ASVAB-SECTION-3 Q&As

ASVAB Section Three : Mechanical Comprehension

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QUESTION 1

Work input is always more than work output because of _____.

A. gravity

B. buoyancy

C. friction

D. tension

Correct Answer: C

Efficiency is affected by friction. It is a ratio of how much effort went into a job compared to what was produced or outputted. Therefore, work input is more than the work output. Friction accounts for the loss in efficiency.

QUESTION 2

Which of the following will happen when a mass of air contracts?

A. The air remains at the same temperature

B. The air gets colder

C. The air gets warmer

D. The air moves faster

Correct Answer: B

Air is a gas. According to the gas laws, gasses will get colder when they contract.

QUESTION 3

A way to determine the amount of power being used is to _____.

A. Multiply the amount of work done by the time it takes.

B. Multiply the distance covered by the time it takes to move a load.

C. Divide the amount of work done by 550 pounds per second.

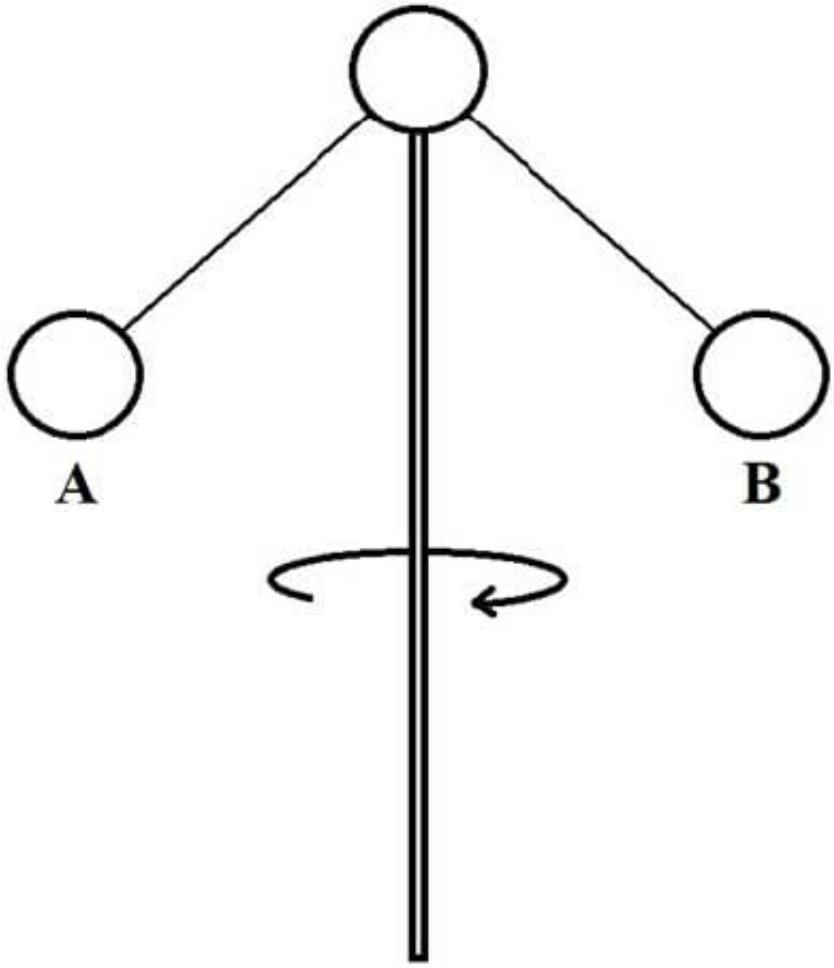
D. Divide the amount of work done by the amount of time it takes.

Correct Answer: D

The formula for determining power is Power = Work ÷ Time.

QUESTION 4

As the central shaft in the illustration below spins faster in a clockwise direction, the balls labeled A and B will _____.



A. move outward and downward

B. move outward and upward

C. move up

D. move down

Correct Answer: B

Centrifugal force from the spinning shaft, regardless of direction, will cause the balls to move outward, away from the shaft; the tension on the strings holding them will result in the balls moving upward.

