

# Turning effect of force

# Assignment

# Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ( ) Class: \_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_

# Section A: MCQ

# What is the SI unit for moment of force?

# A Newton

# B Kilogram

# C Newton metre

# D Newton centimeter ( )

# What are the factors that affect moment of force when you pull a door?

# I Magnitude of force

# II The size of the door knob

# III The distance you are standing from the door

# IV Distance of the force applied from the pivot

# A I, II, III

# B I, IV

# C II, III

# D All of the above ( )

# Moment of force is a vector. What do you think is the meaning of a vector?

# A Magnitude and weight

# B Weight and distance from pivot

# C Magnitude and direction

# D Resultant moment ( )

# What is the moment of force exerted on weight A?

# 

D- 18cm

C- 10cm

B

Weight A= 7N

# A C= 0.7N m

# B B= 0.56N m

# C C= 1.96N m

# D B= 1.96N m ( )

# What is the definition of equilibrium?

# A Force acting on both sides are equal

# B Distance between both objects from each other is different

# C Resultant force is zero

# D None of the above ( )

# Section B: Structured Questions

# Answer all the questions in this section in the spaces provided.

# 1a. Why is it easier to open the lid with a spoon than a coin?

# 1b. State 1 reason how does two objects of different weight balanced on a beam? Why is it so?

# 

# 2.

# 

P

0.3m

1.8m

# 

Figure 1

# Spring S

# Figure 1 shows a type of diving board used at swimming pools. The board is pivoted at P. A boy of weight 640N stands directly above the point 1.8m from P as shown. A spring S holds the diving board in a horizontal position.

# Assuming that the distance between the spring S and the point P is 0.3m; explain and calculate the force exerted by the spring to balance the weight of the boy.

# 

# Answers:

# MCQ-

# C

# B

# C

# D

# A

# Section B: Structured Questions

# 1a. A spoon is longer than a coin, thus, it would be further away from the lid of the container, which is the pivot, therefore, lesser force would be used when you open the lid of a container with a spoon than a coin.

# 1b. They are of equal force acting on the beam. When they are of equal force acting on the beam, the sum of clockwise moments would be the same as the sum of an anti-clockwise moment about the pivot, thus, they would balance on the beam to form equilibrium.

# 2. The moment of the weight of the boy about P is clockwise. The moment of the force exerted by spring S about P is therefore anticlockwise. Thus, the force exerted by S is acting downward.

# Clockwise moment of the weight of the boy about P is weight x perpendicular distance from P

# = 640 x 1.8

# = 1152N m

# Taking moments about P, anti-clockwise moment by S= Clockwise moment of boy’s weight

# i.e. force exerted by S x 0.3m = 1152N m

# Force exerted by S= 1152/0.3

# = 3840N