

HILLCREST HIGH SCHOOLGrade 8 Mathematics Exam – Paper 1November 2018MARKS: 170TIME: 2 HOURS

Name: \_\_\_\_\_

Maths Teacher: \_\_\_\_\_

Class: \_\_\_\_\_

Question	1	2	3	4	5	6	7	8	9	10	11	TOTAL
<b>Total</b>	9	8	24	8	21	13	24	27	7	24	5	<b>170</b>
<b>Marks</b>												
<b>Initials</b>												

## INSTRUCTIONS

1. This paper consists of 11 questions. Answer **ALL** questions.
2. You may use an approved calculator (non-programmable and non-graphical), unless stated otherwise.
3. Show ALL calculations clearly. Answers only will NOT necessarily be awarded full marks.
4. Round off ALL final answers to TWO decimal places, unless stated otherwise.
5. Indicate units of measurement, where applicable.
6. Maps and diagrams are NOT necessarily drawn to scale.
7. Write neatly and legibly.

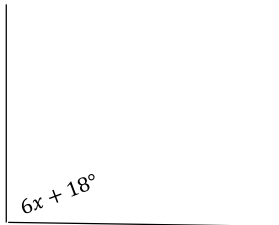
**Question 1: Multiple Choice Questions****[9]****ANSWER THE FOLLOWING BY CIRCLING THE CORRECT LETTER.**1.1 Which decimal number is equal to  $\frac{3}{5}$  ?

- A) 0,06                      B) 0,35                      C) 0,6                      D) 0,3

1.2 How many terms are there in the following expression?

$$12x^2y + 2x^2 - 3xy + \frac{y}{5}$$

- A) 3                      B) 4                      C) 5                      D) 6

1.3 Which value of  $x$  makes the below angle a right angle?

- A) 6                      B) 12                      C) 18                      D) 24

1.4  $\sqrt{36x^{16}} = ?$ 

- A)  $18x^8$                       B)  $18x^4$                       C)  $6x^8$                       D)  $6x^4$

1.5 For which of these values of  $x$  will the following equation be true?

$$x^2 - 2x = 3$$

- A) 2                      B) 1                      C) -1                      D) -2

1.6 Which of the following temperatures is the highest?

- A)  $-21^\circ\text{C}$                       B)  $16^\circ\text{C}$                       C)  $-10^\circ\text{C}$                       D)  $8^\circ\text{C}$

1.7 If Ethan pours 200ml milk into a half litre jug, how full will this jug be?

A)  $\frac{2}{10}$

B)  $\frac{2}{5}$

C)  $\frac{1}{5}$

D)  $\frac{5}{2}$

1.8  $-5 \times -5 - 2$

A) -23

B) -27

C) 23

D) 27

1.9  $\frac{x+1}{4} = \frac{7}{4}$

A) 4

B) 8

C) 12

D) 6

**Question 2: True or False**

**[8]**

For each of the following statements, state if the statement is TRUE or FALSE. If the statement is FALSE, give a reason.

2.1 Every natural number is either prime or composite.

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2.2  $\sqrt{100 - 36} = 4$

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2.3 You can only add and subtract "like" terms.

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2.4  $-7 < -6$

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2.5 Some quantitative data sets have no median.

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**Question 3****[24]**

3.1 Given the set of numbers {0; 1; 2; 3; 4; 5; 6; 7; 8; 9; 10; 11; 12; 13; 14; 15; 16; 17; 18} list:

3.1.1 The prime numbers \_\_\_\_\_ (2)

3.1.2 The factors of 18 \_\_\_\_\_ (2)

3.1.3 The perfect squares \_\_\_\_\_ (2)

3.1.4 The multiples of 4 \_\_\_\_\_ (2)

3.1.5 The Lowest Common Multiple of 6 and 8  
\_\_\_\_\_  
\_\_\_\_\_ (3)

3.1.6 The Highest Common Factor of 3 and 6  
\_\_\_\_\_  
\_\_\_\_\_ (2)

3.2.1 Write 2916 as a product of its prime factors in the space below. (3)

3.2.2 Hence, what is the smallest number by which 2916 can be multiplied to make it a perfect cube?

\_\_\_\_\_

(1)

3.3 Write algebraic expressions to describe the following situations:

3.3.1 Twice a number \_\_\_\_\_ (1)

3.3.2 Add four to the product of five and a number \_\_\_\_\_ (2)

3.3.3 Divide the sum of two numbers by 3 \_\_\_\_\_ (2)

3.3.4 The product of two numbers plus 3 times another number  
 \_\_\_\_\_ (2)

**Question 4**

**[8]**

Given:  $16x^2 - 2x + 3$

4.1 How many terms does the above expression have? \_\_\_\_\_ (1)

4.2 What name do we give to such an expression? \_\_\_\_\_ (1)

4.3 What is the coefficient of  $x$ ? \_\_\_\_\_ (1)

4.4 What is the constant term? \_\_\_\_\_ (1)

4.5 What is the value of the expression if  $x = -1$ ? (SHOW WORKING!) (4)

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**Question 5****[21]**

Simplify, with workings.

