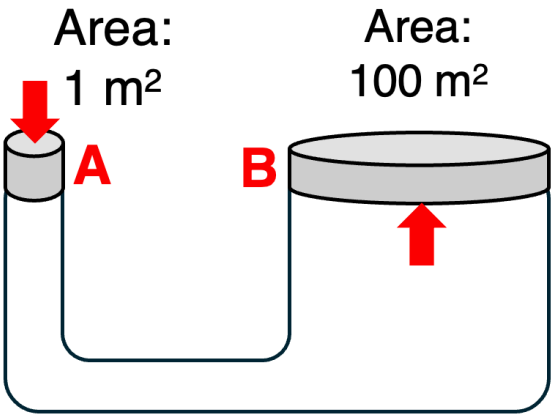
Pascal's Principle

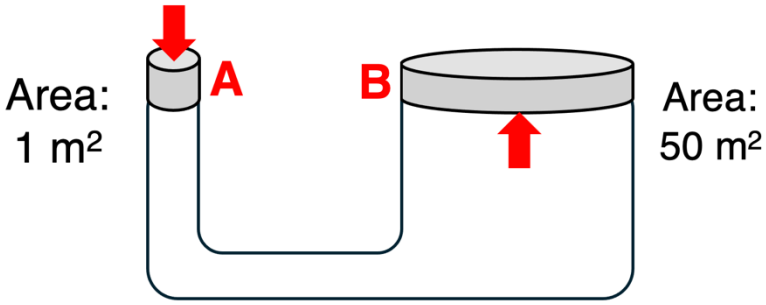
Activity 1: Paragraph Completion
Question Group 1
Question 1

Pascal's principle states that _____ pressure applied to a(n) _____ fluid is transmitted to _____. This principle forms the basis of a(n) _____ lift as shown.

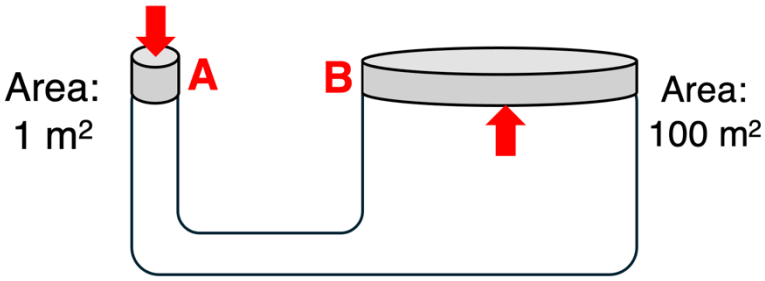


If a pressure of 1000 N/m^2 is applied to Piston A, then the pressure at Piston B would be _____ N/m^2. If a downward force of **F** is exerted on Piston A, then the resulting upward force exerted by Piston B would be _____. This illustrates the value of this device – the force is _____ such that a force at A can lift a _____.

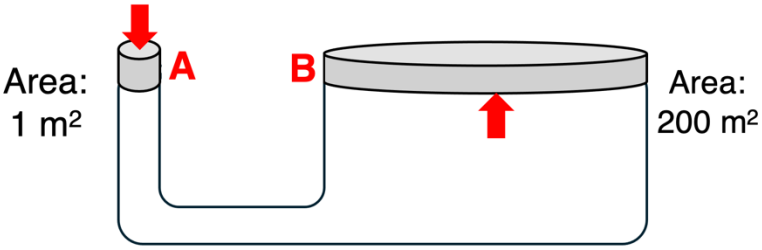
Activity 2: The Hydraulic Lift
Question Group 2
Question 2
A 200-Newton weight is placed on top of piston A. How much weight, positioned at piston B, can this 200-Newton weight support?



Question 3
A 400-Newton weight is placed on top of piston A. How much weight, positioned at piston B, can this 400-Newton weight support?



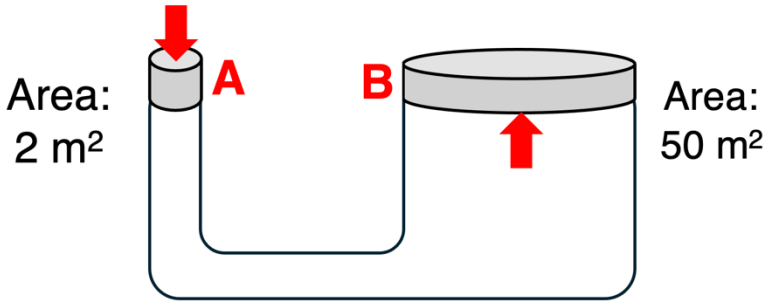
Question 4
A 500-Newton weight is placed on top of piston A. How much weight, positioned at piston B, can this 500-Newton weight support?



