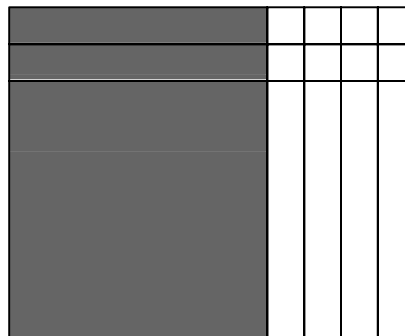
- (A) 9^0
- (B) 9^5
- (C) 9^{14}
- (D) 9^{19}

19. Simplify: $\left(\frac{x^8}{x^{-2}}\right)x^0$

- (A) x^{-4}
- (B) x^0
- (C) x^6
- (D) x^{10}

20. A polynomial is represented by the tiles shown. What are the factors of this polynomial? (Note that grey tiles are positive and white are negative.)

- (A) $(x+2)(x-4)$
- (B) $(x-2)(x-4)$
- (C) $(x-2)(x+4)$
- (D) $(x+2)(x+4)$



21. If the area of a rectangle is $18x^2 - 12x$, and the width is $3x$, what is the length?

- (A) $18x^2 - 15x$
- (B) $6x - 4$
- (C) $18x^2 - 9x$
- (D) $6x^2 - 4x$

22. Multiply: $(5x - 3)(2x + 1)$

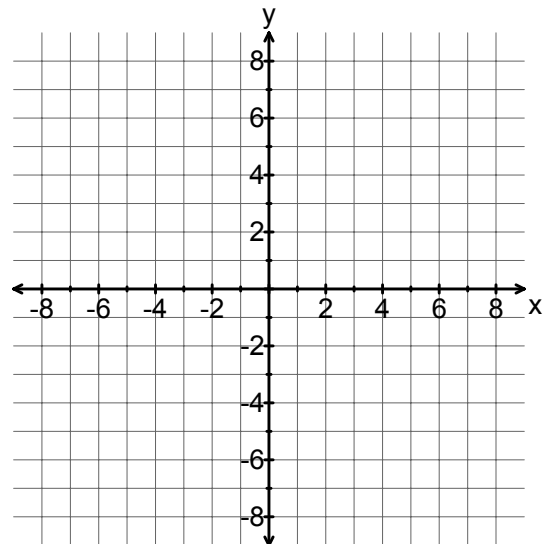
- (A) $7x^2 - 3$
- (B) $10x^2 - 11x - 3$
- (C) $10x^2 - x - 3$
- (D) $7x^2 - x - 3$

23. Chris receives \$3.50 an hour for mowing lawns and can mow a rectangular area measuring 60 m by 40 m in 1 hour. How many dollars would he make if he were to mow a lawn measuring 300 m by 80 m?

