SECOND FORM MATHEMATICS **V.GRIMES**
Promotion Examination 2009-2010 **Harrison College**

Time: 1 hr 35 minutes

This paper has 16 questions and 4 printed pages.
Answer **ALL** questions. All necessary working **MUST** be shown.
Give answers to 1 decimal place unless stated otherwise.

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1. Write the following numbers in standard form

a) 305 b) 200.87 c) 0.8075 d) 12.45×10^{-2} **[5]**

2. a) Write down the next two terms in the sequences

(i) 3, 4, 7, 11, 18, 29, __, ___ **[2]**

(ii) $\frac{1}{3}, \frac{2}{5}, \frac{3}{7}, \frac{4}{9}$, ___, ___ **[2]**

b) Find the value of the following

(i) $5+6\times2$ **[2]**

(ii) $19-(-8+3)$ **[3]**

(iii) $(12-2\times4)-3$ **[2]**

3. a) Using ruler and compasses only. Construct ΔPQS in which $Q\hat{P}S = 60^\circ$, $PQ = 4$cm, $PS = 7$cm. Hence construct the parallelogram $PQRS$.

b) Bisect the line PQ. **[7]**

4. Find the exact value of

a) $(5\frac{3}{5}\div1\frac{5}{9})-(1\frac{1}{2})^2$ **[4]**

b) Express the answer to 3 s.f. **[1]**

5. Simplify

a) $3(4x-y)-4(3x-y)$ **[2]**

b) $\frac{4x+3}{5}+\frac{2x-6}{7}$ **[3]**

c) $x^3\times x^{-5}$ **[1]**

6. I think of a number, multiply it by 3 and add 14. The result is 5 times the original number. Use an equation to find the original number. [3]

7. A tourist exchanged US $300.00 for Jamaican currency at the rate of US$1.00 = JA$18.80. He had to pay a government tax of 3% of the current exchange.

   Calculate in JA currency
   (i) the tax paid
   (ii) the amount the tourist receives. [4]

8. Given that $a = 3, b = -2, c = 4$. Calculate the value of

$$\frac{a^2 + bc}{b - c}$$ [3]

9. Solve a) $5x - 2 = 3(x - 4)$ [2]

   b) $\frac{y}{5} + \frac{y}{3} = 6$ [3]

   c) $\frac{3x + 2}{5} - \frac{5 - 2x}{3} = 0$ [4]

10. Solve the following inequations

a) $7x < 5x - 10$ [2]

b)(i) $5x \geq 7x - 10$ [2]

(ii) graph b)(i) on a number line. [1]

11. a) Make n the subject of $s=2n-4$ [2]

   b) Make x the subject of $T = \frac{kx}{l}$ [2]

12. On the map the scale factor is 1:10000.

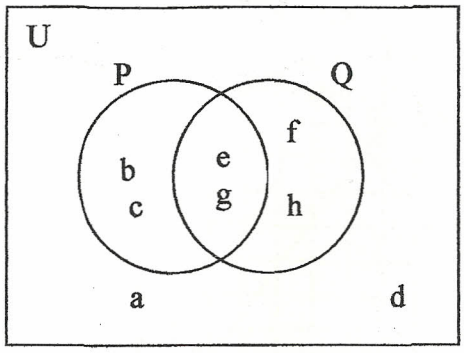
a) Calculate the distance on the map representing 1km on the ground. [2]

b) Calculate the distance on the ground represented by 12.5 cm on the map. [2]

13. a) Find the interior angle of a regular 10 sided polygon. [3]

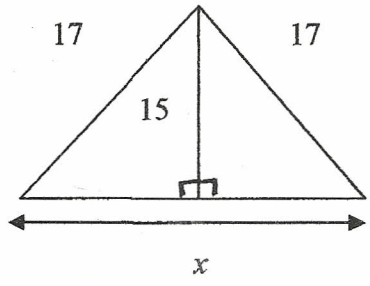
   b) Each interior angle of a regular polygon is 150°. How many sides has the polygon. [3]

14. a) List the elements of P; Q'; $(P \cap Q)'$; $P' \cap Q$ from the diagram below **[4]**



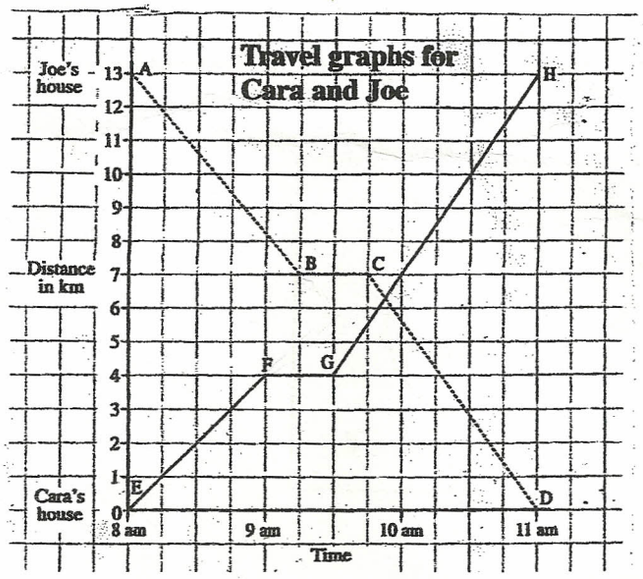
b) Which set has only b and c as elements. **[1]**

15.



Find x. **[3]**

16.



Cara and Joe live 13 km apart. Each one left home at 8 a.m. and travelled to the other's house. Find:

(a) their speeds for (i) AB (ii) CD [4]

(b) the time when they met [1]

(c) how far each was from home when they met [2]

(d) the length of time each rested [2]

(e) their average speeds for the whole journey [3]