Question Group 3

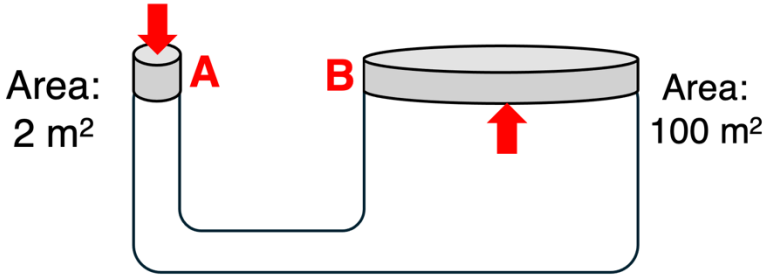
Question 5

A 200-Newton weight is placed on top of piston A. How much weight, positioned at piston B, can this 200-Newton weight support?



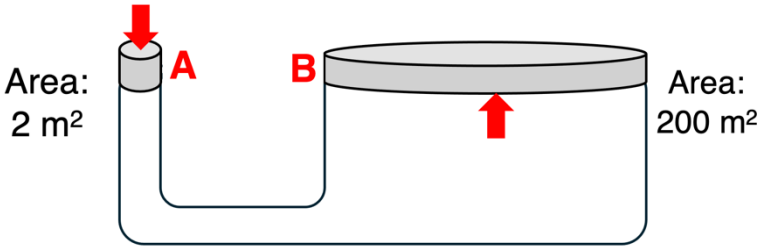
Question 6

A 400-Newton weight is placed on top of piston A. How much weight, positioned at piston B, can this 400-Newton weight support?



Question 7

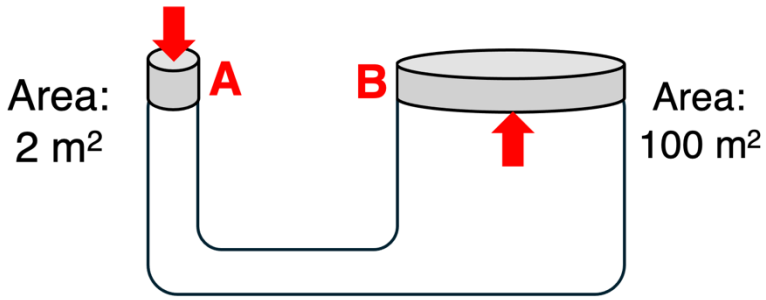
A 500-Newton weight is placed on top of piston A. How much weight, positioned at piston B, can this 500-Newton weight support?



Question Group 4

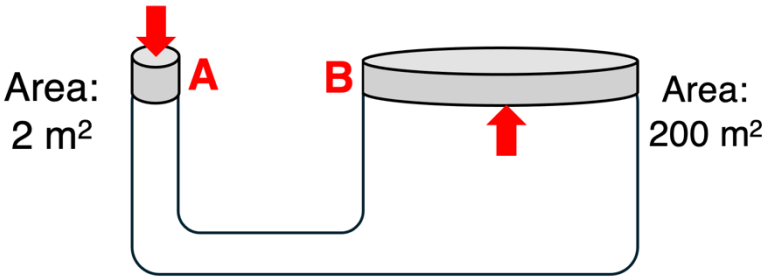
Question 8

A 200-Newton weight is placed on top of piston A. How much weight, positioned at piston B, can this 200-Newton weight support?



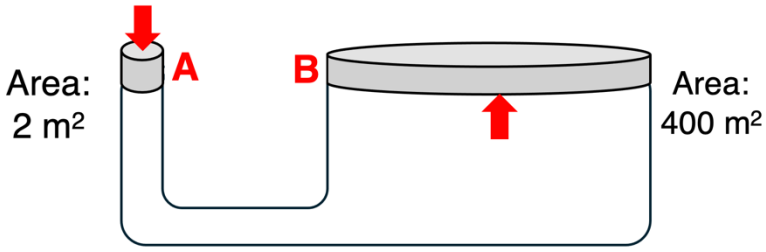
Question 9

A 400-Newton weight is placed on top of piston A. How much weight, positioned at piston B, can this 400-Newton weight support?



