STA 416 Chapter 3 Test Review Name: \_\_\_\_\_\_\_\_\_\_\_\_\_

1. Calculate the efficiency of a machine which takes 145 J to produce 68 J of work.
2. Find the efficiency of a lightbulb which wastes 1050 J of the 1200 J that it consumes.

1200 – 1050 = 150 J

1. How much energy per hour is required by a windmill which is 22% efficient if it is to produce 525,000 J of electricity per hour?

2 386 363J

1. Find the speed of a bicycle ***in km/hr and m/s*** which travels 7500 m in 12 min.
2. An inchworm travels at a speed of 0.50 cm/s.
3. How long ***in hours*** will it take to travel 1 km?

200 000 s ÷ 60÷ 60 = 55.5 h

1. How far ***in metres*** will it travel in 1 day? 24 x 60 x 60 = 86 400s

43 200 cm 🡪 432 m

1. a) How much does a 15.0 kg iron bar weigh on Earth?

F = mg = 15.0 x 9.8 = 147 N

1. How much does it weigh on Mars where g = 3.72 m/s2 ?

F = mg = 15.0 x 3.72 = 55.8 N

1. What is the gravity of an unknown planet where the bar weighs 98.7 N?

F = mg g =

1. An astronaut weighs 137.7 N on the moon where g = 1.62 m/s2. How much does the astronaut weigh on Earth?

F = mg = 85 x 9.8 = 833 N

1. Find the mass of all three objects and state which has the greatest mass:
* Object A, which weighs 205 N on Earth.
* Object B, which weighs 74 N on Mars.
* Object C, which weighs 35 N on the moon.
1. How much force much be applied to a small piston of area 0.0025 m2 in order to lift 90000 N using a large piston with area 3.0 m2?

75 N

ALSO STUDY!

Relationship between heat and temperature, Q = ΔEt

Force types: electromagnetic force, strong/weak nuclear forces, resultant forces, equilibrium

Pascal’s Principle: equal pressure everywhere within a closed system

Archimedes’ Principle: buoyant force equals weight of displaced fluid

Bernoulli’s Principle: higher pressure -> lower speed, lower pressure -> higher speed