- (A) 7.00
- (B) 17.25
- (C) 35.00
- (D) 137.00

24. Given $A(-1, -3)$ and $B(2, 1)$, what is the distance between A and B?

- (A) 5
- (B) 7
- (C) 12
- (D) 25



25. Which type of relation is represented by the data table?

x	y
0	5
1	7
2	13
3	23

- (A) linear
- (B) parabolic
- (C) exponential
- (D) none of these

26. Given the diagrams shown, how many segments would be used to construct Diagram 15?

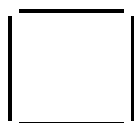


Diagram 1

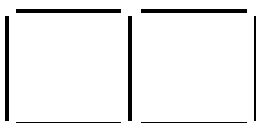


Diagram 2

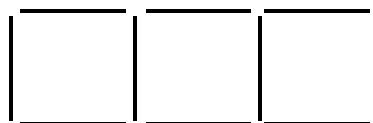


Diagram 3

- (A) 15
- (B) 46
- (C) 59
- (D) 60

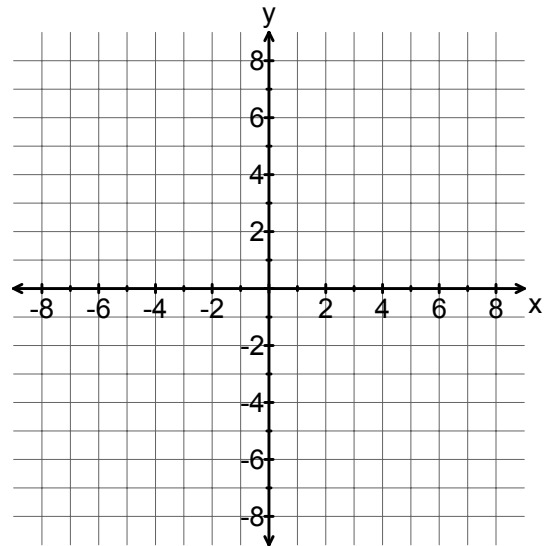
27. Which is the equation of the line with slope $\frac{3}{2}$ and passing through $(-2, 5)$.

(A) $y = \frac{3}{2}x + 2$

(B) $y = \frac{2}{3}x + 6$

(C) $y = \frac{3}{2}x + 8$

(D) $y = \frac{2}{3}x + 8$



28. A rectangle has dimensions $(4x - 2)$ by $(2x + 5)$. If the perimeter is less than 78, which represents the possible values for x ?

(A) $x < 6$

(B) $x < 12.5$

(C) $x > 6$

(D) $x > 12.5$

29. The volume of a cylinder is 642 cm^3 . What is the volume of a cone, in cm^3 , having the same radius and height as the cylinder?

(A) 214

(B) 321

(C) 642

(D) 1926

30. If a soccer ball has a diameter of 22 cm, how many cubic centimetres of air would be required to fully inflate the soccer ball?

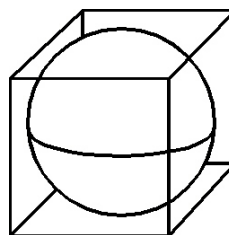
- (A) 138
- (B) 276
- (C) 5572
- (D) 44602

31. At 6am, the temperature was -11°C . If the temperature increased at a constant rate of 3.2°C per hour, which represents the temperature, in $^{\circ}\text{C}$, at 12 noon?

- (A) $-11 + 9.2$
- (B) $-11 + 7(3.2)$
- (C) $-11 - 19.2$
- (D) $-11 + 3.2 \times 6$

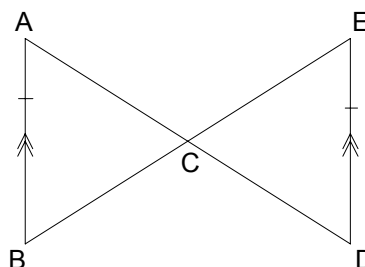
32. A sphere 10 cm in diameter fits perfectly inside a cube with side lengths of 10 cm. What is the surface area, in cm^2 , of the sphere?

- (A) 40π
- (B) 80π
- (C) 100π
- (D) 400π



33. By which congruence relation is $\triangle ABC \cong \triangle DEC$?

- (A) SAS
- (B) ASA
- (C) SSS
- (D) SSA



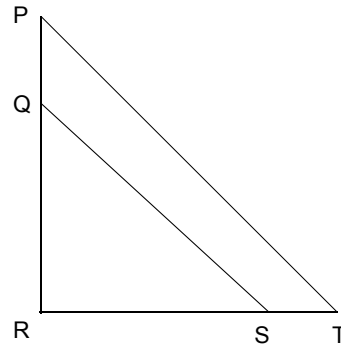
34. Given $\triangle PRT \sim \triangle QRS$ as shown, which statement is true?

(A) $\frac{PQ}{QR} = \frac{ST}{RS}$

(B) $\angle QRS = \angle SQR$

(C) $\frac{PR}{QR} = \frac{TR}{SR}$

(D) $\angle TPQ = \angle QST$



35. A flagpole's shadow is 15.5 m long at the same time John's shadow is 3.6 m long. If John is 1.8 m tall, what is the height to the nearest tenth of a metre of the flagpole?

