

ALGEBRA-BASED PHYSICS-1: MECHANICS (PHYS135A-01): WEEK 5

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WEEK 4 REVIEW

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1. Deep statements about physics: *dynamics* and *kinematics*
 - **Lab activity:** Force, mass and stretching springs
2. Newton's **First Law**
 - **Lab activity:** force tables
3. Newton's **Second Law**
4. Newton's **Third Law**
5. Applications
 - Free-body diagrams
 - Tension
 - Inclined surfaces
 - Restoring forces

WEEK 4 REVIEW PROBLEMS

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A powerful motorcycle can produce an acceleration of 3.50 m/s^2 while traveling at 90.0 km/h . At that speed the forces resisting motion, including friction and air resistance, total 400 N . (Air resistance is analogous to air friction. It always opposes the motion of an object.) What is the magnitude of the force the motorcycle exerts backward on the ground to produce its acceleration if the mass of the motorcycle with rider is 245 kg ?

- A: 1260 N
- B: $12,600 \text{ N}$
- C: 960 N
- D: 400 N

WEEK 4 REVIEW PROBLEMS

Two teams of nine members each engage in a tug of war. Each of the first team's members has an average mass of 68 kg and exerts an average force of 1350 N horizontally. Each of the second team's members has an average mass of 73 kg and exerts an average force of 1365 N horizontally. What is magnitude of the acceleration of the two teams? What is the tension in the section of rope between the teams?

- A: 0.106 m/s^2 , 33435 N
- B: 0.106 m/s^2 , 12150 N
- C: 0.955 m/s^2 , 33435 N
- D: 0.955 m/s^2 , 12150 N

WEEK 5 SUMMARY

CONCLUSION

ANSWERS

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