

MechanicalAptitudeTest.org

FREE MECHANICAL
Aptitude Test
QUESTIONS

A free mechanical aptitude test eBook to help
you pass your next mechanical aptitude test!

HOW TO USE THIS EBOOK

Congratulations, you just took the first step in successfully passing your next mechanical aptitude test! Don't give up now, be sure to complete each example to the best of your abilities.

Welcome to our free mechanical aptitude test questions eBook. In this eBook we will cover some common questions you might encounter in any mechanical aptitude test.

In this free eBook we will cover:

- Levers
- Maps
- Pulleys
- Electrical Circuits
- Gears
- Springs
- Tools

It's important to note that these questions are generic questions; questions that you will encounter on any type of mechanical aptitude test. Depending on the field of your test, there will be terms and specific questions pertaining to it. For example, if you are taking a mechanical aptitude test in the electrical trade, you can expect tools and electrical circuits specific to the electrical trade.

We at Mechanicalaptitudetest.org hope you get great success from your future career.

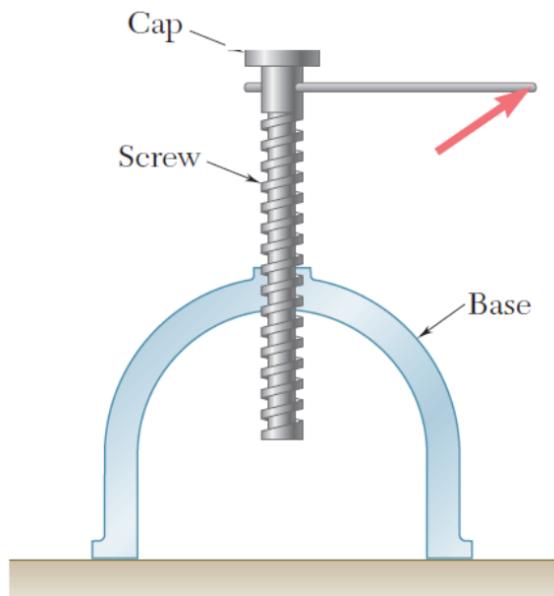
Steve Simon

Steve Simon

QUESTION #1 – SCREWS

The screw shown has an overall length of 0.25 m, it's made of 250 revolutions, what is the pitch of this screw?

- A) 1 cm
- B) 1 mm
- C) 10 cm



The correct answer is....

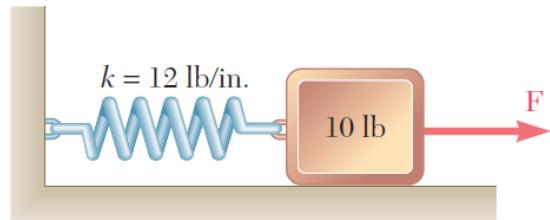
B

The pitch of any screw is defined as the length divided by the number of revolutions within that length, that equals to $250 \text{ mm} / 250 \text{ revolutions} = 1 \text{ mm pitch}$.

QUESTION #2 – SPRINGS

What is the force needed to move the mass 2 inches to the right as shown in figure? Neglect friction.

- A) 24 pounds
- B) 34 pounds
- C) 10 pounds



The correct answer is....

A

The force of the spring is equal to the constant of the spring times the displacement, which equals to $12 * 2 = 24$ pounds.

QUESTION #3 – TOOLS

What is the main similarity in the working principle of these three tools?



- A) All of them depend mainly on friction.
- B) All of them work as a lever.
- C) All of them must be made of steel.



The correct answer is....

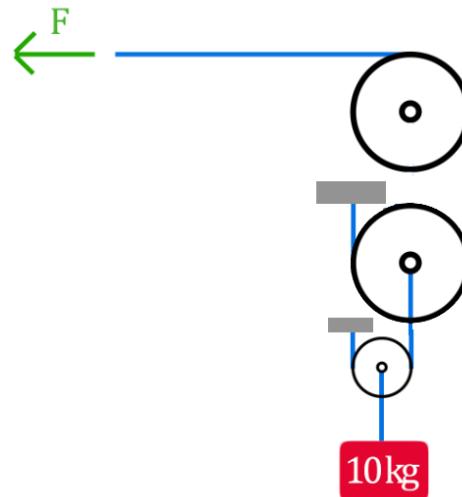
B

All these tools work as a lever. As for the hammer, it uses the claw to extract a nail from the wood, and this job utilizes a lever to do that.

QUESTION #4 – PULLEYS

The force required to keep this system at rest is equal to:

- A) 5 kg
- B) 2.5 kg
- C) 1.25 kg



The correct answer is....

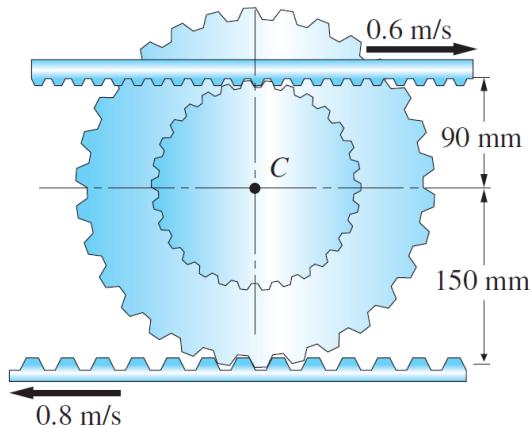
B

Each of the two pulleys right above the block reduces the load by 50%, so the two of them will decrease the load by 25%.

QUESTION #5 – GEARS

The composite gear shown is put between two moving racks, what is the direction linear motion of the center C?

- A) Will move right
- B) Will move left
- C) Will remain stationary



The correct answer is....