5.1  $6b(a) + 2a^2b + 3ab$

(2)

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5.2  $7p \times 3p$

(2)

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5.3  $2p \times 3q^2 \times 4q^3$

(2)

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5.4  $(2p^2)^3$

(2)

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5.5  $3x(2x - y)$

(2)

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5.6  $6a(2b + 3) - 3b(2a - 6)$

(4)

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5.7 
$$\frac{9x^5y}{-27x^2y^3}$$

(3)

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5.8 
$$\frac{8x^2y+6xy-2y}{2y}$$

(4)

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**Question 6****[13]**

6.1 Simplify the following ratios, showing all necessary working and conversions.

6.1.1 18 : 24

(1)

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6.1.2 0,3 : 0,75

(2)

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6.1.3 1,5kg : 300g

(2)

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6.2 There are 783 students in a school and the ratio of boys to girls is 4:5. Showing all calculations, determine how many boys and how many girls there are at the school.

(4)

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6.3 If you wish to make 3l of juice using a dilution ratio of OROS : Water of 1 : 5, how much water will you need, in millilitres (ml)?

(4)

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**Question 7: Equations****[24]****Solve for the unknown variable in each of the following:**

7.1  $x + 3 = 8$

(1)

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7.2  $\frac{p}{-3} = 12$

(2)

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7.3  $2x - 3 = 15$

(2)

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7.4  $3x - 4 = 2x + 1$

(3)

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7.4  $2 - 3y = 7 - y$

(4)

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7.5  $2(x + 3) - 6(2 - x) = 10$

(4)

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7.6  $3x^2 + 2x - 4 = 3x^2$  (3)

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7.5 Andile's sister is twice his age and his father is 25 years older than him. If the total of their ages is 53 years, what is Andile's age? (5)

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**Question 8:**

**[27]**

8.1 Sort the following numbers into **ascending** order (3)

$$\frac{2}{3}; 0,6; \frac{1}{4}; 0,334; 0,329; \frac{1}{2}; 0,586; 0,58$$

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8.2 Round off the following numbers to 2 decimal places (3)

8.2.1 6,543 \_\_\_\_\_

8.2.2 15,249 \_\_\_\_\_

8.2.3 9,896 \_\_\_\_\_

8.3 Simplify the following without the use of a calculator. **SHOW ALL WORKING!**

8.3.1  $-2 + 5 \times 6 + 1$  (2)

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8.3.2  $8 - 2 + 6 \div (9 - 2 \times 3)$  (4)

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8.3.3  $-6^2 - (-6)^2$

(3)

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8.3.4  $\frac{14}{20} \times \frac{5}{7}$

(2)

8.3.5  $\frac{3}{4} \div \frac{9}{2}$

(3)

8.3.6  $3\frac{5}{8} + 2\frac{1}{4}$

(4)

8.3.7  $\sqrt[3]{-8} - \sqrt{4}$

(3)

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**Question 9****[7]**

Consider the following number pattern:

**-7; -2; 3; 8; 13; ...**

9.1 What are the next two numbers in the pattern? (2)

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9.2 Describe in words the process to move from one number in the pattern to the next. (2)

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9.3 Write a formula to describe this pattern, where  $y$  is the output for an input of  $n$ . (3)

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**Question 10****[24]**

10.1 In a particular grade 8 class, the exam marks of 15 learners are as follows:

162; 148; 96; 132; 100; 156; 152; 122; 120; 119; 141; 120; 111; 109; 117

10.1.1 Calculate the mean mark. (3)

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10.1.2 If the exam was out of 200 marks, what was the average percentage of this class? (2)

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10.2 Thabiso wants to analyse the likes he has received on Instagram this week. He has posted 13 times and has received likes on each of them as follows:

14; 26; 18; 20; 31; 27; 21; 31; 33; 24; 25; 17; 29

10.2.1 What is the mode of this data? (1)

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10.2.2 Arrange the numbers in ascending order. (2)

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10.2.3 What is the median of the data? (1)

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10.2.3 What is the range of this data? (2)