QUESTION 5

What determines the speed of an output gear?

A. None of these (Gear speed is not capable of alteration.)

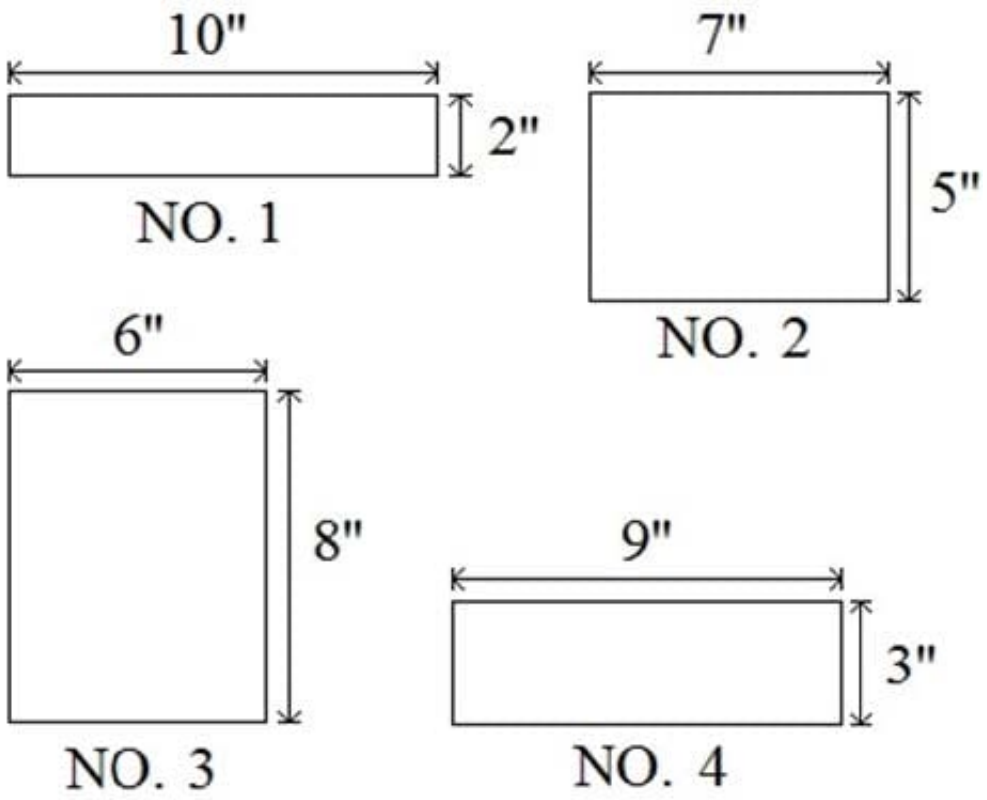
B. The size of gears.

C. The speed of the input gear and the ratio of the number of teeth on each gear.

D. The ratio of companion gears.

Correct Answer: C

QUESTION 6



The bottoms of four boxes are shown above. The boxes all have the same volume.

If postal regulations state that the sides of a box must meet a minimum height, which box is most likely to be too short to go through the mail?

A. NO. 4

B. NO. 2

C. NO. 1

D. NO. 3

Correct Answer: D

The box with the largest area on the bottom will have the shortest sides. If length ?width ?height = volume,

and all the boxes have equal volume, then the sides must be shortest on the box with the largest area on the bottom. Calculate the area of each box bottom: NO. 1 = 20 square inches; NO. 2 = 35 square inches; NO. 3 = 48 square inches; and NO. 4 = 27 square inches.

NO. 3, which has the largest area, will have the shortest sides.

QUESTION 7

Water in an engine can cause damage in winter weather because _____.

A. it can vaporize

B. water expands when it freezes

C. ice is heavier than water

D. cold water creates more steam than warm water

Correct Answer: B

Water expands when it freezes, possibly damaging engine components.

QUESTION 8

Which of the following is not a type of simple machine?

