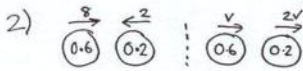


MI June 05

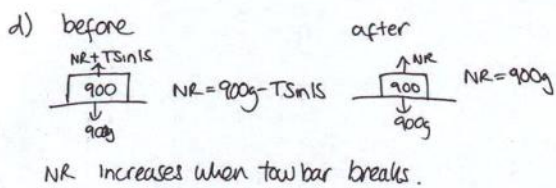
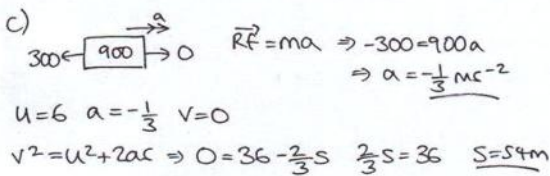
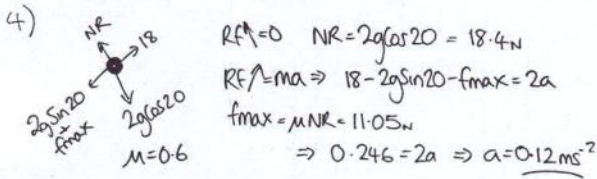
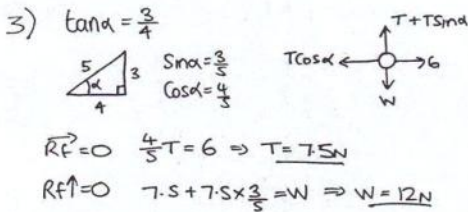
1) $u=2$ $v=74$ $t=20$
 $v=u+at \Rightarrow 74=2+a \times 20$
 $\Rightarrow 72=20a$
 $\Rightarrow a=3.6 \text{ ms}^{-2}$
 $S=\frac{(u+v)t}{2} \Rightarrow S=\frac{(2+74) \times 20}{2}=760 \text{m}$
 A to B

$BC = 1200 - 760 = 440 \text{m}$



Total before = $0.6 \times 8 + 0.2 \times -2 = 4.4 \text{Ns}$
 Total after = $0.6v + 0.2 \times 2 = v$
 $v = 4.4 \text{ms}^{-1}$

b) Mom B before = $0.2 \times -2 = -0.4 \text{Ns}$
 Mom B after = $0.2 \times 8.8 = 1.76 \text{Ns}$
 Impulse = 2.16Ns



- 8) speed = $\sqrt{5^2 + 8^2} = 9.48 \text{ms}^{-1}$
 b) Position = $(2i + j) + t(5i + 8j) = (2+5t)i + (1+8t)j$
 c) due North means i value is the same
 $2+5t = 10 \Rightarrow 5t = 8 \Rightarrow t = 1.6 \text{sec}$
 d) $B = (10i + 7j) + (0i + vj)t = 10i + (7+vt)j$
 $\Rightarrow t = 1.6 \Rightarrow 1+8t = 7+vt$
 $\Rightarrow 1 + 12.8 = 7 + 1.6v \Rightarrow 1.6v = 6.8$
 $v = 4.25 \text{ms}^{-1}$
 e) friction of ball on the floor.

