Intermediate Mathematics
Provincial Assessment 2007

This Student Work Booklet contains the remaining questions for the Intermediate Mathematics Provincial Assessment 2006.

You will need a pencil, paper, and a ruler for these questions and you are also permitted the use of a calculator). No question requires the use of a calculator but you may use one if you choose. No graphing calculator is permitted.

Section 3: **Calculators Permitted**

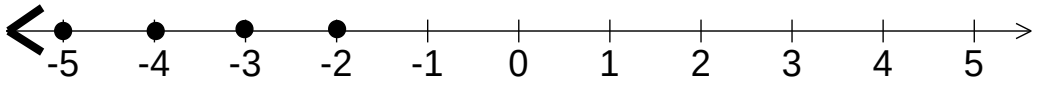
Section 3 contains 31 multiple-choice questions (items 12-42) all having A,B,C,D choices. You are to shade the appropriate bubble (having the same number as the question) on the bubble sheet **using a pencil only**.

Do not shade more than one bubble or the question is scored as incorrect. Erase carefully with a good quality eraser if you need to change an answer.

Since the first question in this section is item 12, start with bubble 12. The last bubble you should shade in this assessment is 42 since the last multiple choice question you answer is item 42.

Please begin Section 3 now.

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?

$$-\tfrac{2}{5}, -\tfrac{3}{4}, 1\tfrac{3}{5}, \tfrac{7}{4}$$

(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

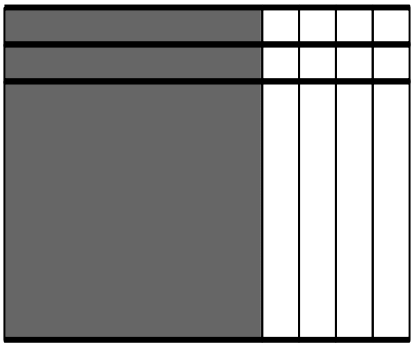
18. Calculate: $9^{4\ 3} \div 9^{7}$

(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

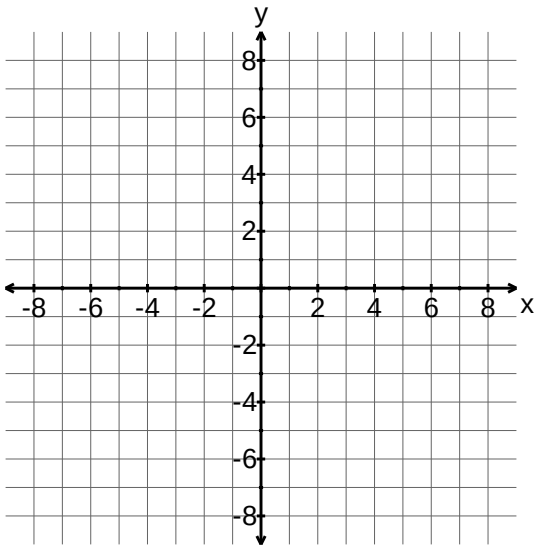
24. Given A $-1,-3$ and B $2,1$, what is the distance between A and B?

(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?

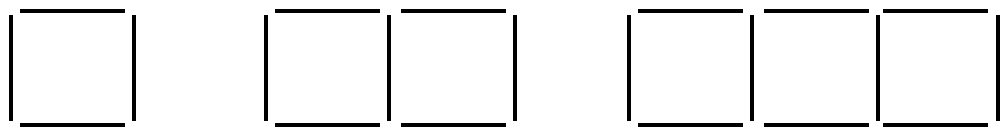
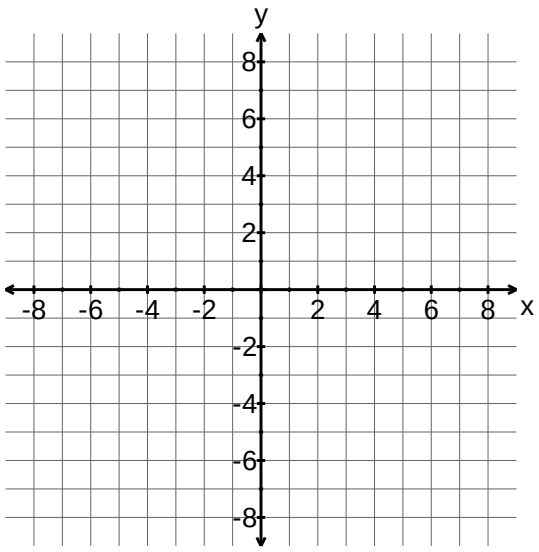


Diagram 1 Diagram 2 Diagram 3

(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?