A. Pulley

B. Spring

C. Lever

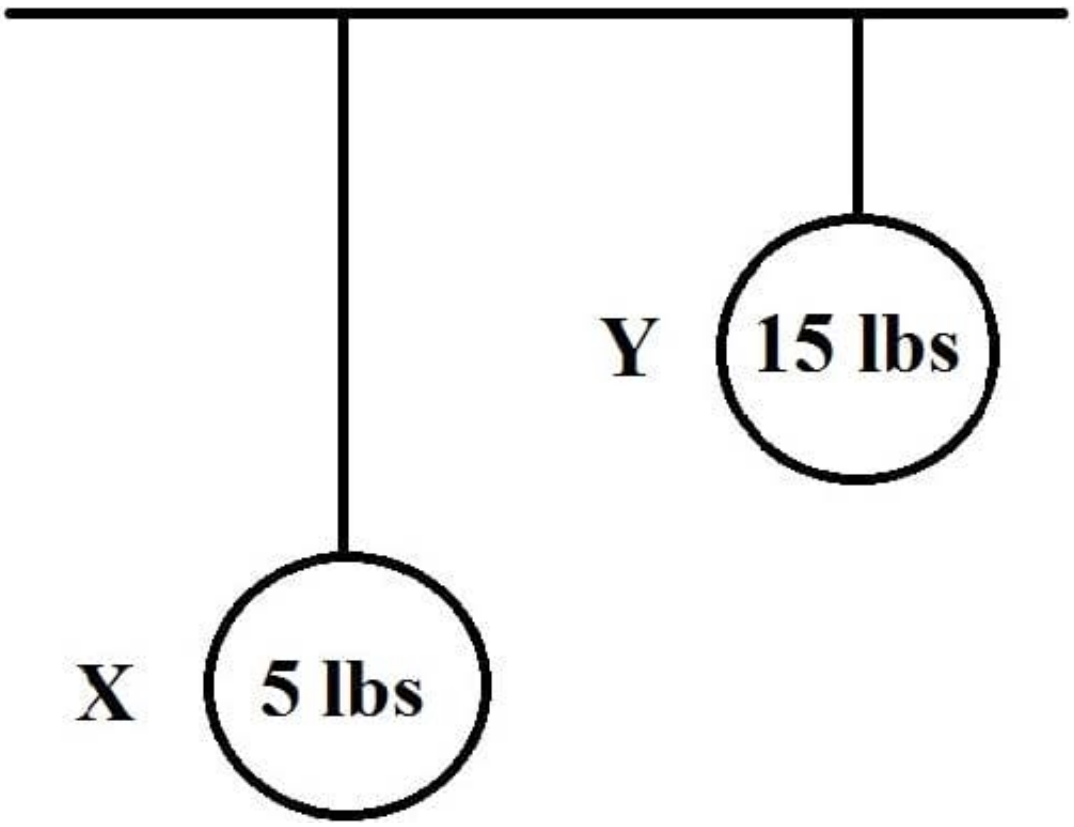
D. Screw

Correct Answer: B

The six types of simple machines are: pulley, lever, screw, wheel and axle, wedge, inclined plane.

QUESTION 9

Which pendulum takes less time to make one complete back-and-forth swing?



B. Y

C. Both take the same amount of time.

D. There is not enough information to calculate the answer.

Correct Answer: B

The length of time it takes for one all back and forth swing depends on the length of the string, not the weight at the end of it.

QUESTION 10

A 130-pound woman is wearing shoes with high heels that measure 1-inch square.

If the woman is standing on one heel, what psi does the heel exert as it rests on the ground? (Disregard atmospheric pressure from your calculations.)

