

Chapter 1 : Sample Problems and Solutions

Free SAT II Physics Practice Questions Vectors with detailed solutions and explanations Interactive Html 5 applets to add and subtract vectors Vector Addition using and html5 applet to understand the geometrical meaning of the addition of vectors, important concept in physics as it is related to addition of forces.

A river is 3. A man can row 5. How long will it take him to row three miles down river and back? How long will it take him to row straight across the river and back? What is his total flying time in minutes for the round trip? A river flows due north with a speed of 3. A man rows a boat across the river; his velocity relative to the water is 4. What is his velocity relative to the earth? In the previous problem, how much time is required to cross the river if it is 2 miles wide? How far north of his starting point will he reach the opposite bank? A N object is suspended from the ceiling of a room by two ropes A and B. Rope A makes an angle of Compute the tension in each rope. The wire stretches until the middle part sags 1. How much did the wire stretch? What is the tension in the wire? What force parallel to the plane is required to hold it stationary? What is the force exerted by the sphere on each side of the trough? A child is swinging back and forth on the swing, going a maximum horizontal distance of 1. At the end of the swing, the tension in the rope is N. What is the combined weight of the child and the swing? A N picture is supported by a wire from a single hook. The ends of the wire are attached to the picture frame by two screw eyes 50cm apart. The length of the wire between the hooks is 55cm. Calculate the tension in the wire. Find the acceleration of the two blocks in Figure 3. What is the tension in the rope? Assume that there is no friction. A cord passes from A over a frictionless pulley to an 8. Find the acceleration of the blocks when released. A block has been placed on an inclined plane and the slope of the incline changed until the block will slide down at a constant speed once started in motion. Calculate the angle of incline in terms of the coefficient of friction and show that it is the same regardless of the mass of the block. A box with a mass of 50kg rests on a horizontal surface. The coefficient of friction between the box and the surface is 0. A man wishes to move the box across the floor but it is too heavy to carry. Calculate the force required in each case. In the system pictured in Figure 3. The ball at the lower end has a mass of 29kg. The system is released when the lower ball is 3. How fast is the lower ball moving when it reaches the ground? Two objects, A and B, are hung from a rope which is attached to its ends to vertical walls, as in figure 3. What is the tension in the wire if the lowest point on the wire is 4. A body of mass 5. Calculate the tension in each of the three sections of the cord. Two identical smooth cylinders, each weighing N, are placed lengthwise in a narrow rectangular box as shown in Figure 3. The radius of the cylinders is 20cm and the width of the box is 60cm. What force is exerted by the bottom of the box on the lower of the two cylinders? What is the force exerted by one machine on the other? What force is exerted on the wall of the box by each cylinder? Assign this reference page [Click here to assign this reference page to your students.](#)

Chapter 2 : Solutions to Scalar and Vector Problems

I recycled the solution to this problem from an earlier one. The idea was to show a common problem solving method used in physics. Whenever possible, take a difficult problem that you haven't solved and reduce it one that you have solved.

The sum of two vectors is not being a scalar and numeric they are vector. If two vectors are equal in magnitude directions, the resultant vector would be equal to zero. Distinguish between cross product and dot product of two vectors. The cross product of two vectors is non-commutative whereas the dot product of two vectors is always commutative. The cross product of two perpendicular vectors has maximum magnitude whereas the dot product of two mutually perpendicular vectors is always zero. The cross product of two parallel vectors is null or zero vector whereas, the dot product of two parallel vectors is always equal to product of their magnitudes. The necessary condition for addition of vectors is both are must be vector or the vectors having the same, nature only can be added. Momentum of a moving body is vector because it has both magnitude and direction. Yes two vectors be added by using the parallelogram law of vector addition 8. Two vectors suppose A and B are said to be equal if they have the same magnitude and same direction regardless of the position of their starting points. Negative of a vector: Vector equal in magnitude with the other vector but in the opposite direction. Such vector is called as negative of a vector. Suppose we have two vectors A and B both have the same magnitude but they are opposite in direction so they will be written as: These values are found by subtracting and adding the two vectors. Only 20N has the maximum resultant that is more than 15N and minimum resultant that is less than 15N. Scalars are the physical quantities that can be represented by their magnitude. Examples of such physical quantities include mass, time, length, energy, temperature etc. All of these require a magnitude to be represented. For instance mass is represented by just expressing its magnitude in respective units, like 5 kg, time is expressed in seconds, energy in joules, temperature in Celsius. There is no sense of direction in these physical quantities. Vectors are the physical quantities that require magnitude and also direction to be represented. Examples include force, velocity, acceleration, etc. All of these require a magnitude and a direction in which they act to be completely defined. For instance force needs to be defined in terms of magnitude in N and also the direction in which it acts; velocity is expressed in ms^{-1} and needs a direction in which the body is travelling. The triangle law of vectors states: If two vectors such as AB and BC are representing the two sides of a triangle ABC, then the third side AC closing the other side of the triangle in opposite direction represents the sum of two vectors both in magnitude and vectors. If a number of vectors acting simultaneously on a body be represented in magnitude and direction by the sides of a polygon taken in order, the closing side of the polygon taken in opposite order represents the resultant vector both in magnitude and direction. The vectors having the same, nature only can be subtracted. The process of splitting a vector into various parts or components is called resolution of vectors these parts of a vector may act in different directions and are called components of vector. The scalar product between two vectors is zero if the vectors are perpendicular to each other. The vector product between two vectors is zero if the vectors are parallel to each other.

Chapter 3 : Vectors in Physics

3 - 1 Chapter 3: Solutions of Homework Problems Vectors in Physics as drawn at Picture the Problem: The given vector components correspond to the vector r & right.

Chapter 4 : AP Problem Sets - Physh's Physics

Vectors Exam1 and Problem Solutions 1. Find $A+B+C$. First, we find $A+B$ then add it to vector C. We find $R1$, now we add C to $R1$ to find resultant vector.

Chapter 5 : Vectors and scalars questions (practice) | Khan Academy

In mathematics and physics, a vector is a quantity with both magnitude and direction. Vectors are commonly used (usually unknowingly) in everyday life; for instance, "five miles west" is a vector.

Chapter 6 : Chapter 6 Vectors - Example Problems Solutions

These problems allow any student of physics to test their understanding of the use of the four kinematic equations to solve problems involving the one-dimensional motion of objects. You are encouraged to read each problem and practice the use of the strategy in the solution of the problem.

Chapter 7 : Vector word problems (practice) | Vectors | Khan Academy

2. The resultant vector is the vector that results from adding two or more vectors together. Parallelogram law of vector states that "If the vectors acting simultaneously at a point both in direction and magnitude represented by the adjacent sides of the parallelogram drawn from the point, then the resultant of the vectors both in magnitude and direction are represented by the diagonal of.

Chapter 8 : Scalars And Vectors Grade 11 Physics Question Answer | Solutions | Khullakitab

4.) Graphically add the following vectors. b) A person swims upstream at m/s , south relative to a river going m/s , north.

Chapter 9 : Vector Problems: Unit 3: Vectors

Physics Vector Problems where \hat{i} is the angle between the Force and Displacement vectors. Note that when $\hat{i} = 90^\circ$ the result will be zero ($\cos 90^\circ = 0$). In other.