

## Pressure

Video 385 on [www.corbettmaths.com](http://www.corbettmaths.com)

Examples



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Workout

Question 1: Work out the pressure for each of the following.  
Give suitable units for each answer.

- (a) A box is placed on a table and exerts a force of 250N on an area of  $20\text{cm}^2$
- (b) An object is placed on the ground and exerts a force of 3000N on an area of  $4\text{m}^2$
- (c) An object is placed on the ground and exerts a force of 54N on an area of  $0.5\text{cm}^2$
- (d) A box is placed on a table and exerts a force of 124 newtons on an area of  $10.5\text{cm}^2$
- (e) An object is placed on the ground and exerts a force of 25958N on an area of  $1.4\text{m}^2$

Question 2: Work out the force for each of the following.  
In each case a box has been placed on the floor.

- (a) The area of contact is  $16\text{cm}^2$  and the pressure exerted is  $10\text{N}/\text{cm}^2$
- (b) The area of contact is  $1.5\text{m}^2$  and the pressure exerted is  $5000\text{N}/\text{m}^2$
- (c) The area of contact is  $660\text{cm}^2$  and the pressure exerted is  $8.2\text{N}/\text{cm}^2$
- (d) The area of contact is  $0.2\text{m}^2$  and the pressure exerted is  $1.2\text{N}/\text{cm}^2$
- (e) The area of contact is  $500\text{cm}^2$  and the pressure exerted is  $450000\text{N}/\text{m}^2$

Question 3: Work out the area of contact for each of the following.  
In each case an object has been placed on the floor.  
Give suitable units for each answer.

- (a) The object exerts a force of 420N on the floor and the pressure on the floor is  $20\text{N}/\text{cm}^2$
- (b) The object exerts a force of 8590N on the floor and the pressure on the floor is  $900\text{N}/\text{m}^2$
- (c) The object exerts a force of 30N on the floor and the pressure on the floor is  $600\text{N}/\text{m}^2$
- (d) The object exerts a force of 3945N on the floor and the pressure on the floor is  $200\text{N}/\text{cm}^2$

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### Apply

Question 1: Find the pressure exerted by a force of 180 newtons on an area of  $50\text{cm}^2$ .  
Give your answer in  $\text{newtons/m}^2$

Question 2: A cylinder is placed on a table.  
The cylinder has a weight of 400N and has a diameter of 10cm.

Work out the pressure on the table in  $\text{newtons/cm}^2$

Question 3: Two cubes are placed on a table.  
One cube has a side length of 4cm and the other cube has a cube length of 10cm.

The weight of the smaller cube is 50N and the weight of the large cube is 250N

Which cube exerts a greater pressure on the table?

Question 4: A microwave is placed on a worktop.

The area of the microwave in contact with the table is  $600\text{cm}^2$ .  
The pressure of the microwave is 2450  $\text{Newtons/m}^2$ .

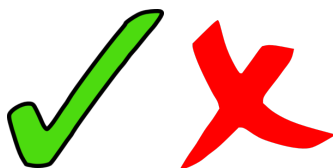
Work out the force exerted by the microwave on the worktop.

Question 5: The pressure of a tyre is 32 pounds per square inch.

Given            1 pound = 0.4536 kilograms  
                      1 inch = 2.54 centimetres

Work out the pressure in grams per square centimetre.

Answers



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