GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

GAUTENG DEPARTMENT OF EDUCATION

PROVINCIAL EXAMINATION

JUNE 2017

GRADE 10

### MATHEMATICS
PAPER 2

MEMORANDUM

6 pages

GAUTENG DEPARTMENT OF EDUCATION

PROVINCIAL EXAMINATION

MATHEMATICS
(Paper 2)

MEMORANDUM

QUESTION 1			
1.1		$OP^2 = (4)^2 + (3)^2 \dots Pythagoras$ $OP^2 = 25$ $OP = 5$	✓ $OP^2 = (4)^2 + (3)^2$ ✓ $OP^2 = 25$ ✓ $OP = 5$ (3)
1.2	1.2.1	$\sin\theta$ $= \dfrac{3}{5}$	✓ answer (1)
	1.2.2	$\cot\theta$ $= \dfrac{4}{3}$	✓ answer (1)
	1.2.3	$\sin^2\theta + \cos^2\theta$ $= \left(\dfrac{3}{5}\right)^2 + \left(\dfrac{4}{5}\right)^2$ $= \dfrac{9}{25} + \dfrac{16}{25}$ $= 1$	✓ $\dfrac{4}{5}$ ✓ answer (2)
			[7]

QUESTION 2			
		PENALISE JUST ONCE FOR INCORRECT ROUNDING-OFF.	
2.1	2.1.1	$3\sin 138,7°$ $=1,980$	✓ answer (1)
	2.1.2	$\sec 50°$ $=1,556$	✓ answer (1)
	2.1.3	$\dfrac{4\tan^2 288,2°.\cos 164,6°}{\sin 199,4°}$ $=107,402$	✓✓ answer (2)
2.2	2.2.1	$\cos 30° + \tan 60°$ $=\dfrac{\sqrt{3}}{2}+\sqrt{3}$ $=\dfrac{\sqrt{3}+2\sqrt{3}}{2}$ $=\dfrac{3\sqrt{3}}{2}$	✓ $\dfrac{\sqrt{3}}{2}$ ✓ $\sqrt{3}$ ✓ answer (3)
	2.2.2	$\dfrac{\sin 45°}{\cos 45°}-5\cos ec\,90°+3\tan^2 30°$ $=\dfrac{\frac{\sqrt{2}}{2}}{\frac{\sqrt{2}}{2}}-5(1)+3\left(\dfrac{1}{\sqrt{3}}\right)^2$ $=1-5+3\left(\dfrac{1}{3}\right)$ $=-3$	✓ $\dfrac{\sin 45°}{\cos 45°}=1$ ✓ $\cos ec\,90°=1$ ✓ $\tan 30°=\dfrac{1}{\sqrt{3}}$ ✓ $\dfrac{1}{3}$ ✓ answer (5)
			[12]
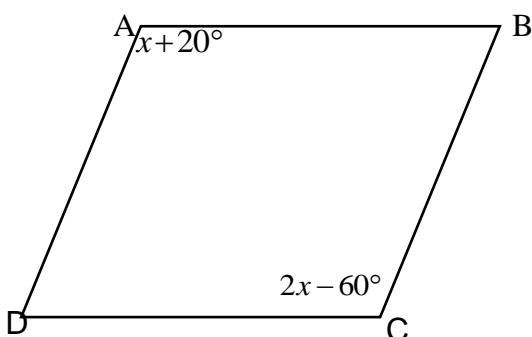
QUESTION 3		
3.1	$\tan\theta=4,96$ $\theta=78,60°$	✓ answer (1)
3.2	$2\sin(2\theta-10°)=1$ $\sin(2\theta-10°)=\dfrac{1}{2}$ $(2\theta-10°)=30°$ $2\theta=40°$ $\theta=20°$	✓ divide by 2 ✓ 30° ✓ answer (3)
		[4]

