PHYSICS

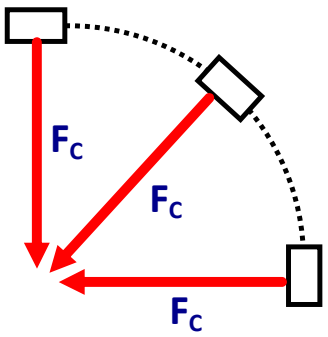
CENTRIPETAL FORCE

Centripetal Force

Recall Newton's Second Law that states that when an external unbalanced force acts on an object, the object will accelerate in the direction of the force

Also recall that when an object moves around a curve it is accelerating toward the centre of the curve.

Thus, there must be some force that causes an object to turn and accelerate toward the centre. This unbalanced force is called ***CENTRIPETAL FORCE***.



Centripetal force is a specific type of net force that causes an object to curve. Centripetal Force is an unbalanced force just like Net Force. Therefore, it can be found using the very same formula:

$$F_{NET} = F_C = ma$$

PHYSICS

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Example

A 3000kg car is travelling at 80km/h [N]. It goes around a curve and 5 seconds later finds that it is travelling 80 km/h [N 25 W]. What is the centripetal force acting on the car?

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Example

A 3000kg car is travelling at 80km/h [N]. It approaches a curve and experiences a centripetal force of 7500 N [S45E] for 5 seconds. What is its final velocity

PHYSICS

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Try This ...

A 3000kg car experiences a centripetal force of 6000 N [N15E] for 5 seconds and is then travelling at 80km/h [N]. What is its initial velocity