

Key

Name _____

Physical Science Review

~~Write answers on answer sheet~~

1

Which of these best describes work input?

- a. the work done on a machine
- b. the work the machine does on an object
- c. the force you put on a machine

2

Which of these best describes work output?

- a. the work done on a machine
- b. the work the machine does on an object
- c. the force the machine puts on an object

3

Which of these best describes input force?

- a. the work you do on a machine
- b. the force you put on a machine
- c. the force the machine puts on an object

4

Which of these best describes output force?

- a. the work you do on a machine
- b. the force you put on a machine
- c. the force the machine puts on an object

5

Which best describes how a ramp makes work easier?

- a. it allows you to move the object a shorter distance using more force
- b. it makes friction between the object and the ramp which makes less work
- c. it allows you to move the object a longer distance using less force

6

(T)(F) A ramp (inclined plane) has a mechanical advantage of less than 1.

False

7

Which is an example of a wedge?

- a. a wheelbarrow
- b. a knife
- c. a bicycle wheel

8

When a golfer swings her club, she moves her hands and arms a shorter distance with a larger force. The club moves a larger distance, and therefore at a greater speed, with less force. What kind of machine is the club in this case?

- a. pulley
- b. screw
- c. lever
- d. wedge

9

Which two machines are related to the inclined plane?

- a. pulley and wheel and axle
- b. lever and pulley
- c. wedge and screw

10

Which machine is most closely related to the wheel and axle?

- a. inclined plane
 - b. lever
 - c. pulley
- > either - closer to lever

11

Which of these best describes mechanical efficiency?

- a. the comparison between a machine's work input and work output
- b. the comparison between a machine's input force and output force
- c. Force x Distance

12

When a ball is dropped from a height of 10m, what happens to its mechanical energy as it falls?

- a. it increases
- b. it stays the same
- c. it decreases

13

How does the sun generate so much thermal and light energy?

- a. Chemical reactions in the core
- b. nuclear fusion
- c. combustion

14

Which of these best describes mechanical efficiency?

- a. work output/work input
- b. input force/output force
- c. force x distance

15

Which of these best describes motion?

- a) Distance divided by time
- b) An object's change in position
- c) Speed and direction
- d) Change in velocity

16

Which of the following is an example of relating motion to a reference point?

- a) The distance that a racecar travels compared to the time it travels
- b) The hands of a clock compared to the numbers on the clock
- c) The change in velocity of a train compared to time.

17

(T)(F) The surface of the earth is a common reference point for determining motion of objects.

True

18

Which two things work together to determine the speed of an object?

- a) Distance and time
- b) Motion and reference point
- c) Acceleration and velocity

(✓)

19

A cyclist travels 300m in 25 sec. What is her average speed?(Show your work below)

~~SHOW WORK HERE~~

~~Distance = 300m~~

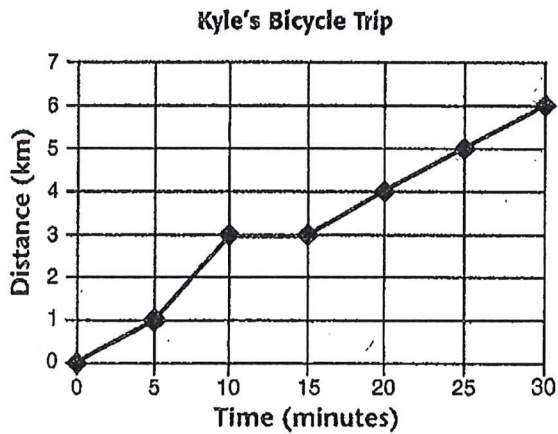
$$300/25 = 12 \text{ m/s}$$

20

A walker hikes 10km in 4 hrs, stops to rest for 1 hour, then walks another 3 km in 1 hour. What is the hiker's average speed over the entire trip?(Show your work below)

$$\frac{13}{6} = 2.1\bar{6}$$

Use the graph below to answer the following question.



21

During which interval was Kyle's speed fastest?

- a) 0-5 min
- b) 5-10 min
- c) 10-15 min

22

What may have happened during the 10-15minute interval?