QUESTION 4		
4.1		$f(x)=2\tan x$ ✓ shape ✓ asymptote ✓ $(45°;2)$ $g(x)=\cos x+1$ ✓ shape ✓ x-intercept ✓ y-intercept (6)
4.2 4.2.1	1	✓ answer (1)
4.2.2	180°	✓ answer (1)
4.2.3	$y\in[0;2]$ **OR** $0\le y\le 2$	✓ critical values ✓ correct brackets/ inequality (2)
		[10]
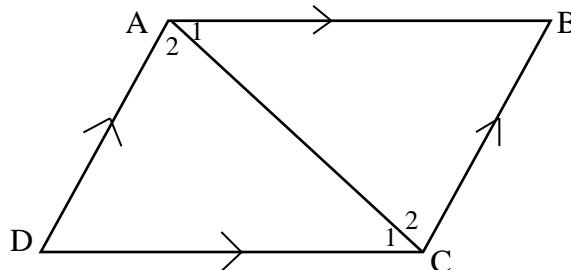
QUESTION 5		
5.1	Both pairs of opposite sides are parallel. All sides are equal. Diagonals bisect the angles. Diagonals bisect at right angles. Both pairs of opposite angles are equal.	✓✓ any two answers (2)

5.2
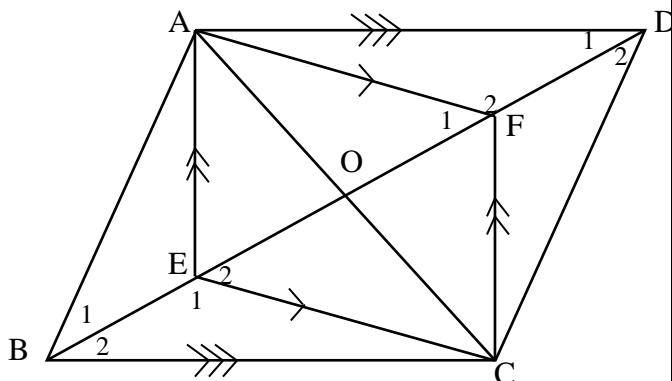
$\hat{A} = \hat{C}$ $x + 20° = 2x - 60°$ $x = 80°$ $\hat{C} = 100°$	Opp angles of $//^m$	✓ statement ✓ answer (2)
		[4]

QUESTION 6		

6.1

Construct diagonal AC In $\triangle ADC$ and $\triangle ABC$ $AC = AC$ $\hat{A}_1 = \hat{C}_1$ $\hat{A}_2 = \hat{C}_2$ $\triangle ADC \equiv \triangle ABC$ $\therefore$ AB = DC $\therefore$ AD = BC	Common Alternate angles AB//DC Alternate angles AD//BC s<< $\triangle ADC \equiv \triangle ABC$ $\triangle ADC \equiv \triangle ABC$	✓ construction ✓ alternate angles AB//CD ✓ alternate angles AD//BC ✓ $\triangle ADC \equiv \triangle ABC$ ✓ AB = DC AND AD = BC (5)

6.2			
	6.2.1	$\hat{F}_1 = \hat{E}_2$ $\hat{F}_1 + \hat{F}_2 = \hat{E}_1 + \hat{E}_2 = 180°$ $\therefore \hat{F}_2 = \hat{E}_2$	Alternate angles AF//EC Angles on straight line	✓statement and reason ✓statement and reason ✓ $\therefore \hat{F}_2 = \hat{E}_2$ (3)
	6.2.2	In $\triangle AFD$ and $\triangle BEC$ AF = EC $\hat{D}_1 = \hat{B}_2$ $\hat{F}_2 = \hat{E}_1$ $\therefore \triangle AFD \equiv \triangle BEC$ AD = BC AB//BC ABCD is a parallelogram	 Opposite sides $//^m$ Alternate angles AD//BC proved s<< $\triangle AFD \equiv \triangle BEC$ One pair of opp sides =//	✓identify correct $\triangle$ ✓ AF = EC ✓ $\therefore \triangle AFD \equiv \triangle BEC$ ✓ AD=BC ✓ reason (5)
			[13]
			TOTAL: 50