

Answer on Question#41295, Physics, Mechanics Question: A force of 90 N is applied to a wagon (mass 40 kg) at an angle of 30 to the horizontal. If the frictional force is 27.94 N, the magnitude of the resulting acceleration of the wagon is m/s².

Solution. The projection of the applied force is

$$F = 90N \cdot \cos 30^\circ$$

The resulting force is

$$F - F_{fr} = 90N \cdot \cos 30^\circ - 27.94 = 90 \cdot \sqrt{3}/2 - 27.94 = 50 N$$

Then acceleration is

$$a = \frac{50}{40} = 1.2 m/s^2$$

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