

Chapter 11.3 and 12 Forces

REVIEW

Question 1

- ▶ Name and explain the two types of forces.

Answer 1

- ▶ Balanced- Do not change motion.
- ▶ Unbalanced- Will change motion

Question 2

- ▶ State Newton's First Law of Motion.

Answer 2

- ▶ An object at rest remains at rest and an object in motion maintains its velocity unless it experiences a net force.

Question 3

- ▶ What are the two main types of friction?

Answer 3

- ▶ Static Friction
- ▶ Kinetic Friction

Question 4

- ▶ Provide the units for the items below: They must all be correct to get the point.
 1. Force- _____
 2. Weight- _____
 3. Momentum- _____
 4. Velocity - _____
 - 5 Free Fall - _____

Answer 4

1. Force- Newtons or $\text{kg} \times \text{m}/\text{s}^2$
2. Weight- Newtons or $\text{kg} \times \text{m}/\text{s}^2$
3. Momentum- $\text{kg} \times \text{m}/\text{s}$
4. Velocity – m/s
5. Free Fall- m/s^2

Question 5

- ▶ What two things will affect the strength of the force of gravity?

Answer 5

- ▶ Mass and Distance

Question 6

- ▶ The gravitational force exerted on an object is called the object's

_____.

Answer 6

► Weight

Question 7

► What is the mass of an object if a force of 34 N produces an acceleration of 4.0 m/s^2 ?

Answer 7

- ▶ $m = F/a$
- ▶ $m = 34 \text{ N}/4.0 \text{ m/s}^2$
- ▶ $m = 8.5 \text{ kg}$

Question 8

- ▶ 1. Explain the condition needed for free fall to occur.
- ▶ 2. Explain what would happen.

Answer 8

- ▶ 1. Absence of air
- ▶ 2. All objects fall at the same speed.

Question 9

- ▶ What is another name for Newton's Third Law of Motion?

Answer 9

▶ Action- Reaction

Question 10

- ▶ 1. What is the Earths gravity?
- ▶ 2. What is the moons gravity?

Answer 10

- ▶ 1. 9.8 m/s^2
- ▶ 2. 1.6 m/s^2 or $1/6$ of the Earth's gravity

Question 11

- ▶ What two forces must be equal to reach terminal velocity?

Answer 11

- ▶ Gravity and air resistance

Question 12

- ▶ What is the mass of a person that weighs 560 N?

Answer 12

- ▶ $m = w/g$
- ▶ $m = 560 \text{ N} / (9.8 \text{ m/s}^2)$
- ▶ $m = 57 \text{ kg}$

Question 13

- ▶ State Newton's Second Law of Motion

Answer 13

- ▶ Net force acting on object causes object to accelerate in direction of force

Question 14

- ▶ A combination of all forces acting on an object is called _____.

Answer 14

- ▶ Net Forces

Question 15

- ▶ The tendency of an object at rest to remain at rest or if moving, to continue moving at a constant velocity is called _____.

Answer 15

► Inertia

Question 16

► When these two motions are combined, they form a curved path. What are they?

Answer 16

- ▶ Horizontal and Vertical Motion

Question 17

- ▶ A racing motorcycle with a mass of 300 kg accelerates from 0 to 60 m/s in 5 seconds. How much force is acting on the motorcycle?

Answer 17

- ▶ $F = ?$
- ▶ $m = 300 \text{ kg}$
- ▶ $V_f = 60 \text{ m/s}$
- ▶ $V_i = 0 \text{ m/s}$
- ▶ $t = 5 \text{ s}$
- ▶ $a = ?$

$$a = \frac{60 \text{ m/s} - 0 \text{ m/s}}{5 \text{ s}}$$

$$a = 12 \text{ m/s}^2$$

$$F = m \times a$$

$$F = 300 \text{ kg} \times 12 \text{ m/s}^2$$

$$F = 3600 \text{ N}$$

$$F = 4000 \text{ N}$$

Question 18

- ▶ What law states that the force of gravity is not only limited to Earth, but also acts between all objects in the universe?

Answer 18

- ▶ Law of Universal Gravitation

Question 19

- ▶ What is an objects momentum?

Answer 19

- ▶ Force need to change an objects motion.