A. 130

B. 65

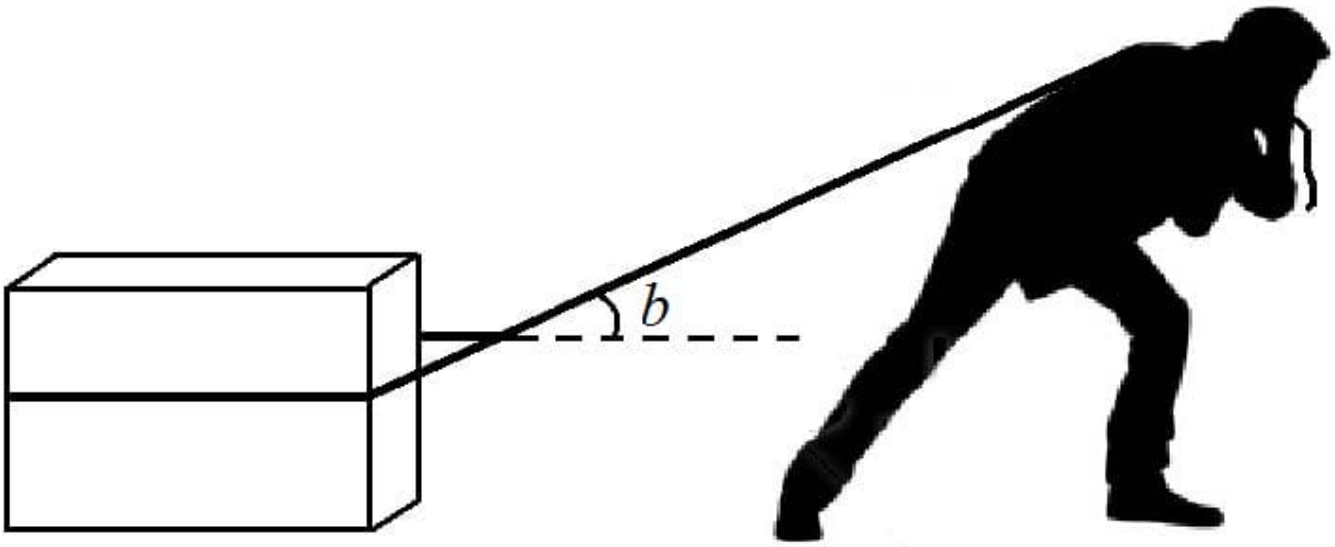
C. 260

D. 11

Correct Answer: A

Power = Force/Area. P = 130/1 = 130.

QUESTION 11



In the figure, the angle b is important, since when it is _____.

