Pressure Force Area - Worksheet

Skill

Group A - Pressure

Work out the pressure:

1) Force = $100\ N$
Area = $20\ m^2$

2) Force = $300\ N$
Area = $20\ m^2$

3) Force = $600\ N$
Area = $20\ m^2$

4) Force = $120\ N$
Area = $10\ m^2$

5) Force = $120\ N$
Area = $30\ m^2$

6) Force = $120\ N$
Area = $40\ m^2$

7) Force = $400\ N$
Area = $40\ m^2$

8) Force = $800\ N$
Area = $40\ m^2$

9) Force = $1000\ N$
Area = $40\ m^2$

10) Force = $600\ N$
Area = $30\ m^2$

11) Force = $600\ N$
Area = $40\ m^2$

12) Force = $600\ N$
Area = $120\ m^2$

Group B - Force

Work out the force:

1) Pressure = $10\ N/m^2$
Area = $20\ m^2$

2) Pressure = $12\ N/m^2$
Area = $20\ m^2$

3) Pressure = $18\ N/m^2$
Area = $20\ m^2$

4) Pressure = $60\ N/m^2$
Area = $10\ m^2$

5) Pressure = $60\ N/m^2$
Area = $20\ m^2$

6) Pressure = $60\ N/m^2$
Area = $60\ m^2$

7) Pressure = $20\ N/m^2$
Area = $30\ m^2$

8) Pressure = $40\ N/m^2$
Area = $30\ m^2$

9) Pressure = $70\ N/m^2$
Area = $30\ m^2$

10) Pressure = $60\ N/m^2$
Area = $20\ m^2$

11) Pressure = $60\ N/m^2$
Area = $50\ m^2$

12) Pressure = $60\ N/m^2$
Area = $70\ m^2$

Pressure Force Area - Worksheet

Group C - Area

Work out the area:

1) Force = $200\ N$
Pressure = $10\ N/m^2$

2) Force = $500\ N$
Pressure = $10\ N/m^2$

3) Force = $650\ N$
Pressure = $10\ N/m^2$

4) Force = $400\ N$
Pressure = $20\ N/m^2$

5) Force = $400\ N$
Pressure = $40\ N/m^2$

6) Force = $400\ N$
Pressure = $80\ N/m^2$

7) Force = $300\ N$
Pressure = $25\ N/m^2$

8) Force = $150\ N$
Pressure = $25\ N/m^2$

9) Force = $375\ N$
Pressure = $25\ N/m^2$

10) Force = $900\ N$
Pressure = $30\ N/m^2$

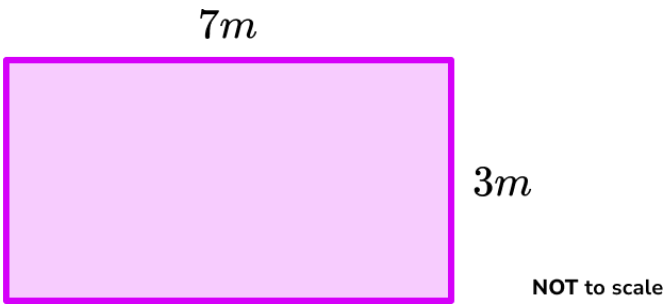
11) Force = $900\ N$
Pressure = $60\ N/m^2$

12) Force = $900\ N$
Pressure = $150\ N/m^2$

Pressure Force Area - Worksheet

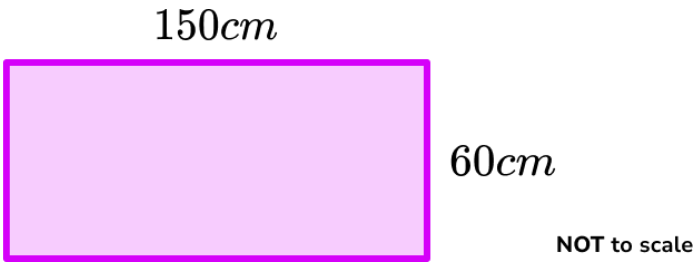
Applied

1) **(a)** Work out the area of the following shape:



(b) A force of $630\ N$ acts on the area. Calculate the pressure.

2) **(a)** Work out the area of the shape below. Give your answer in m^2.



(b) A pressure of $200\ N/m^2$ is exerted onto the area. Calculate the force.

