Gr 12 PSc 2019

## **ACTIVITY 1.3**

Solve the following problem and discuss your answers in class with your teacher:

1. A 5 kg block, resting on a rough horizontal table, is connected by a light inextensible string passing over a light frictionless pulley to another block of mass 2 kg. The 2 kg block hangs vertically as shown in the diagram below.

A force of 60 N is applied to the 5 kg block at an angle of  $10^{\circ}$  to the horizontal, causing the block to accelerate to the left.



The coefficient of kinetic friction between the 5 kg block and the surface of the table is 0,5. Ignore the effects of air friction.

1.1	Draw a labelled free-body diagram showing ALL the forces acting on the 5 kg block.					(5)
1.2	Calculate the magnitude of the:					
	1.2.1	Vertical co	omponent of the 6	0 N force		(2)
	1.2.2 Horizontal component of the 60 N force					(2)
1.3	State Newton's Second Law of Motion in words.					(2)
Calculat	e the mag	nitude of th	ne:			
1.4	Normal force acting on the 5 kg block					(2)
1.5	Tension in the string connecting the two blocks					(7)
ANSWE	RS					[20]
1.1			1.2.1: 10,42 N	1.2.2: 59,09 N	1.3: See EG pg. 7	
F <sub>app</sub> ▼		F <sub>N</sub> f→ F <sub>g</sub>	▶ Т	1.4: 38,58 N	1.5: 25,37 N	