

## **Mechanical Systems**

### **Topic 4 - Force, Pressure, and Area Practice Quiz**

1. To calculate pressure the formula used is  $P = F / A$ . Units of pressure are ...  
**joules**  
  
**kilojoules**  
  
**pascals**  
  
**kilograms**
  
2. The heel of a stiletto shoe can exert a lot of pressure. If the area of the heel is  $0.5\text{cm}^2$  and a force of  $200\text{N}$  is exerted using the heel, what is the pressure exerted by the heel?  
**10 Pa**  
  
**200 Pa**  
  
**400 Pa**  
  
**1000 Pa**
  
3. Crash test dummies are used to test safety in vehicles. The main reason for this is because they are ....  
**inexpensive to use**  
  
**realistic**  
  
**easily repaired**  
  
**non-living**

4. Pascal's law states that ...

**pressure exerted on a contained fluid is transmitted equally in all directions**

**pneumatics exerted on a contained fluid is transmitted equally in all directions**

**force exerted on a contained fluid is transmitted equally in all directions**

**hydraulics exerted on a contained fluid is transmitted equally in all directions**

5. A cherry picker uses hydraulics to raise a working platform. 10N of force are applied to the small piston in the hydraulic system to raise a load of 50N (on the large piston) a distance of 0.5m. How far would the small piston have to be pushed to accomplish this task?

**5 m**

**2.5 m**

**0.5 m**

**25 m**

**Check your**  
**Answers**

## **Mechanical Systems**

### **Topic 4 - Force, Pressure, and Area Practice Quiz**

1. To calculate pressure the formula used is  $P = F / A$ . Units of pressure are ...  
**joules**  
  
**kilojoules**  
  
**pascals**  
  
**kilograms**
  
2. The heel of a stiletto shoe can exert a lot of pressure. If the area of the heel is  $0.5\text{cm}^2$  and a force of  $200\text{N}$  is exerted using the heel, what is the pressure exerted by the heel?  
**10 Pa**  
  
**200 Pa**  
  
**400 Pa**  
  
**1000 Pa**
  
3. Crash test dummies are used to test safety in vehicles. The main reason for this is because they are ....  
**inexpensive to use**  
  
**realistic**  
  
**easily repaired**  
  
**non-living**

4. Pascal's law states that ...

**pressure exerted on a contained fluid is transmitted equally in all directions**

**pneumatics exerted on a contained fluid is transmitted equally in all directions**

**force exerted on a contained fluid is transmitted equally in all directions**

**hydraulics exerted on a contained fluid is transmitted equally in all directions**

5. A cherry picker uses hydraulics to raise a working platform. 10N of force are applied to the small piston in the hydraulic system to raise a load of 50N (on the large piston) a distance of 0.5m. How far would the small piston have to be pushed to accomplish this task?

**5 m**

**2.5 m**

**0.5 m**

**25 m**