3) **(a)** An area of $50m^2$ has a pressure of $20\ N/m^2$ exerted upon it. Calculate the force.

(b) The area and the pressure are both doubled. What happens to the force?

4) **(a)** An area of $20m^2$ has a force of $800\ N$ acting upon it. Calculate the pressure.

(b) The area and the force both increase by 10%. What happens to the pressure?

Pressure Force Area - Exam Questions

1) Work out the force when the pressure is 80 N/m^2 and the area is 16 m^2. Circle your answer.

96 N 1280 N 5 N 0.2 N

(1 mark)

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2) Work out the area when a force of 4500 Newtons results in a pressure of 90 N/m^2.

.....m^2

(2 marks)

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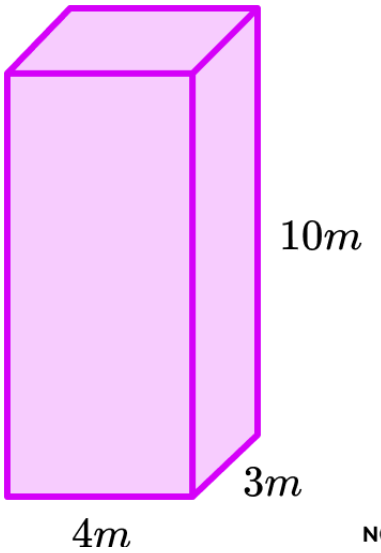
3) A block is resting on the floor.
The downward force of the block is 4800 N.



NOT to scale

Calculate the pressure.

.....N/m^2

(3 marks)

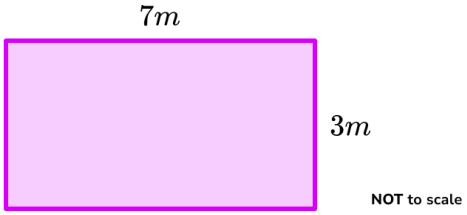
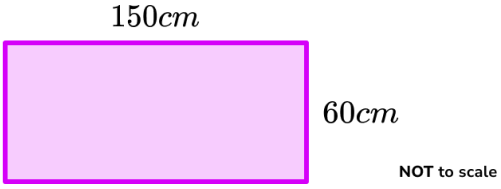
Pressure Force Area - Answers

	Question	Answer
	Skill Questions	
Group A	Work out the pressure: **1)** Force = $100\ N$, Area = $20\ m^2$ **2)** Force = $300\ N$, Area = $20\ m^2$ **3)** Force = $600\ N$, Area = $20\ m^2$ **4)** Force = $120\ N$, Area = $10\ m^2$ **5)** Force = $120\ N$, Area = $30\ m^2$ **6)** Force = $120\ N$, Area = $40\ m^2$ **7)** Force = $400\ N$, Area = $40\ m^2$ **8)** Force = $800\ N$, Area = $40\ m^2$ **9)** Force = $1000\ N$, Area = $40\ m^2$ **10)** Force = $600\ N$, Area = $30\ m^2$ **11)** Force = $600\ N$, Area = $40\ m^2$ **12)** Force = $600\ N$, Area = $120\ m^2$	 **1)** $5\ N/m^2$ **2)** $15\ N/m^2$ **3)** $30\ N/m^2$ **4)** $12\ N/m^2$ **5)** $4\ N/m^2$ **6)** $3\ N/m^2$ **7)** $10\ N/m^2$ **8)** $20\ N/m^2$ **9)** $25\ N/m^2$ **10)** $20\ N/m^2$ **11)** $15\ N/m^2$ **12)** $5\ N/m^2$
Group B	Work out the force: **1)** Pressure = $10\ N/m^2$, Area = $20\ m^2$ **2)** Pressure = $12\ N/m^2$, Area = $20\ m^2$ **3)** Pressure = $18\ N/m^2$, Area = $20\ m^2$ **4)** Pressure = $60\ N/m^2$, Area = $10\ m^2$ **5)** Pressure = $60\ N/m^2$, Area = $20\ m^2$ **6)** Pressure = $60\ N/m^2$, Area = $60\ m^2$ **7)** Pressure = $20\ N/m^2$, Area = $30\ m^2$ **8)** Pressure = $40\ N/m^2$, Area = $30\ m^2$ **9)** Pressure = $70\ N/m^2$, Area = $30\ m^2$ **10)** Pressure = $60\ N/m^2$, Area = $20\ m^2$ **11)** Pressure = $60\ N/m^2$, Area = $50\ m^2$ **12)** Pressure = $60\ N/m^2$, Area = $70\ m^2$	 **1)** $200\ N$ **2)** $240\ N$ **3)** $360\ N$ **4)** $600\ N$ **5)** $1200\ N$ **6)** $3600\ N$ **7)** $600\ N$ **8)** $1200\ N$ **9)** $2100\ N$ **10)** $1200\ N$ **11)** $3000\ N$ **12)** $4200\ N$

