

# Level 1 Science (1.1 Mechanics) SAMPLE

Castle Score

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**MAKEorBREAK™**

Got the answer?  
Be the first to stand  
your group's flag.  
yours or  
The group with the  
castles wins. Enjoy!

Science 1.1  
Physics

1	21	41
2	22	42
3	23	43
4	24	44
5	25	45
6	26	46
7	27	47
8	28	48
9	29	49
10	30	50
11	31	51
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13	33	53
14	34	54
15	35	55
16	36	56
17	37	57
18	38	58
19	39	59
20	40	60

**SCIENCE SAMPLE  
Physics 1.1**

Score

**Question 1:**  
What is the symbol for velocity?

**Answer:**  
v

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Score

**Question 2:**  
Identify the missing word:  
*Every force has an \_\_\_\_\_ but opposite reaction force. This is Newton's Second Law.*

**Answer:**  
equal

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Score

**Question 3:**  
Give the definition of pressure.

**Answer:**  
A measure of the amount of force acting on an object per unit area.

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Score

**Question 4:**  
James exerts a 20N force on a box. Calculate the work done when he pushes it 5m.

**Answer:**  
100J

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Score

**Question 5:**  
Name the two forces acting on a skydiver while they are falling towards the Earth.

**Answer:**  
Gravity, air resistance/drag

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# Level 1 Science (1.1 Mechanics) SAMPLE

Score

Answer

**Question 6:**  
True or False?  
Force = mass x velocity.

**Answer:**  
False (Force = mass x acceleration).

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Score

Answer

**Question 7:**  
Complete the phrase:  
Newton's First Law states that an object will remain stationary or at a constant velocity unless a \_\_\_\_\_ acts upon it.

**Answer:**  
Force

MAKEorBREAK?

Score

Answer

**Question 8:**  
Give the unit for acceleration.

**Answer:**  
 $\text{ms}^{-2}$  (metres per second squared)

MAKEorBREAK?

Score

Answer

**Question 9:**  
Describe what the area under a speed-time graph tells us.

**Answer:**  
The distance the object has travelled in a particular time period (or similar).

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Score

Answer

**Question 10:**  
State which mechanics concept fits the following definition:  
The quantity of matter in an object.

**Answer:**  
Mass

MAKEorBREAK?

Score

Answer

**Question 11:**  
True or False?  
Friction is a force that opposes motion.

**Answer:**  
True

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# Level 1 Science (1.1 Mechanics) SAMPLE

Score

Answer

**Question 12:**  
Kate has a mass of 55kg.  
Calculate her weight when  $g=10\text{ms}^{-2}$ .

**Answer:**  
**550N**

MAKEorBREAK?

Score

Answer

**Question 13:**  
Give the definition of acceleration.

**Answer:**  
**Acceleration is the change in speed of an object (or similar).**

Score

Answer

**Question 14:**  
Describe the line on a distance-time graph that would represent an object travelling at constant speed which then becomes stationary.

**Answer:**  
**Sloped line that then becomes horizontal.**

Score

Answer

**Question 15:**  
Identify the missing word:  
The Law of Conservation of Energy states that energy cannot be created or \_\_\_\_\_.

**Answer:**  
**destroyed.**

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Score

Answer

**Question 16:**  
State the unit for Power.

**Answer:**  
**Watt/W**

MAKEorBREAK?

Score

Answer

**Question 17:**  
True or False?  
Kinetic energy is stored energy.

**Answer:**  
**False (Kinetic energy is the energy of an object in motion).**

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# Level 1 Science (1.1 Mechanics) SAMPLE

Score

Answer

**Question 18:**  
Name the forward force created by an aeroplane's engine.

**Answer:**  
**Thrust.**

MAKEorBREAK?

Score

Answer

**Question 19:**  
The energy that an object gains when lifted above ground level is called what?

**Answer:**  
**Gravitational Potential Energy**

MAKEorBREAK?

Score

Answer

**Question 20:**  
Calculate the kinetic energy of a 1000kg car travelling at  $10\text{ms}^{-1}$ . Hint:  $E_k = mv^2/2$

**Answer:**  
**50000J**

MAKEorBREAK?

Score

Answer

**Question 21:**  
Describe Friction.

**Answer:**  
**A force that opposes motion (or similar).**

MAKEorBREAK?

Score

Answer

**Question 22:**  
Calculate the net force acting on a box when Amy exerts a 20N push force on it, while 10N of friction opposes it.

**Answer:**  
**10N**

MAKEorBREAK?

Score

Answer

**Question 23:**  
Give the definition of Power.

**Answer:**  
**The rate at which energy changes/the rate at which work is done (or similar).**

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# Level 1 Science (1.1 Mechanics) SAMPLE

Score

Answer

**Question 24:**  
True or False?  
The vertical axis of a speed-time graph represents distance.

**Answer:**  
False(The vertical axis represents speed).

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Score

Answer

**Question 25:**  
Identify the missing word:  
The vertical forces acting on an aeroplane during flight are weight/gravity and \_\_\_\_\_.

**Answer:**  
Lift/Support.

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Score

Answer

**Question 26:**  
Describe the motion of an object that has a curved line on a speed-time graph.

**Answer:**  
It is accelerating (or decelerating).

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Score

Answer

**Question 27:**  
True or False?  
The unit for pressure is the joule.

**Answer:**  
False (The unit for pressure is the Pascal (pa)).

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Score

Answer

**Question 28:**  
State which physics concept matches the following definition: The overall force acting on an object.

**Answer:**  
Net force.

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Score

Answer

**Question 29:**  
What is the symbol for Power?

**Answer:**  
P

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# Level 1 Science (1.1 Mechanics) SAMPLE

## Question 30:

The air pressure of a tyre is 200000Pa. Calculate the force acting on a surface area of  $2\text{m}^2$ .  
Hint:  $P=F/A$

Score

Answer

Answer:  
**100 000N**

MAKEorBREAK?