Stop

23

Which best describes instantaneous speed?

- a) Direction and speed
- b) An object's speed at a particular moment
- c) Total distance divided by total time

24

Compare and contrast speed and velocity. Be sure to use the terms scalar and vector.

speed - only scalar velocity - vector with direction

25

Which best describes the difference between speed and velocity?

- a) Speed has motion while velocity does not
- b) Velocity involves acceleration while speed does not
- c) Velocity includes direction while speed does not

26

Which best describes a force?

- a) A push or pull on an object
- b) Something strong
- c) Something heavy

27

Is a force scalar or vector?

vector # + direction

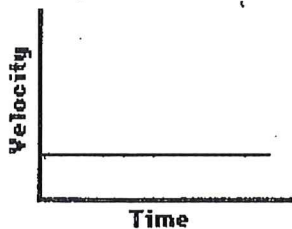
28

How much work is done if a 6N box gets lifted 8m?

Show work

$$6 \times 8 = 48 \text{ J}$$

Use the graph below to answer the following question.



29

(Y)(N) Is this object accelerating?

No

Which of the following best describes the physics definition of energy?

- 30
- a. Power
 - b. the ability to move things
 - c. something you can burn

31 Which of the following objects has the least acceleration?

- a. an empty shopping cart pushed with a hard force
- b. a full shopping cart pushed with a hard force
- c. an empty shopping cart pushed with a light force
- d. a full shopping cart pushed with a light force

32 If a 10 kg bicycle and a 1000kg car are each pushed with a force of 100N, which will have greater acceleration?

- a. 10 kg bicycle
- b. 1000 kg car
- c. the two objects will accelerate the same because objects all accelerate at the same rate

33 Which two factors determine the acceleration of an object?

- a. Gravity and volume
- b. Force and mass
- c. balanced and unbalanced forces

34 According to Newton's first law, a ball that is rolled will continue to roll forever unless acted on by an unbalanced force. Why does a ball that is rolled on a flat surface come to a stop?

- a. the unbalanced force of rolling friction between the ball and the surface stops the ball
- b. the unbalanced force of gravity pulls it to a stop
- c. the ball runs out of energy from rolling so long

35

(T)(F) A motionless ball that sits on a table has no forces acting on it.

False

36

Which best explains why an object falling through earth's atmosphere reaches a maximum speed and then stops accelerating?

- a) The earth's gravity is only strong enough to accelerate an object up to a certain point.
- b) As a falling object's speed increases, so does air resistance, and when the force of air resistance becomes equal to the force of gravity, acceleration stops.
- c) As an object falls, friction with the atmosphere causes it to heat up and become less dense, so it doesn't weigh as much.

37

Which best explains terminal velocity?

- a) the velocity of a train as it leaves the train terminal
- b) the greatest velocity that a falling object can reach
- c) the amount of electrical current running through a battery's terminal

38

Which best explains why a feather and a cannonball will fall through the atmosphere at different speeds when dropped?

- a) the feather is lighter than the cannonball is
- b) the feather is less dense than the cannonball is
- c) the feather has more air resistance than the cannonball does

39

Which statement about terminal velocity is most accurate?

- a) an object stops accelerating at terminal velocity
- b) an object has unbalanced forces acting on it at terminal velocity
- c) air resistance decreases when an object reaches terminal velocity

40

Astronauts float freely inside the shuttle when it is in orbit. Which statement best describes the reason for this floating?

- a) they are in free fall with the shuttle
- b) there is very little gravity in orbit because they are so far from the earth
- c) there is no gravity in space .

41

25. Is free fall possible close to the earth's surface?

- a) No, because gravity is too strong there
- b) No, because air resistance balances the acceleration due to gravity
- c) Yes, because gravity accelerates all objects 9.8m/s/s

42

Which best describes the factors that affect the air resistance of a moving object?

- a) mass, density, and volume
- b) shape, size, and speed
- c) acceleration, force, and motion

43

Which best describes the motions that combine to form orbit?

- a) inertia (forward motion) and free fall
- b) terminal velocity and spinning
- c) acceleration and floating