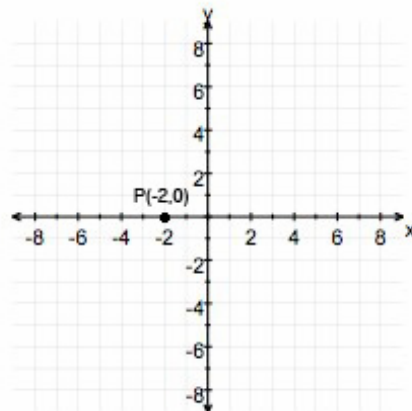
- (A) 0.4
- (B) 6.1
- (C) 7.8
- (D) 31.0

36. For which transformation is the image similar to, but not necessarily congruent to, the original figure?

- (A) dilatation
- (B) reflection
- (C) rotation
- (D) translation

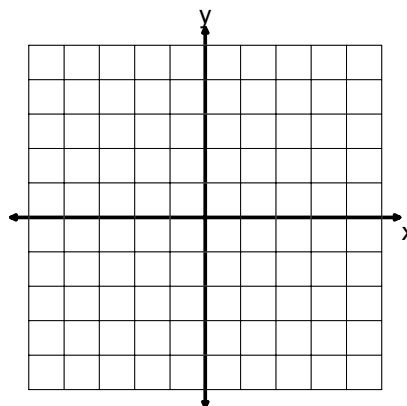
37. A point P $(-2,0)$ undergoes a translation $(x,y) \rightarrow (x-2, y+3)$ followed by a rotation $(x,y) \rightarrow (-y, x)$. What would be the new location of the point?

- (A) $(-3,-4)$
 (B) $(3,4)$
 (C) $(-4,-3)$
 (D) $(4,3)$



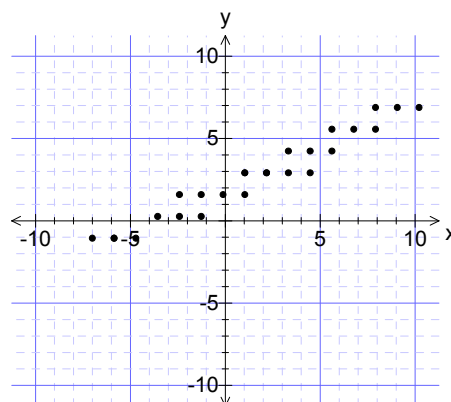
38. Point P is reflected in the y -axis producing image point $P'(-5, 2)$. What are the coordinates of point P?

- (A) $(-5, -2)$
 (B) $(2, -5)$
 (C) $(5, -2)$
 (D) $(5, 2)$



39. Which equation best approximates the line of best fit for the scatterplot shown?

- (A) $y = \frac{1}{2}x + 2$
 (B) $y = 2x + 2$
 (C) $y = \frac{1}{2}x - 4$
 (D) $y = 2x - 4$



40. Which would show a negative correlation?
- (A) distance driven versus the amount of fuel remaining
 - (B) distance driven versus the amount of fuel used
 - (C) age versus height
 - (D) height versus mathematics mark
41. In theory what is the probability that a family with only 3 children would have 3 boys?
- (A) $\frac{1}{27}$
 - (B) $\frac{1}{8}$
 - (C) $\frac{1}{2}$
 - (D) $\frac{3}{2}$
42. The title MINDS ON MATH is spelled out using Scrabble tiles which are then turned letter side down and mixed up. What is the probability of choosing an A and then choosing an H if the first tile is not replaced before the second tile is picked?
- (A) $\frac{1}{121}$
 - (B) $\frac{1}{110}$
 - (C) $\frac{2}{11}$
 - (D) $\frac{21}{110}$