9	**(a)**		$1.2^2 = 0^2 + 2a(1.5) \Rightarrow a = 0.48$ (m s^{-2})	**B1** **[1]**	**2.1**	**AG**	
9	**(b)**		 $2.5g - T = 2.5a$ $T = 2.5(9.8) - 2.5(0.48) = 23.3$ (N)	**M1** **A1** **A1** **[3]**	**3.3** **1.1** **1.1**	N2L for particle B – correct number of terms – allow sign errors **AG** e.g. $2.5(9.8) - T = 2.5(0.48)$ $\Rightarrow T = 23.3$	M0 if mass only on lhs Value of a must be substituted for this mark
9	**(c)**		$R = 2g\cos\theta = 2g\left(\frac{4}{5}\right)$ $T - F - 2g\sin\theta = 2a$ or $T - \mu R - 2g\sin\theta = 2a$ $23.3 - F - 2g\left(\frac{3}{5}\right) = 2a$ or $23.3 - \mu R - 2g\left(\frac{3}{5}\right) = 2a$ $23.3 - \mu(2g)\left(\frac{4}{5}\right) - 2g\left(\frac{3}{5}\right) = 2(0.48)$ $\mu = 0.675$	**B1** **M1*** **A1** **M1dep*** **A1** **[5]**	**1.1** **3.3** **1.1** **3.4** **2.2a**	Correctly resolves perpendicular to the plane and substitutes the correct value for cosine N2L for particle A – correct number of terms with weight component resolved Correct equation with $T = 23.3$ and $a = 0.48$ Use of $F = \mu R$ with their values for F and R – may be implied by N2L Correct to at least 3 sf (0.674744898…)	$R = 15.68$ Allow sign errors Equation in μ only R must be a component of $2g$ only Note that $\mu = \frac{529}{784}$
9	**(d)**		$-\mu R - 2g\sin\theta = 2a$ therefore $-\frac{529}{784}(15.68) - 2g\left(\frac{3}{5}\right) = 2a$ $a = -11.17$ $0^2 = 1.2^2 + 2(-11.17)s$ s = 0.065 (m) or 0.064 (m)	**M1*** **A1** **M1dep*** **A1** **[4]**	**3.1b** **1.1** **3.4** **1.1**	N2L parallel to the plane with $T = 0$ to find new acceleration $a = -11.172$ if $\mu = 0.675$ used Applies $v^2 = u^2 + 2as$ with $v = 0$ and $u = 1.2$ Correct to at least 3 d.p.	Correct number of terms Accept positive a – may be implied by later working 0.06445837064… if μ exact used or 0.06444683… if 3 sf for μ used