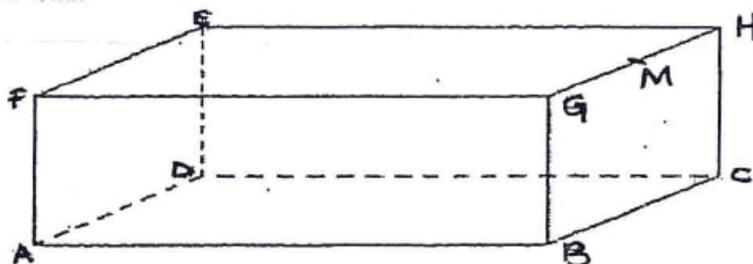


**MATHEMATICS PAPER 2 - 2019 KCSE Prediction Questions Set 1****SECTION I (50 Marks)**Answer **all** questions in this section

- When asked to find  $\frac{7}{18}$  of a certain number, Juma found by mistake  $\frac{7}{8}$  of it. Hence the answer was too large by 105. Find the number. (3 marks)
- Simplify leaving the answer in the form of  $a\sqrt{2} + b\sqrt{5}$  where a and b are constants. (3 marks)

$$\frac{5}{2\sqrt{2} - \sqrt{5}} - \frac{2}{2\sqrt{2} + \sqrt{5}}$$

- Expand completely  $(x-0.2)^5$  (1 mark)
  - Hence use your expansion to find the exact value of  $(9.8)^5$  (2 marks)
- The figure below represents a solid cuboid ABCDEFGH with a rectangular base. AB = 12 cm, BC = 10 cm and CH = 5 cm. M is the midpoint of GH



Calculate the angle between BM and CE (3 marks)

- A ball allowed to drop from a height of 16 cm on to a floor rebounds to  $\frac{3}{4}$  of its previous height. Find the total distance the ball will have travelled when it hits the ground for the tenth time correct to four significant figures. (2 marks)
- Calculate the standard deviation for the distribution below (4 marks)

No. of children	0	1	2	3	4	5	6
No. of families	4	2	4	7	8	3	2

- Make x the subject of the formula (3 marks)

$$Y = \frac{MX}{X^2 + F}$$

- A triangle whose area is  $7.2 \text{ cm}^2$  is mapped onto a triangle whose area is  $3.6 \text{ cm}^2$  by the matrix given below. Find the two possible values of x. (3 marks)

$$\begin{pmatrix} x+4 & 6 \\ 5 & x \end{pmatrix}$$

- Simplify completely the expression (3 marks)

$$\frac{-2ax - 3by + 2ay + 3bx}{3b - 2a}$$

- Find the amount after 3.25 years if Kshs 234,000 is invested at 10% p.a compounded semi annually. (3 marks)
- In the figure below XY and YZ are chords of the circle centre O. XY = 6 cm and XZ = 9 cm. Find

# MATHEMATICS PAPER 2 Marking Scheme - 2019 KCSE Prediction Answers Set 1

## SECTION I (50 Marks)

Answer **all** questions in this section

1. When asked to find  $\frac{7}{18}$  of a certain number, Juma found by mistake  $\frac{7}{8}$  of it. Hence the answer was too large by 105. Find the number. (3 marks)

$$\begin{aligned}\frac{7}{8}x - \frac{7}{18}x &= 105 \\ 63x - 28x &= 7560 \\ 35x &= 7560 \\ x &= 216\end{aligned}$$

2. Simplify leaving the answer in the form of  $a\sqrt{2} + b\sqrt{5}$  where a and b are constants. (3 marks)

$$\begin{aligned}\frac{5}{2\sqrt{2} - \sqrt{5}} - \frac{2}{2\sqrt{2} + \sqrt{5}} \\ \frac{5}{\sqrt{2} - \sqrt{5}} - \frac{2}{\sqrt{2} + \sqrt{5}} \\ \frac{5(2\sqrt{2} + \sqrt{5})}{8} - \frac{2(2\sqrt{2} - \sqrt{5})}{5} \\ \frac{10\sqrt{2} + 5\sqrt{5}}{3} - \frac{4\sqrt{2} - 2\sqrt{5}}{3} \\ \frac{6\sqrt{2}}{3} - \frac{7\sqrt{5}}{3} \\ \sqrt{2} + \frac{7}{3}\sqrt{5}\end{aligned}$$

3. a. Expand completely  $(x-0.2)^5$  (1 mark)

$$\begin{aligned}x^5 - 5x^4(0.2) + 10x^3(0.2)^2 - 10x^2(0.2)^3 + 5x(0.2)^4 - (0.2)^5 \\ x^5 - x^4 + 0.4x^3 - 0.08x^2 + 0.008x - 0.00032\end{aligned}$$

- b. Hence use your expansion to find the exact value of  $(9.8)^5$  (2 marks)

$$\begin{aligned}10^5 - 10^4 + 0.4(10)^3 - 0.08(10)^2 + 0.008(10) - 0.00032 \\ 10^5 - 10^4 + 400 - 8 + 0.08 - 0.00032 \\ 90,392.07968\end{aligned}$$

4. The figure below represents a solid cuboid ABCDEFGH with a rectangular base. AB = 12 cm, BC = 10 cm and CH = 5 cm. M is the midpoint of GH