

MATHEMATICS PAPER 2 - KCSE 2019 STAREHE PRE MOCK EXAMINATION (WITH MARKING SCHEME)

SECTION I (50 MARKS)

Answer all the questions from this section

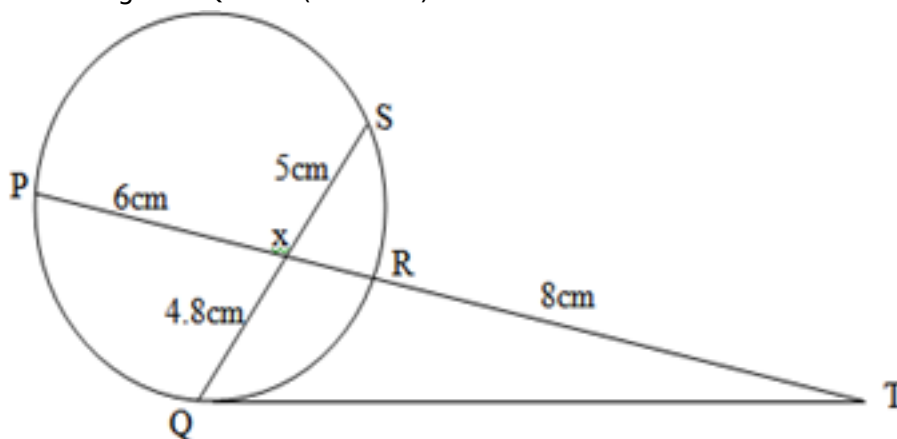
1. Use logarithm to solve tables to evaluate (4 marks)

$$\sqrt[3]{\frac{45.3 \times 0.00697}{0.534}}$$

2. The length and breadth of a rectangular paper were measured to be the **nearest** centimeter and found to be 20cm and 15 cm respectively. Find the percentage error in its perimeter leaving your answer to 4 significant figures. (3 marks)
3. Simplify the following surds leaving your answer in the form $a+b\sqrt{c}$ (3 marks)

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

4. In the figure below QT is a tangent to the circle at Q. PXRT and QXS are straight lines. PX = 6cm, RT = 8cm, QX = 4.8cm and XS = 5cm. Find the length of QT (3 marks)



5. Mary and Jane working together can cultivate a piece of land in 6 days. Mary alone can complete the work in 15 days. After the two had worked for 4 days Mary withdrew the services. Find the time taken by Jane to complete the remaining work. (3 marks)
6. The equation of a circle is given by $3x^2 + 3y^2 - 18x + 12y - 9 = 0$. Determine the radius and the center of the circle. (3 marks)
7. Make Q the subject of the formula (3 marks)

$$T = P \sqrt{\frac{Q}{Q-1}}$$

MARKING SCHEME

SECTION I

	WORKING			MARKS	GUIDELINES
1.	No	Std form	Log	M1	For \checkmark logs
	45.3 0.33697	4.5×10^1 6.97×10^{-2}	$\frac{1.6561}{\underline{3.8432} +}$ $\underline{1.4993}$	M1	For attempt to add and sub
	0.534	5.34×10^{-1}	$\underline{1.7275} -$	M1	
	0.8392	8.392×10^{-1}	$\frac{1.7718}{\underline{1.9239}} \div 3$	M1	Attempt to divide by 3
	0.8392			A1	
				4	
2.	Maximum perimeter $2(18.5 + 12.5) = 62\text{cm}$ Minimum perimeter $2(17.5 + 11.5) = 58\text{cm}$ Working perimeter $2(18 + 12) = 60\text{cm}$ Absolute error = $\frac{62 - 58}{2} = 2$ $= \frac{2}{60} \times 100$ $= 3\frac{1}{3}\%$			M1	Avoid $\frac{10\%}{3}$
				M1	
				A1	
				3	
3.	$\frac{\sqrt{5}}{2\sqrt{2}-\sqrt{5}} + \frac{\sqrt{2}}{2\sqrt{2}+\sqrt{5}} = \frac{\sqrt{5}(2\sqrt{2}+\sqrt{5})+\sqrt{2}(2\sqrt{2}-\sqrt{5})}{(2\sqrt{2})^2-(\sqrt{5})^2}$ $= \frac{2\sqrt{10}+\sqrt{25}+2\sqrt{4}-\sqrt{10}}{4(2)-5}$ $= \frac{\sqrt{10}+9}{3}$ $= \frac{9}{3} + \frac{\sqrt{10}}{3}$ $= 3 + \frac{\sqrt{10}}{3}$			M ₁	Activate Wi Fi
				M1	
				A ₁	
				3	