

Name:

Class:



A person swims from a depth of 0.50 m to a depth of 1.70 m below the surface of the sea.

Density of the sea water = 1030 kg/m³ Gravitational field strength = 9.8 N/kg

Calculate the **increase** in pressure on the swimmer. Give the unit.

Pressure of a column of liquid = height of column × density × gravitational field strength

$$P = h \times d \times g$$

$$P = 0.5 \times 1030 \times 9.8$$

$$P = 5047$$

$$P = h \times d \times g$$

$$P = 1.70 \times 1030 \times 9.8$$

$$P = 17159.8$$

$$\text{Increase in pressure} = 17159.8 - 5047$$

$$\text{Increase in pressure} = \mathbf{12112.8 \text{ Pa}}$$

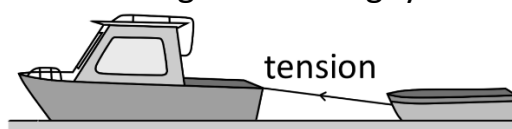
What is the critical angle?

The angle at which total internal reflection occurs.

State the equation to calculate the specific heat capacity of a material.

$$C = \frac{\Delta E}{m \times \Delta \theta}$$

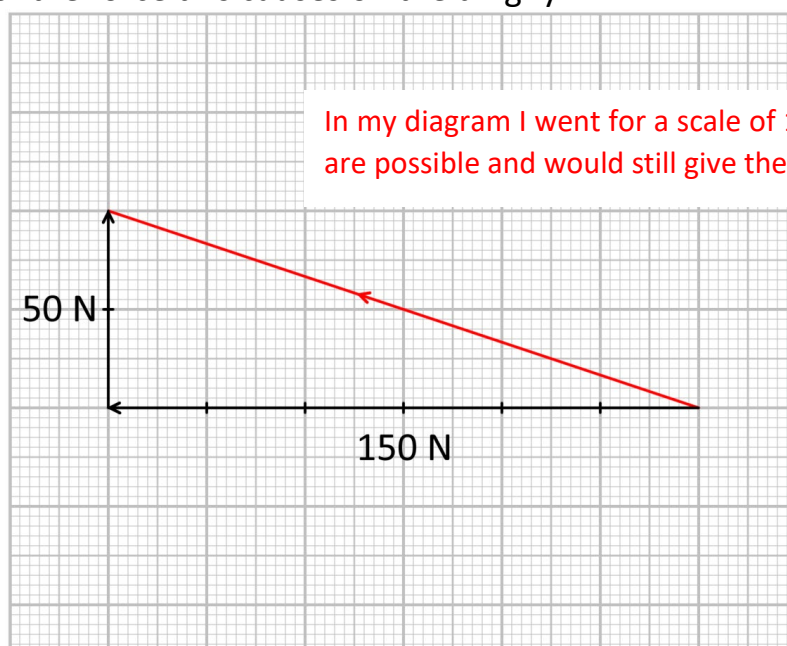
The figure below shows the boat towing a small dinghy.



The tension force in the tow rope causes a horizontal force forwards and a vertical force upwards on the dinghy.

The horizontal force forwards = 150 N. The vertical force upwards = 50 N

Draw a vector diagram to determine the magnitude of the tension force in the tow rope and the direction of the force this causes on the dinghy.



Use your figure to complete the following questions.

i. Scale used = **1 cm is 25 N** ii. Resultant force = allow 155 to 165 N

iii. The direction of the resultant force = **horizontal**.