A. 0 degrees the entire force is dragging the box

B. 90 degrees the entire force is lifting the box

C. both lifting and dragging between 10 degrees and 90 degrees

D. all of the above

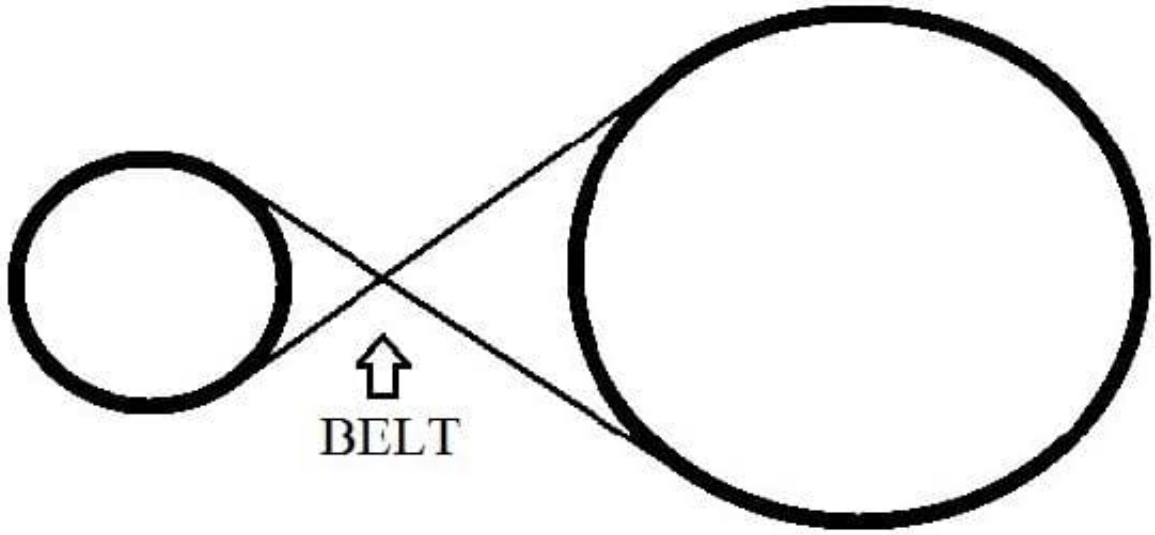
Correct Answer: D

The angle of the rope determines if the box is being pulled along the floor or being lifted from the floor. That means it can be both lifted and pulled along at any angle that is more than 0 degrees and less than 90 degrees.

QUESTION 12

The wheels below are connected by a belt as shown.

If the larger wheel makes two revolutions, how many revolutions will the smaller wheel make?



A. Less than one

B. One

C. Two

D. More than two

Correct Answer: D

We are not told the sizes of the two wheels, but we can see that one is larger than the other.

If the two wheels are connected by a belt, the small wheel will be forced to turn fester and complete more

turns than the larger wheel.

QUESTION 13

What is the definition of a "concurrent force"?

A. A force system requiring concurrent movement.

B. A force system described as having multiple sources of force.

C. A system requiring all systems to pass through the same point.

D. A series of forces requiring simultaneous movement.

Correct Answer: C

QUESTION 14

The force produced when a boxer\\'s hand hits a heavy bag and "bounces" off it is called _____.

A. static electricity

B. magnetism

C. recoil

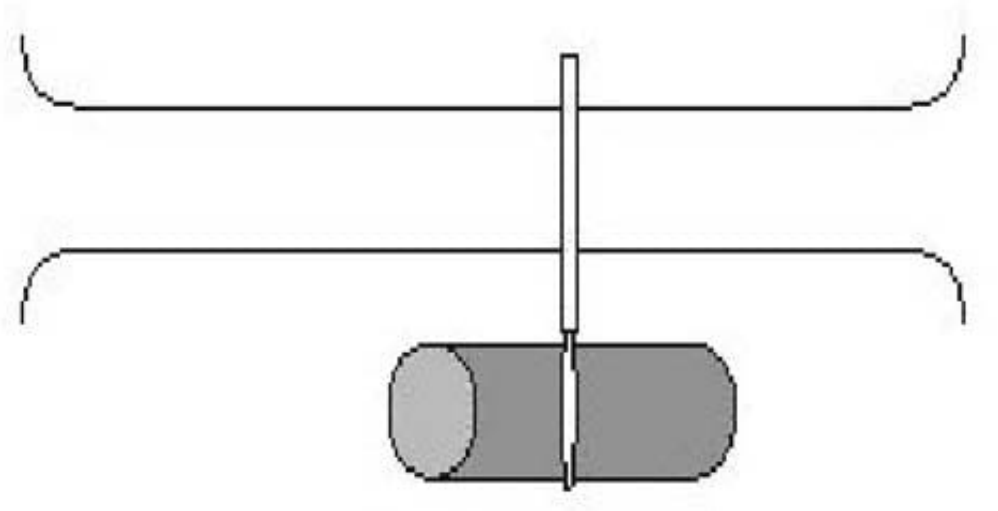
D. gravity

Correct Answer: C

Recoil occurs when an object producing a force is kicked back.

QUESTION 15

If you drag a log across the road, one way to reduce the amount of force needed to pull it would be to _____.



A. use a thicker rope

B. pull harder

C. cross at an angle

D. lubricate the road

Correct Answer: D

If you drag a log across the road, one way to reduce the amount of force needed to pull it would be to lubricate the road.

Two things contribute to the force needed to pull the log across the road: the weight (mass) of the log itself, and the friction between the log and the road.

Lubricating the road will reduce the friction and therefore reduce the force needed to pull the log across the road.

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