3.6 Pressure, Moments and Simple Machines: Test Pack

Calculator allowed · about 15 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Quickfire: circle the correct letter for each question.

(a) The unit of pressure is the pascal, which is equivalent to: **(1)**

- [ ] A) N
- [ ] B) N/m2
- [ ] C) kg/m3
- [ ] D) N times m

(b) A fixed force is spread over a larger area. What happens to the pressure? **(1)**

- [ ] A) it increases
- [ ] B) it decreases
- [ ] C) it stays the same
- [ ] D) it becomes zero

(c) The moment of a force about a pivot is defined as: **(1)**

- [ ] A) force x perpendicular distance from the pivot
- [ ] B) force divided by distance
- [ ] C) force x time taken
- [ ] D) mass x distance from the pivot

(d) Which of these is an example of a lever? **(1)**

- [ ] A) a pair of scissors
- [ ] B) a torch battery
- [ ] C) a glass of water
- [ ] D) a thermometer

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2 Name three everyday tools, other than a spanner or a crowbar, that work as levers.

(3)

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3 A sealed can of deodorant contains gas at high pressure. If the can is heated (for example, left near a radiator), the pressure inside increases and the can can even explode. Explain why heating the gas increases the pressure inside the sealed can.

(3)

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4 State the equation for the moment of a force, and state its unit.

(2)

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Mark scheme · 3.6 Pressure, Moments and Simple Machines: Test Pack

Question 1

(a) B (N/m2) cao **B1**

(a) Answer: **B) N/m2**

(b) B (it decreases) cao **B1**

(b) Answer: **B) it decreases**

(c) A cao **B1**

(c) Answer: **A) force x perpendicular distance from the pivot**

(d) A (scissors) cao **B1**

(d) Answer: **A) a pair of scissors**

Question 2

any one of: scissors, wheelbarrow, bottle opener, nutcracker, tweezers, a pair of pliers, a broom, a fishing rod, a see-saw, or any other tool that works as a lever (e.g. claw hammer, nail clippers, tin opener, stapler) **B1**

a second correct example, from the list above or any other correct lever **B1**

a third correct example, from the list above or any other correct lever **B1**

Answer: **Any three of: scissors, wheelbarrow, bottle opener, nutcracker, tweezers, pliers, a broom, a fishing rod, a see-saw, or any other correct lever.**

Question 3

heating the gas gives its particles more energy, so they move faster (on average) **B1**

the faster particles collide with the inside walls of the can more often and with greater force **B1**

more frequent, harder collisions with the walls increase the pressure inside the can, oe **B1**

Answer: **Heating the gas increases the average speed of its particles, so they collide with the inside walls of the can more often and with greater force, which increases the pressure inside the sealed can.**

Question 4

moment = force x perpendicular distance from the pivot, oe **B1**

unit: newton metres (Nm), cao **B1**

Answer: **moment = force x perpendicular distance from the pivot, measured in newton metres (Nm).**

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