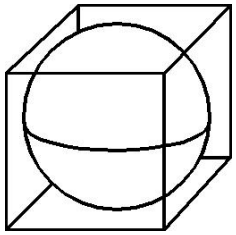
(A) 138
(B) 276
(C) 5572
(D) 44602

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 ^{o}C, at 12 noon?

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

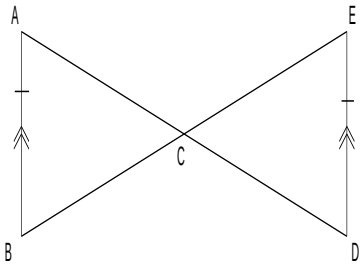
32. A sphere 10 cm in diameter fits perfectly inside a cube with side lengths of 10 cm. What is the surface area, in cm^2, of the sphere?

(A) 40π
(B) 80π
(C) 100π
(D) 400π

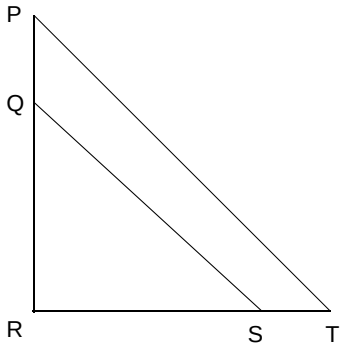


33. By which congruence relation is $\Delta ABC \cong \Delta DEC$?

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



34. Given $\Delta PRT \sim \Delta QRS$ 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

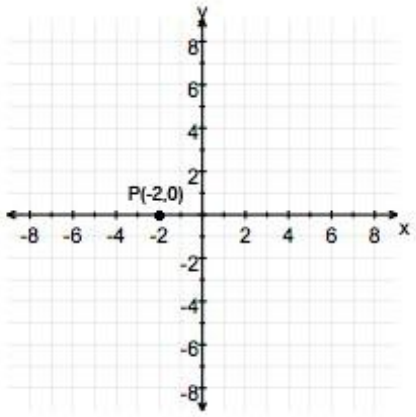
37. A point P (-2,0) undergoes a translation $x,y \rightarrow x-2, y+3$ followed by a rotation $x,y \rightarrow -y, x$. What would be the new location of the point?

(A) (-3,-4)

(B) (3,4)

(C) (-4,-3)

(D) (4,3)



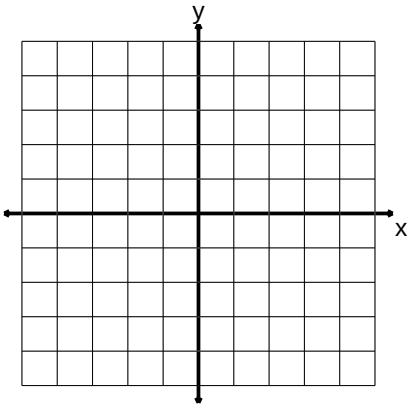
38. Point P is reflected in the *y*-axis producing image point $P'\ -5, 2$. What are the coordinates of point P?

(A) $-5, -2$

(B) $2, -5$

(C) $5, -2$

(D) $5, 2$



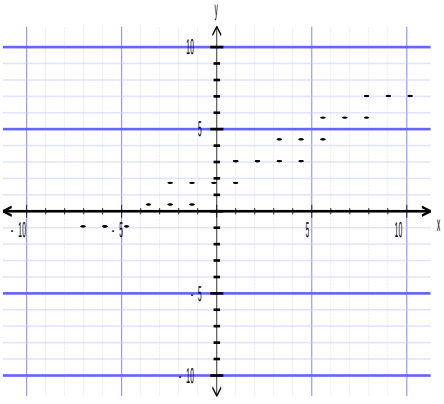
39. Which equation best approximates the line of best fit for the scatterplot shown?

(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) $\frac{21}{110}$

End of the Assessment