Question 10

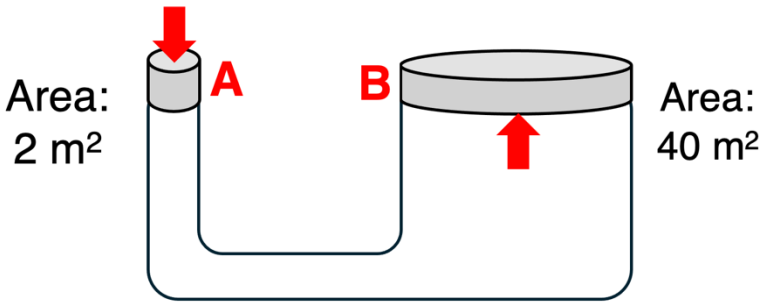
A 500-Newton weight is placed on top of piston A. How much weight, positioned at piston B, can this 500-Newton weight support?



Question Group 5

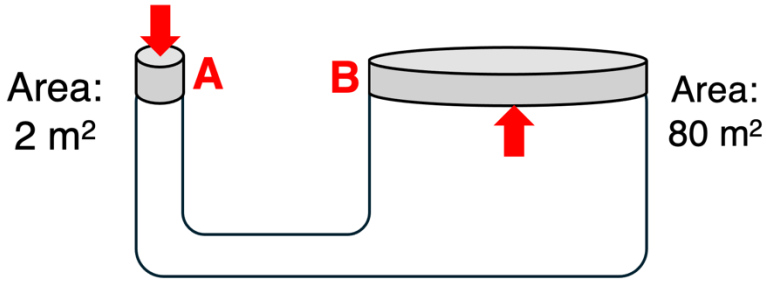
Question 11

A 200-Newton weight is placed on top of piston A. How much weight, positioned at piston B, can this 200-Newton weight support?



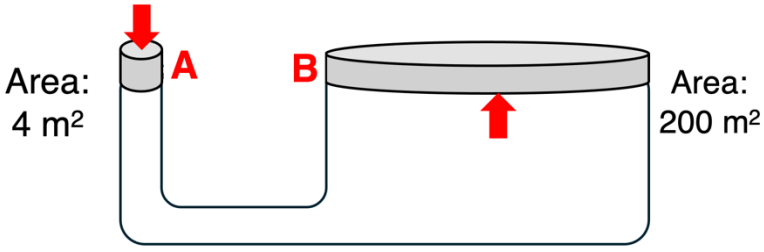
Question 12

A 400-Newton weight is placed on top of piston A. How much weight, positioned at piston B, can this 400-Newton weight support?



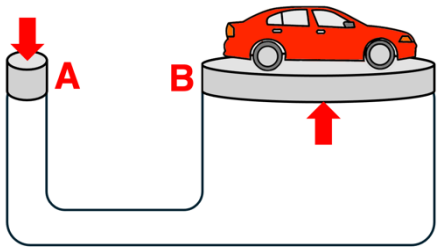
Question 13

A 500-Newton weight is placed on top of piston A. How much weight, positioned at piston B, can this 500-Newton weight support?



Activity 3: Thinking Proportionally
Question Group 6
Question 14

A hydraulic lift is used to raise a car. The area of piston B is 10 times the area of piston A. A downward force of F_A is exerted on piston A resulting in a pressure of P_A. The fluid at piston A is displaced downward a distance of d_A. As a result there is an upward force of F_B on piston B, resulting in a pressure of P_B that raises the car upward a distance of d_B.

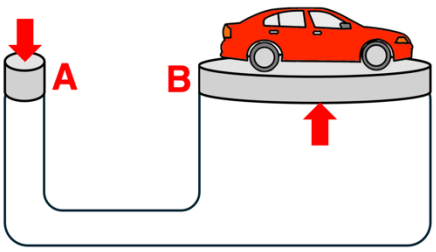


Area @ B = 10 x Area @ A

The value of F_B is _____ F_A.
The value of P_B is _____ P_A.
The value of d_B is _____ d_A.

Question 15

A hydraulic lift is used to raise a car. The area of piston B is 20 times the area of piston A. A downward force of F_A is exerted on piston A resulting in a pressure of P_A. The fluid at piston A is displaced downward a distance of d_A. As a result there is an upward force of F_B on piston B, resulting in a pressure of P_B that raises the car upward a distance of d_B.

