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S3 Mathematics

Test 1: Linear Inequalities in One Unknown

Name：_____

Class：_____（　）

Date：_____

Time：30 minutes

Section A: Multiple Choice Questions (10 marks)

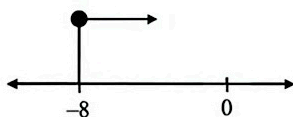1. Which of the following inequalities represents 'x is at most 9'?

   A. $x > 9$

   B. $x < 9$

   C. $x \geq 9$

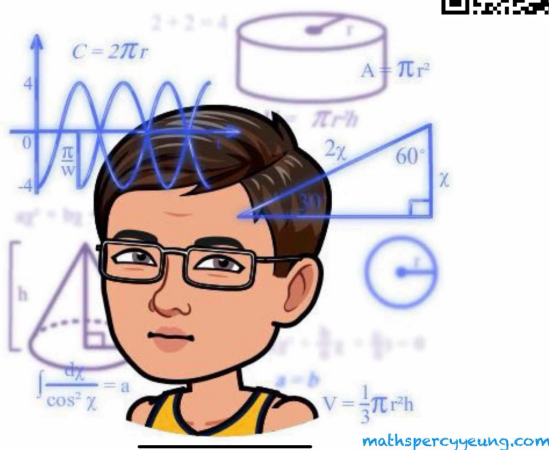   D. $x \leq 9$

2. Which of the following numbers satisfies the inequality $3x + 7 < 4$?

   A. -3

   B. -1

   C. 1

   D. 3

3. The following is the graphical representation of the solutions of the inequality
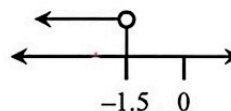

   A. $x > -8$.

   B. $x < -8$.

   C. $x \geq -8$.

   D. $x \leq -8$.

4. The solutions of an inequality in x are represented on the number line that shown in the figure. Which of the following must be true?

 I. $x < -1.5$

 II. $x = -1$ is a solution of the inequality.

 III. The greatest integer satisfying the inequality is -2.

$-1.5 \quad 0$

    A. I and II only

    B. I and III only

    C. II and III only

    D. I, II and III

5. If $a > b$ and $k < 0$, which of the following must be true?

 I. $a + k > b + k$

 II. $a^2 > b^2$

 III. $k^2 a > k^2 b$

    A. I only

    B. II only

    C. I and III only

    D. II and III only

Write down the correct answers in the boxes.

1	2	3	4	5

Section B: Conventional Questions (20 marks)

6. Represent the solutions of each of the following inequalities graphically.

    (a) $x > -0.5$ (b) $7.8 \geq x$ (2 marks)

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7. Solve each of the following inequalities.

    (a) $-3x - 4 \leq 11 - 2x$ **(b)** $4(x + 3) < 5(1 - x)$ **(5 marks)**

    (c) $\dfrac{8 - 3x}{2} < \dfrac{3x}{5} - 1$ **(4 marks)**

8. **(a)** Solve the inequality $-\dfrac{4(5 - x)}{3} \geq \dfrac{3(2x - 9)}{2}$.

    (b) How many non-negative integers satisfy the above inequality?   **(4 marks)**

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9. The selling prices of a badminton racket and a table tennis racket are \$120 and \$50 respectively. Bella has \$800 in her pocket and wants to buy some badminton rackets and table tennis rackets for her family.

    (a) If she wants to buy 5 badminton rackets and some table tennis rackets, at most how many table tennis rackets can she buy?

    (b) If she wants to buy 8 rackets for her family, at most how many badminton rackets should she buy?

<div align="right">(5 marks)</div>

Section C: *Bonus Questions (2 marks)

10. Ken claims that for any real numbers x and y, prove that $x^2 + y^2 \geq 2xy$. Do you agree? Explain your answer.

<div align="right">(2 marks)</div>

<div align="center">**END OF PAPER**</div>

$\boxed{/5(+2)}$