A

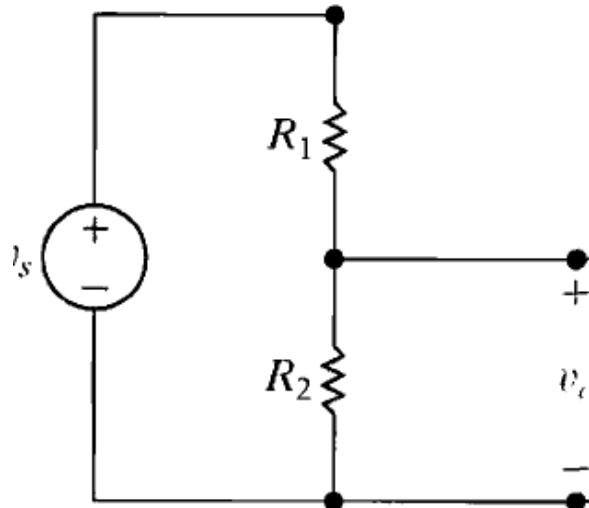
Direction of motion is directly related to the speed of the rack, and inversely related to the distance of that rack from the center, so if we divide each speed by the radius, we get a number that represents the strength of effect of that rack on the center.

For top rack: $0.6/0.09 = 6.667$, for bottom rack: $0.8/0.15 = 5.33$, so the center moves with the top rack (to the right).

QUESTION #6 – ELECTRICAL CIRCUITS

The circuit shown in the figure consists of two resistors and a power supply. Suppose that we increase the value of resistance of R_1 . What would happen to the voltage across R_2 terminals?

- A) Increase
- B) Decrease
- C) Remain the same



The correct answer is....

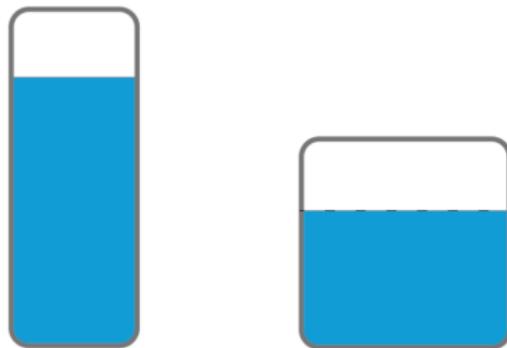
B

According to the voltage divider law, the voltage across R_2 is equal to: $R_2 / (R_1 + R_2)$ times the input voltage. By increasing R_1 we would increase the denominator, thus the voltage value will decrease.

QUESTION #7 – WATER TANKS

The figure shows two different shapes of water tanks, but both of the same capacity. Which of them do you think would deliver higher water pressure at the same elevation?

- A) The skinny, tall one.
- B) The fat, short one.
- C) Both would deliver the same pressure.



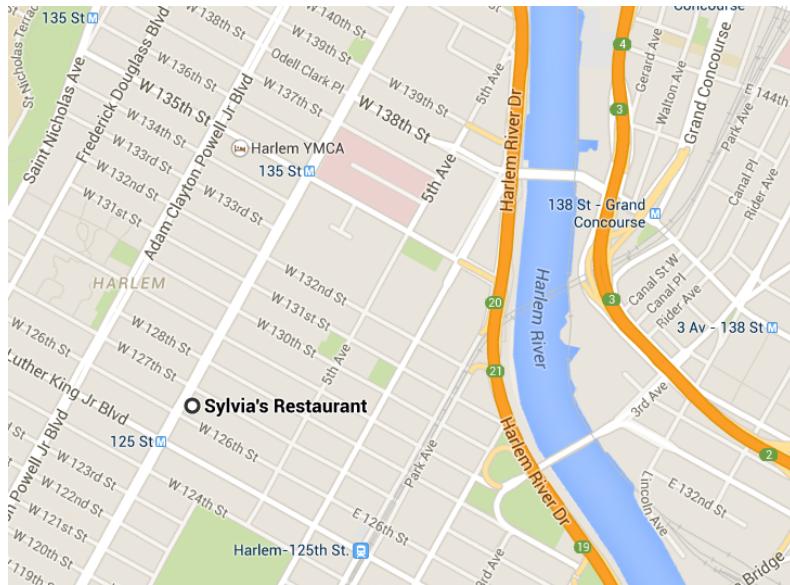
The correct answer is....

A

The pressure of a water container measured at the bottom of it is equal to the product of water density and gravitational acceleration and water height, so the higher of these two tanks will have higher pressure.

QUESTION #8 – MAPS

You're at Sylvia's, 127th St. and Malcolm X Boulevard. You drive north and take your 8th left, then drive to the end of the block. Where are you now?

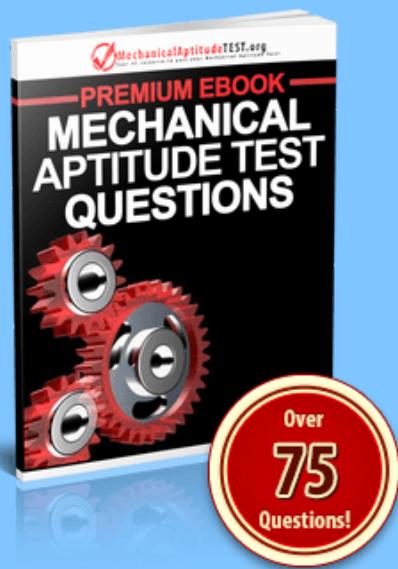


- A) 135th St and Adam Clayton Blvd.
- B) 5th Ave. and 138th St.
- C) 133rd St and Malcolm Blvd.

The correct answer is....

A

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