

# Mathematics Paper 1 - Alliance High School Pre-Trial Examination 2018

121/1  
 MATHEMATICS  
 PAPER 1  
 MAY 2018  
 TIME: 2½ HOURS

## ALLIANCE HIGH SCHOOL PRE-TRIAL EXAMINATION 2018

### INSTRUCTIONS TO CANDIDATES

- The paper consists of two sections: Section I and II.
- Answer all the questions in section 1 and ONLY 5 in section II.
- Show all the steps in your calculations giving your answers at each stage in the spaces below each question.
- Marks may be given for correct working even if the answer is wrong.
- Non-programmable silect electronic calculator and KNEC examination tables may be used except where stated otherwise.

### **SECTION 1. ANSWER ALL THE QUESTIONS IN THIS SECTION**

1. Evaluate:

$$\frac{2}{5} \text{ of } 1\frac{2}{3} - \frac{1}{2} \sqrt{\frac{1\frac{2}{3} - 2\frac{1}{2}}{\frac{1}{3} - \frac{19}{27}}} + \frac{2}{3}$$

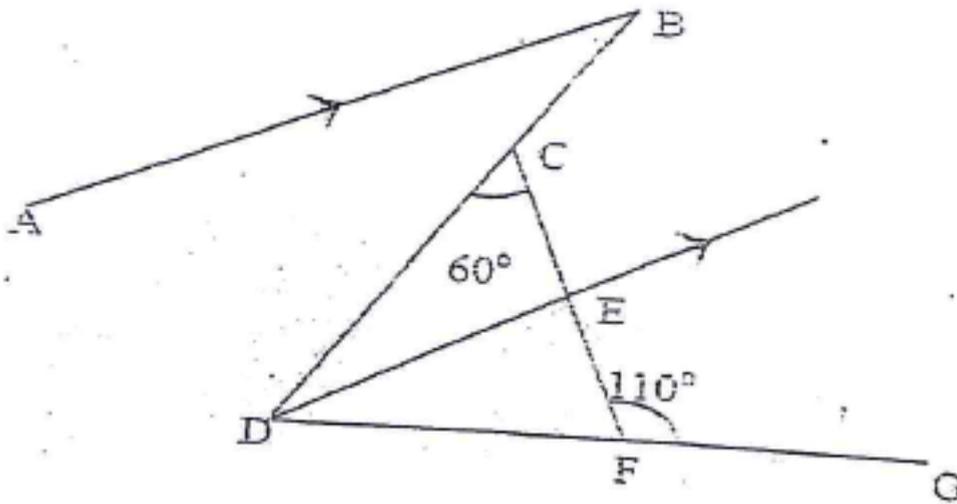
2. Solve for y in the equation

$$8(2^2)^y = 6(2^y) - 1 \quad (4 \text{ mks})$$

3. A line  $Ax + 3y - 6 = 0$  is perpendicular to the line  $5x + 7y - k = 0$  passes through the points (4,3).  
 Determing the values of A and K. (4 mks)

4. Two numbers are in the ration 5:7. When 15 is added to each number, the ration changes to 5:6.  
 Find the two numbers. (3 mks)

5. In the figure below, AB is parallel to DE, DE bisects angle BDG, angle DCF = 60° angle CFG = 110°

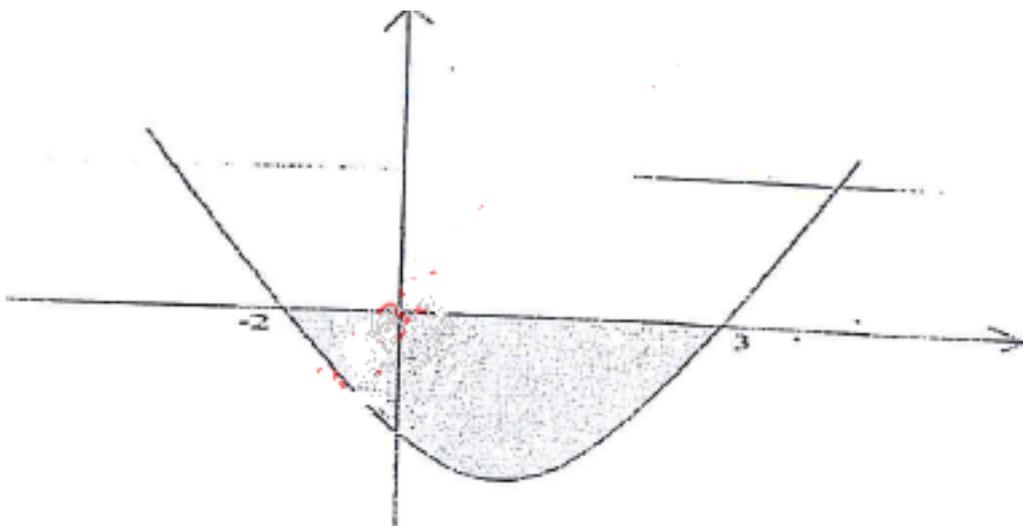


Find, give reasons for your answers

a.  $\angle CDF$  (2 mks)

b.  $\angle ABD$  (2 mks)

6. The diagram below shows the sketch of the curve  $y = x^2 - x - 6$



Using the trapezoidal rule with four trapezia, calculate the area of the shaded region. (4 mks)

7. Simplify the expression completely. (3 mks)

$$\frac{12x^2 - 16x}{20 - 11x - 3x^2}$$

8. Solve the following inequalities, illustrating the solution on a graph.

$$2x - 1 \leq 7x + 12 < 5x + 17 \quad (3 \text{ mks})$$

9. Two boys and a girl shared some money. The younger boy got  $\frac{5}{18}$  of it; the elder boy got  $\frac{7}{12}$  of the