MME

GCSE MATHEMATICS

AQA | Edexcel | OCR | WJEC

Pressure Force Area

Please write clearly in block capitals

Forename:
Surname:

Materials

For this paper you must have:
- mathematical instruments

You ***can*** use a calculator.

Instructions

- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Fill in the boxes at the top of this page.
- Answer all questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- Do all rough work in this book. Cross through any work you do not want to be marked.

Information

- The marks for questions are shown in brackets.
- You may ask for graph paper, tracing paper and more answer paper. These must be tagged securely to this answer book.

Advice

- In all calculations, show clearly how you work out your answer.

1 A system has a pressure of $5\ \mathrm{N/m^2}$

If a force of $2000\ \mathrm{N}$ is applied, what is the area that the force is applied to?

Give the units.

[2 marks]

Answer _____

2 The force applied to a $0.4\ \mathrm{m}$ by $0.8\ \mathrm{m}$ break pad produces a pressure of $500\ \mathrm{N/m^2}$.

Calculate the force applied to the break pad.

[2 marks]

Answer _____

3 An object exerts a force of $10\ \mathrm{kN}$ on an area of $2\ \mathrm{cm^2}$.

What is the pressure the object exerts on the surface?

Give the units of pressure.

[1 mark]

Answer _____

Turn over for next question

5

4 Our atmosphere exerts a pressure of $101\ \mathrm{N/m^2}$

Calculate the force on one square centimetre caused by the atmosphere.

Give your answer in Newtons to 3 significant figures.

[1 mark]

Answer _____ N

5 A crate in a Wearhouse exerts a $10{,}000\ \mathrm{N}$ force on the floor.

The base of the crate has dimensions of $0.5\ \mathrm{m}$ by $3\ \mathrm{m}$.

Calculate the pressure on the warehouse floor caused by the crate.

Give your answer in Newtons to 3 significant figures.

[2 marks]

Answer _____ N

6 A needle requires a force of 0.5 Newtons to puncture the skin.

The tip of the needle has an area of $0.0000001\ \mathrm{m^2}$

Calculate the pressure needed to puncture the skin?

[2 marks]

Answer _____ $\mathrm{N/m^2}$

Turn over for next question

5

7 A coin is dropped off of a building landing on its side.

It hits with a pressure of $400\ \mathrm{N/m^2}$

It hits with a force of $0.1\ \mathrm{N}$

Calculate the area of the coin?

[2 marks]

Answer _____

8 A cylinder sands on the circular end.

The cylinder exerts a force of $2\ \mathrm{N}$ onto the floor.

The cylinder has a radius of $0.5\ \mathrm{m}$

Calculate the pressure the cylinder exerts on the floor.

Give your answer to 3 significant figures.

[2 marks]

Answer _____

4

END