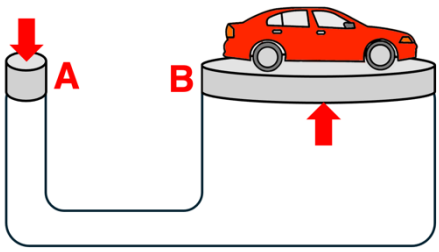


Area @ B = 20 x Area @ A

The value of F_B is _____ F_A.
The value of P_B is _____ P_A.
The value of d_B is _____ d_A.

Question 16

A hydraulic lift is used to raise a car. The area of piston B is 30 times the area of piston A. A downward force of F_A is exerted on piston A resulting in a pressure of P_A. The fluid at piston A is displaced downward a distance of d_A. As a result there is an upward force of F_B on piston B, resulting in a pressure of P_B that raises the car upward a distance of d_B.



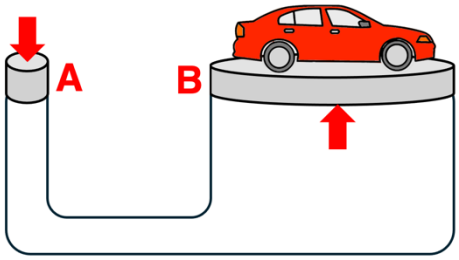
Area @ B = 30 x Area @ A

The value of F_B is _____ F_A.
The value of P_B is _____ P_A.
The value of d_B is _____ d_A.

Question Group 7

Question 17

A hydraulic lift is used to raise a car. The area of piston B is 5 times the area of piston A. A downward force of F_A is exerted on piston A resulting in a pressure of P_A. The fluid at piston A is displaced downward a distance of d_A. As a result there is an upward force of F_B on piston B, resulting in a pressure of P_B that raises the car upward a distance of d_B.

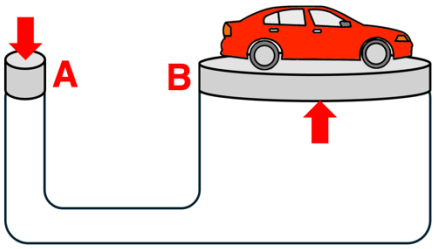


Area @ B = 5 x Area @ A

The value of F_B is _____ F_A.
The value of P_B is _____ P_A.
The value of d_B is _____ d_A.

Question 18

A hydraulic lift is used to raise a car. The area of piston B is 15 times the area of piston A. A downward force of F_A is exerted on piston A resulting in a pressure of P_A. The fluid at piston A is displaced downward a distance of d_A. As a result there is an upward force of F_B on piston B, resulting in a pressure of P_B that raises the car upward a distance of d_B.

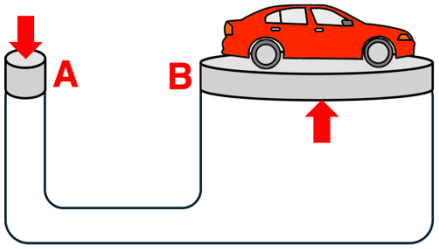


Area @ B = 15 x Area @ A

The value of F_B is _____ F_A.
The value of P_B is _____ P_A.
The value of d_B is _____ d_A.

Question 19

A hydraulic lift is used to raise a car. The area of piston B is 25 times the area of piston A. A downward force of F_A is exerted on piston A resulting in a pressure of P_A. The fluid at piston A is displaced downward a distance of d_A. As a result there is an upward force of F_B on piston B, resulting in a pressure of P_B that raises the car upward a distance of d_B.



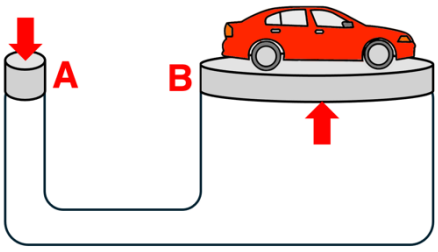
Area @ B = 25 x Area @ A

The value of F_B is _____ F_A.
The value of P_B is _____ P_A.
The value of d_B is _____ d_A.

Question Group 8

Question 20

A hydraulic lift is used to raise a car. The area of piston B is 40 times the area of piston A. A downward force of F_A is exerted on piston A resulting in a pressure of P_A. The fluid at piston A is displaced downward a distance of d_A. As a result there is an upward force of F_B on piston B, resulting in a pressure of P_B that raises the car upward a distance of d_B.

