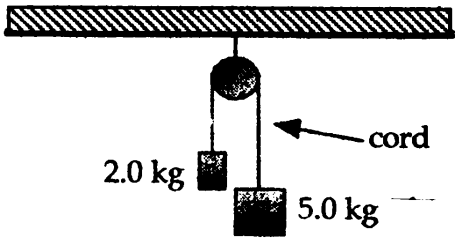
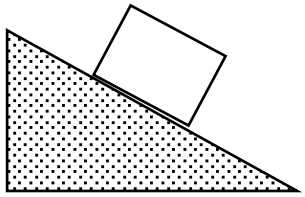
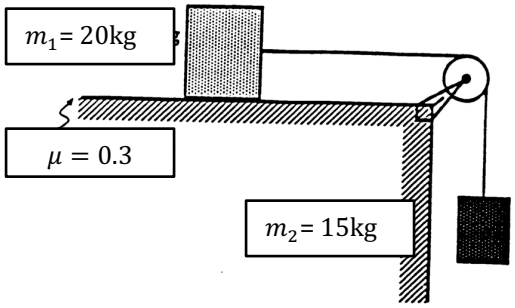
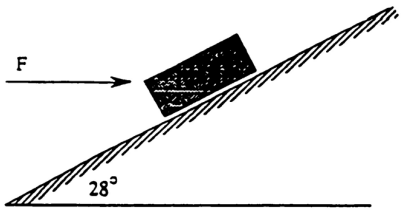
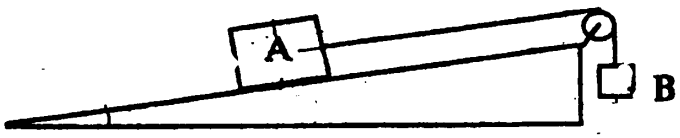
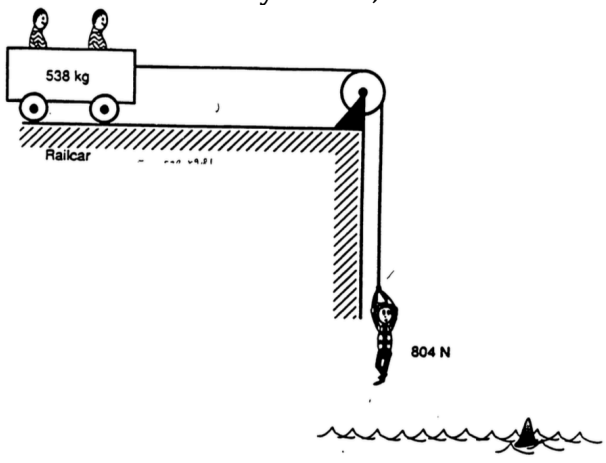
Physics 12 2019 Vector Addition and Balanced Forces Assignment **Name**_____

Mark:_____/

1.	Two soccer players kick the ball at exactly the same time. One player's foot exerts a force o 66 N North. The other's food exerts a force of 88 N at 50 degree east of North. What is the **resultant force** on the ball? Ans)_____ Direction)_____
2.	Two masses of 2.0 kg and 5.0 kg are suspended by a massless cord over a frictionless pulley. What is the magnitude and direction of the acceleration for the 2.0 kg mass?  Ans)_____
3.	A 5 kg block is traveling at constant speed down a 30° ramp; find the coefficient of friction $\boldsymbol{\mu}$ between the block and the ramp.  Ans)_____
4	Two objects are connected togethere by a light string over a fricitonless pulley. Object m1 is sitting on a surface (with Ff) and it has a mass of 20 kg; the hanging object m2 has a mass of 15 kg  a) what is the magnitude of the acceleration? b) What is the tension of the string? Ans)_____ Ans)_____

5.	A 12.5 kg block is pushed at a constant speed up a frictionless 28° incline by a horizontally applied force F.  a) Draw a FBD on the block (with different colors) b) What horizontal force F is required in order to maintain the block at constant speed? Ans)_____ c) What is the normal force exerted by the ramp on the block? Ans)_____
6.	In the picture below Mass A is 7 kg and Mass B is 6 kg. The ramp is inclined at 16° to the horizontal and the coefficient of firciton between the ramp and the block is 0.4. Determind the accelration of the system and the Tension on the string.  acceleration)_____ Tension)_____
C H A L L E N G E	A stunt man weighing 804 N finds himself hanging from the end of a rope with is attached to a railcar as shown in the diagram. The mass of the railcar and passengers is 538 kg. The coefficient of friciton between the locked wheels and track is 0.76. if the speed of the railcar is 5 m/s when the wheels are suddenly locked, how far will the stunt man continue to fall before the stops?  Ans)_____