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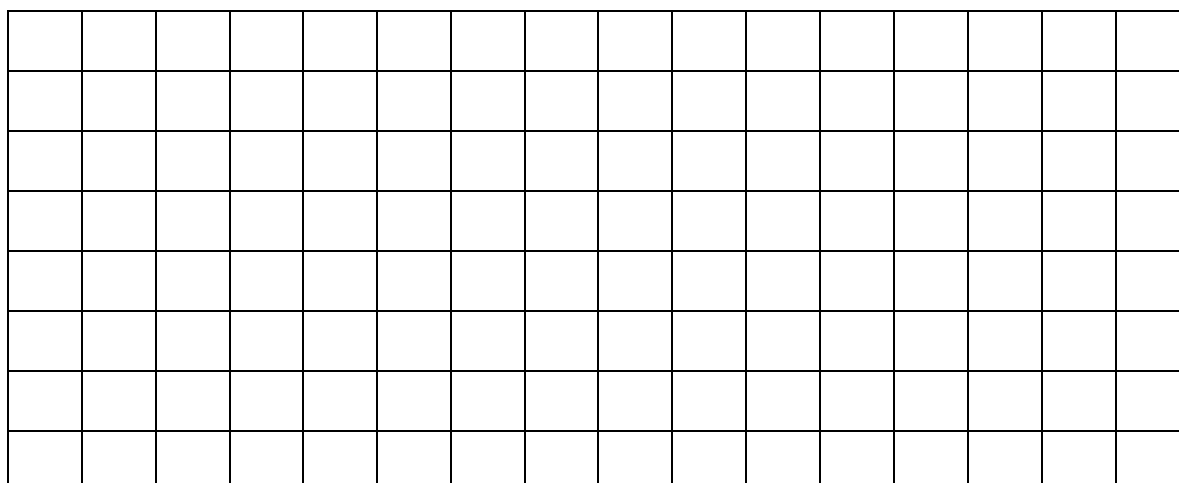


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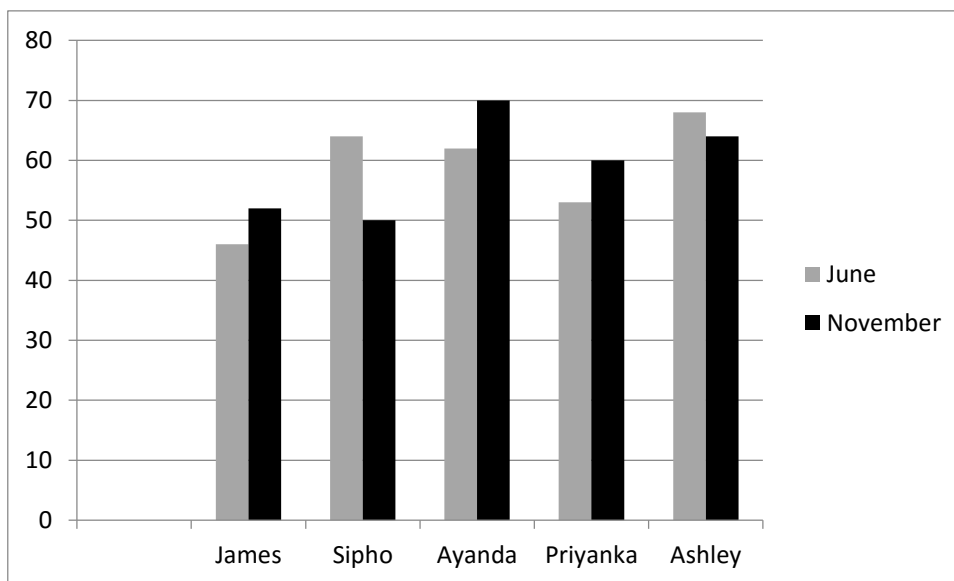
10.2.4 Complete the tally table below using the data given in Question 10.2 (5)

Data Interval	Tally	Frequency
11 – 15		
16 – 20		
21 – 25		
26 – 30		
31 – 35		

10.2.5 Draw a bar-graph in the space provided below to represent the data. (5)



10.3 The following bar graph shows the marks of five Grade 8 students in their June exams as compared to their November exams.



10.3.1 Which student showed the biggest decrease in marks from June to November? (1)

\_\_\_\_\_

10.3.2 Which student received approximately 52% in their November exam? (1)

\_\_\_\_\_

10.3.3 Did Priyanka's mark increase or decrease from June to November? (1)

\_\_\_\_\_

10.3.4 Approximately what mark did Priyanka receive in the November exam? (1)

\_\_\_\_\_

**Question 11****[5]**

Plot and connect the following points, in order, on the grid provided to reveal a shape.

A(0;2)

B(3; 6)

C(7;4)

D(4;0)



Name this shape. \_\_\_\_\_