## Question 31:

Give the definition of mass.

Score

Answer

Answer:  
**The amount of matter in an object (or similar).**

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## Question 32:

State the four forces acting on a moving vehicle.

Score

Answer

Answer:  
**Thrust, friction, weight, support.**

MAKEorBREAK?

## Question 33:

True or False?  
The weight of an 80kg person in space is 0 Newtons.

Score

Answer

Answer:  
**True ( $g=0$  in space. This results in weightlessness).**

## Question 34:

Identify the missing word:  
Pressure is calculated by dividing force by \_\_\_\_\_.

Score

Answer

Answer:  
**Area.**

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## Question 35:

What does a horizontal line on a speed-time graph represent?

Score

Answer

Answer:  
**Constant speed/velocity.**

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# Level 1 Science (1.1 Mechanics) SAMPLE

Score

Answer

**Question 36:**  
Gravitational Potential is a form of what?

**Answer:**  
Energy

MAKEorBREAK?

Score

Answer

**Question 37:**  
A car travels 200m in 10 seconds. Calculate its average speed.

**Answer:**  
20ms<sup>-1</sup>

MAKEorBREAK?

Score

Answer

**Question 38:**  
True or False?  
Work done=force x velocity.

**Answer:**  
False (W=Fd).

MAKEorBREAK?

Score

Answer

**Question 39:**  
Tim has a mass of 50kg. He climbs some stairs with a vertical height of 10m. How much gravitational potential energy did he gain?  
Hint:  $E_p = mgh$ ,  $g = 10\text{ms}^{-2}$

**Answer:**  
5000J

MAKEorBREAK?

Score

Answer

**Question 40:**  
Complete the phrase: A net force of 20N acting on a truck causes \_\_\_\_\_.

**Answer:**  
Acceleration

MAKEorBREAK?

Score

Answer

**Question 41:**  
Give the definition of kinetic energy.

**Answer:**  
The type of energy an object in motion has (or similar).

# Level 1 Science (1.1 Mechanics) SAMPLE

Score

Answer

**Question 42:**  
Name the type of energy that friction most commonly transforms kinetic energy to.

**Answer:**  
Heat energy.

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Score

Answer

**Question 43:**  
Identify the missing word:  
Professional cyclists keep low in their seats to reduce \_\_\_\_\_.

**Answer:**  
Air resistance/drag.

MAKEorBREAK?

Score

Answer

**Question 44:**  
Calculate the acceleration of a truck that accelerates from  $10\text{ms}^{-1}$  to  $20\text{ms}^{-1}$  in 10 seconds.

**Answer:**  
 $1\text{ms}^{-2}$

MAKEorBREAK?

Score

Answer

**Question 45:**  
True or False?  
Drag is a form of friction.

**Answer:**  
True

MAKEorBREAK?

Score

Answer

**Question 46:**  
Name the forces acting on a stationary truck.

**Answer:**  
Weight and Support.

MAKEorBREAK?

Score

Answer

**Question 47:**  
What is the formula for velocity?

**Answer:**  
 $v=d/t$

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# Level 1 Science (1.1 Mechanics) SAMPLE

## Question 48:

A runner accelerates for 5 seconds from rest and then travels at a constant speed of 5ms<sup>-1</sup>. Describe what the runner's speed-time graph would look like.

### Answer:

Starting at zero it is curved. At 5 seconds, it is a horizontal line.

Score

Answer

## Question 49:

Identify the missing word:  
\_\_\_\_\_ force is the force that causes an aeroplane to gain height.

Answer:  
Lift.

Score

Answer

MAKEorBREAK?

## Question 50:

True or False?  
Weight is the same as mass.

### Answer:

False (Mass is the quantity of matter).

Score

Answer

## Question 51:

Name the physics term that is a measure of the amount of force acting on a particular area.

Answer:  
Pressure.

Score

Answer

MAKEorBREAK?

## Question 52:

Newton's Second Law states that  $F=ma$ . Use Newton's Second Law to calculate the amount of thrust provided by the engine of a 1000kg car accelerating at 0.5ms<sup>-2</sup>.

### Answer:

500N

Score

Answer

MAKEorBREAK?

## Question 53:

Identify the missing word:  
*An object remains at a constant velocity unless a \_\_\_\_\_ acts upon it. This is Newton's First Law.*

Answer:  
force

Score

Answer

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# Level 1 Science (1.1 Mechanics) SAMPLE

Score

Answer

**Question 54:**  
State the formula for acceleration.

**Answer:**  
 $a = \Delta v / \Delta t$

MAKEorBREAK?

Score

Answer

**Question 55:**  
Name the force that opposes the forward motion of an aeroplane.

**Answer:**  
Air resistance/drag.

MAKEorBREAK?

Score

Answer

**Question 56:**  
What is the unit for energy?

**Answer:**  
Joule

MAKEorBREAK?

Score

Answer

**Question 57:**  
True or False?  
Power is the rate at which work is done.

**Answer:**  
True

MAKEorBREAK?

Score

Answer

**Question 58:**  
Identify the missing word:  
*Heat and sound are forms of \_\_\_\_\_.*

**Answer:**  
energy

MAKEorBREAK?

Score

Answer

**Question 59:**  
Who was the scientist that came up with the three main laws of motion?

**Answer:**  
Sir Isaac Newton.

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# Level 1 Science (1.1 Mechanics) SAMPLE

Score

Answer

**Question 60:**

Air resistance and drag are forms of \_\_\_\_\_.

**Answer:**

**Friction**

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