

12	(a)	$H_0 : \mu = 1.5$ $H_1 : \mu < 1.5$ μ is the population mean weight of flour in a bag	B1	1.1	both hypotheses in terms of μ
			B1	2.5	allow μ is the population mean weight of a bag of flour
			[2]		

Question			Answer	Marks	AO	Guidance
12	(b)		$N(a, b)$ $a = 1.5$ or $b = \frac{0.24^2}{32}$ or 0.0018 $N(1.5, \frac{0.24^2}{32})$ isw or $N(1.5, 0.0018)$ isw	M1 A1 A1	3.3 2.2a 3.1a	a and b are numerical values allow 0.0424 ² for variance A0 if answer spoiled by wrong variable quoted eg $\mu \sim N(1.5, \frac{0.24^2}{32})$ or $X \sim N(1.5, \frac{0.24^2}{32})$; allow only $\bar{X}$ oe if variable included
				[3]		
12	(c)		$0.0786 > 0.05$ or $-1.4142 > -1.645$ do not reject H_0 there is insufficient evidence at the 5% level to suggest that the mean weight of the flour in the bags is less than 1.5 kg	M1 A1 A1	3.4 1.1 2.2b	or $1.44 > 1.43(02586 \dots)$ NB 1.43(02586...) is from InvNorm(0.05, 1.5, 0.0424) allow accept H_0 or not significant or reject H_1 do not allow eg conclude / prove / indicate or other assertive statement instead of suggest if calculated values are used full marks may be awarded for awrt 0.07865 or 0.0786, or $-1.415 \leq z \leq -1.414$; otherwise award a maximum of M1A1 for 0.07...or $-1.4\dots$ other calculated values score M0
				[3]		