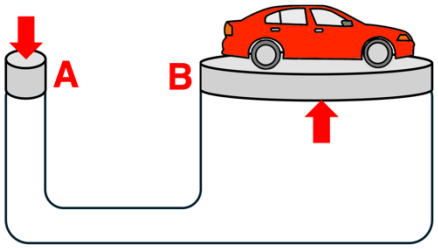


Area @ B = 40 x Area @ A

The value of F_B is _____ F_A.
The value of P_B is _____ P_A.
The value of d_B is _____ d_A.

Question 21

A hydraulic lift is used to raise a car. The area of piston B is 50 times the area of piston A. A downward force of F_A is exerted on piston A resulting in a pressure of P_A. The fluid at piston A is displaced downward a distance of d_A. As a result there is an upward force of F_B on piston B, resulting in a pressure of P_B that raises the car upward a distance of d_B.

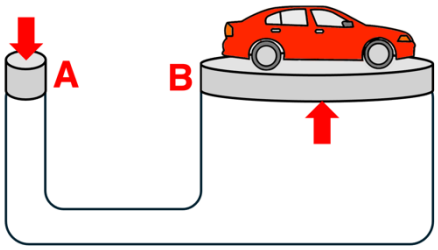


Area @ B = 50 x Area @ A

The value of F_B is _____ F_A.
The value of P_B is _____ P_A.
The value of d_B is _____ d_A.

Question 22

A hydraulic lift is used to raise a car. The area of piston B is 60 times the area of piston A. A downward force of F_A is exerted on piston A resulting in a pressure of P_A. The fluid at piston A is displaced downward a distance of d_A. As a result there is an upward force of F_B on piston B, resulting in a pressure of P_B that raises the car upward a distance of d_B.



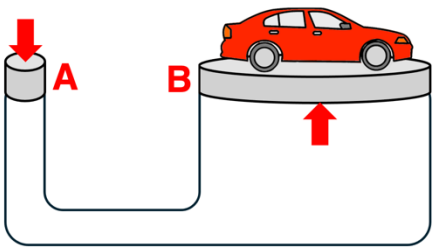
Area @ B = 60 x Area @ A

The value of F_B is _____ F_A.
The value of P_B is _____ P_A.
The value of d_B is _____ d_A.

Question Group 9

Question 23

A hydraulic lift is used to raise a car. The area of piston B is 80 times the area of piston A. A downward force of F_A is exerted on piston A resulting in a pressure of P_A. The fluid at piston A is displaced downward a distance of d_A. As a result there is an upward force of F_B on piston B, resulting in a pressure of P_B that raises the car upward a distance of d_B.

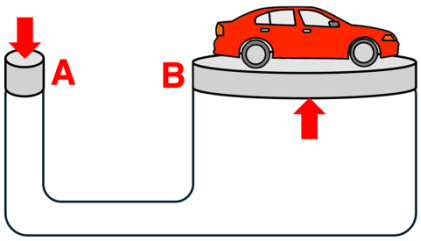


Area @ B = 80 x Area @ A

The value of F_B is _____ F_A.
The value of P_B is _____ P_A.
The value of d_B is _____ d_A.

Question 24

A hydraulic lift is used to raise a car. The area of piston B is 100 times the area of piston A. A downward force of F_A is exerted on piston A resulting in a pressure of P_A. The fluid at piston A is displaced downward a distance of d_A. As a result there is an upward force of F_B on piston B, resulting in a pressure of P_B that raises the car upward a distance of d_B.

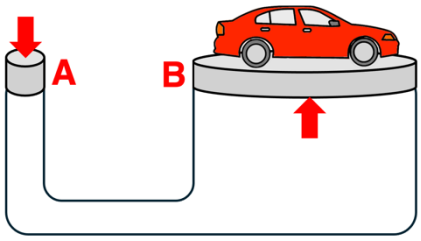


Area @ B = 100 x Area @ A

The value of F_B is _____ F_A.
The value of P_B is _____ P_A.
The value of d_B is _____ d_A.

Question 25

A hydraulic lift is used to raise a car. The area of piston B is 120 times the area of piston A. A downward force of F_A is exerted on piston A resulting in a pressure of P_A. The fluid at piston A is displaced downward a distance of d_A. As a result there is an upward force of F_B on piston B, resulting in a pressure of P_B that raises the car upward a distance of d_B.



Area @ B = 120 x Area @ A

The value of F_B is _____ F_A.
The value of P_B is _____ P_A.
The value of d_B is _____ d_A.