

Finding the resultant force of 2 perpendicular forces - by pythagoras or scale drawing

1. A toy car is pulled with a force of 30 N to the right and 40 N forwards.
Calculate the size of the resultant force. You may use a scale diagram or Pythagoras.
Scale diagram suggestion: 1 cm = 10 N.
2. A pupil pulls a box with a force of 12 N north. Another pupil pulls the same box with a force of 16 N east.
Calculate the size of the resultant force. You may use a scale diagram or Pythagoras.
Scale diagram suggestion: 1 cm = 4 N.
3. A small boat is pushed forwards by its engine with a force of 60 N. A current pushes it sideways with a force of 80 N.
Calculate the size of the resultant force acting on the boat. You may use a scale diagram or Pythagoras.
Scale diagram suggestion: 1 cm = 20 N.
4. A drone has an upward lift force of 90 N and a sideways wind force of 120 N.
Calculate the size of the resultant force acting on the drone. You may use a scale diagram or Pythagoras.
Scale diagram suggestion: 1 cm = 30 N.
5. A football is kicked with a force of 150 N forwards. At the same time, a crosswind produces a sideways force of 200 N.
Calculate the size of the resultant force on the ball. You may use a scale diagram or Pythagoras.
Scale diagram suggestion: 1 cm = 50 N.
6. A swimmer pushes forwards through the water with a force of 180 N. The river current pushes the swimmer sideways with a force of 240 N.
Calculate the size of the resultant force and describe its direction. You may use a scale diagram or Pythagoras.
Scale diagram suggestion: 1 cm = 60 N.

7. A parachutist has a downward force of 800 N due to weight. A strong wind pushes the parachutist sideways with a force of 600 N. Calculate the size of the resultant force acting on the parachutist. You may use a scale diagram or Pythagoras.
Scale diagram suggestion: 1 cm = 200 N.
8. A rescue helicopter lifts a crate upwards with a force of 1200 N. The wind pushes the crate sideways with a force of 900 N. Calculate the size of the resultant force acting on the crate and state whether the force is vertical, horizontal or diagonal. You may use a scale diagram or Pythagoras.
Scale diagram suggestion: 1 cm = 300 N.
9. A ship's engine provides a forward force of 2400 N. A sea current pushes the ship sideways with a force of 700 N. Calculate the size of the resultant force acting on the ship. Explain why the ship will not travel exactly in the direction the engine is pushing. You may use a scale diagram or Pythagoras.
Scale diagram suggestion: 1 cm = 200 N.
10. A delivery drone is flying in a straight line. Its motors provide a forward force of 3600 N. A crosswind pushes it sideways with a force of 1500 N. Calculate the size of the resultant force and explain why the drone would need to adjust its direction to stay on course. You may use a scale diagram or Pythagoras.
Scale diagram suggestion: 1 cm = 300 N.