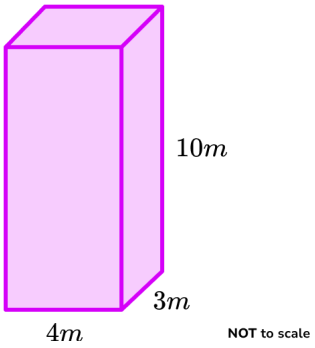
Pressure Force Area - Answers

Group C	Work out the area:	
	1) Force = $200\ N$, Pressure = $10\ N/m^2$	**1)** $20\ m^2$
	2) Force = $500\ N$, Pressure = $10\ N/m^2$	**2)** $50\ m^2$
	3) Force = $650\ N$, Pressure = $10\ N/m^2$	**3)** $65\ m^2$
	4) Force = $400\ N$, Pressure = $20\ N/m^2$	**4)** $20\ m^2$
	5) Force = $400\ N$, Pressure = $40\ N/m^2$	**5)** $10\ m^2$
	6) Force = $400\ N$, Pressure = $80\ N/m^2$	**6)** $5\ m^2$
	7) Force = $300\ N$, Pressure = $25\ N/m^2$	**7)** $12\ m^2$
	8) Force = $150\ N$, Pressure = $25\ N/m^2$	**8)** $6\ m^2$
	9) Force = $375\ N$, Pressure = $25\ N/m^2$	**9)** $15\ m^2$
	10) Force = $900\ N$, Pressure = $30\ N/m^2$	**10)** $30\ m^2$
	11) Force = $900\ N$, Pressure = $60\ N/m^2$	**11)** $15\ m^2$
	12) Force = $900\ N$, Pressure = $150\ N/m^2$	**12)** $6\ m^2$

Pressure Force Area - Answers

	Question	Answer
	Applied Questions	
1)	**a)** Work out the area of the following shape:  **b)** A force of $630\ N$ is exerted onto the area. Calculate the pressure.	**a)** $Area = 21\ m^2$ **b)** $Pressure = 30\ N/m^2$
2)	**a)** Work out the area of the shape below. Give your answer in m^2.  A pressure of $200\ N/m^2$ is exerted onto the area. **b)** Calculate the force.	**a)** $Area = 0.9\ m^2$ **b)** $Force = 180\ N$
3)	**a)** An area of $50m^2$ has a pressure of $20\ N/m^2$ exerted upon it. Calculate the force.	**a)** $Force = 20 \times 50 = 1000\ N$
	b) The area and the pressure are both doubled. What happens to the force?	**b)** $Force = 40 \times 100 = 4000\ N$ The force is 4 times larger.
4)	**a)** An area of $20m^2$ has a force of $800\ N$ acting upon it. Calculate the pressure.	**a)** $Pressure = \frac{800}{20} = 40\ N/m^2$
	b) The area and the force both increase by 10%. What happens to the pressure?	**b)** $Pressure = \frac{880}{22} = 40\ N/m^2$ The pressure has stayed the same

Pressure Force Area - Answers

	Question	Answer	
	Exam Questions		
1)	Work out the force when the pressure is 80 N/m^2 and the area is 16 m^2. Circle your answer. 96 N 1280 N 5 N 0.2 N	1280 N	(1)
2)	Work out the area when a force of 4500 Newtons results in a pressure of 90 N/m^2.	$Area = 4500 \div 90$ $= 50\ m^2$	(1) (1)
3)	A block is resting on the floor. The downward force of the block is 4800 N.  Calculate the pressure.	$Area = 4 \times 3 = 12$ $Pressure = 4800 \div 12$ $= 400\ N/m^2$	(1) (1) (1)