Feedback Lesson

Answer the following questions:

1. Define acceleration.
   The rate of change of velocity.
2. State Newton's First Law.
   An object's motion will not change unless acted upon by an unbalanced force.
3. Explain what is shown by a horizontal line on a velocity-time graph.
   An object moving with constant velocity.
4. Name the quantity that can be calculated from the gradient of a velocity-time graph.
   Acceleration
5. State Newton's Third Law.
   Every action has an equal and opposite reaction. If object A exerts a force on object B, object B exerts an equal and opposite force on object A.
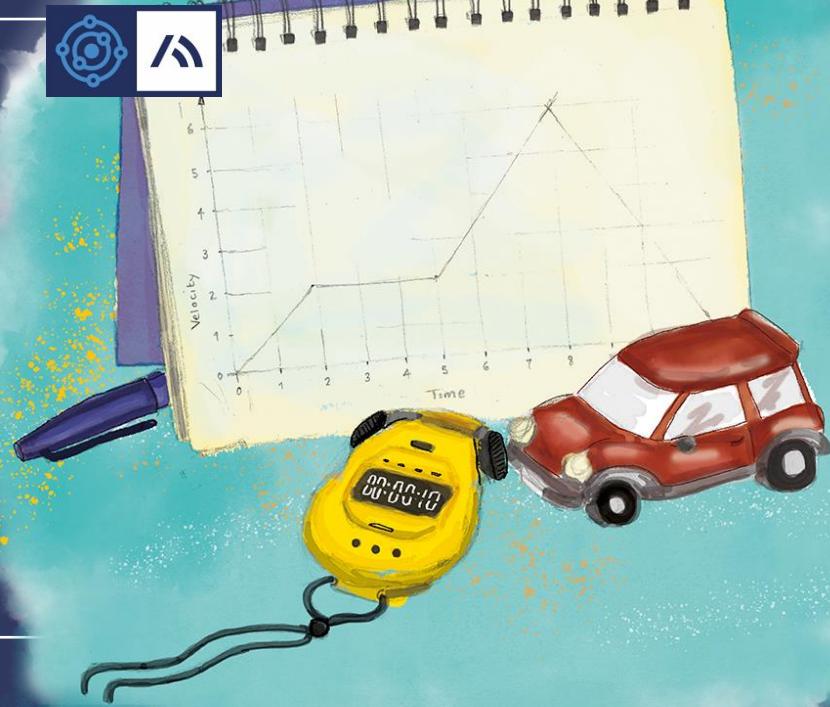
Feedback Lesson

P3.1.12

Science
Mastery

The Big Idea: Forces Predict Motion

Science Mastery

Acceleration

Why does a space rocket need so much force to lift off? Can humans keep getting faster at the 100 m sprint? What would happen if you jumped through a hole through the centre of the Earth?

The ways in which objects move depends on the forces acting on them. If the forces acting on an object are unbalanced, the object will change its speed, direction or shape. The behaviour of objects in motion follow mathematical laws that can be used to make predictions about speed, distance travelled, the time taken and acceleration.

This is the **third** unit we are studying as part of the big idea: **Forces Predict Motion**

In this unit we will learn the effect of forces on the motion of objects, learning about Isaac Newton's First Law. We will also review the effects of balanced and unbalanced forces. We will also look at Newton's Third Law and learn how to describe forces in terms of action- reaction pairs. We will learn about the differences between scalar and vector quantities and examples of each, comparing speed and velocity; distance and displacement. By the end of this unit we will be able to describe the forces acting on an object based on its motion.

We will develop our mathematical skills in this unit by learning how to do some complex calculations to find the resultant force of an object using a graph. We will also learn how to calculate acceleration. By the end of this unit we will be able to describe motion using

Answers

Question	Answer
1	B
2	A
3	B
4a	B
4b	B
5a	B
5b	A
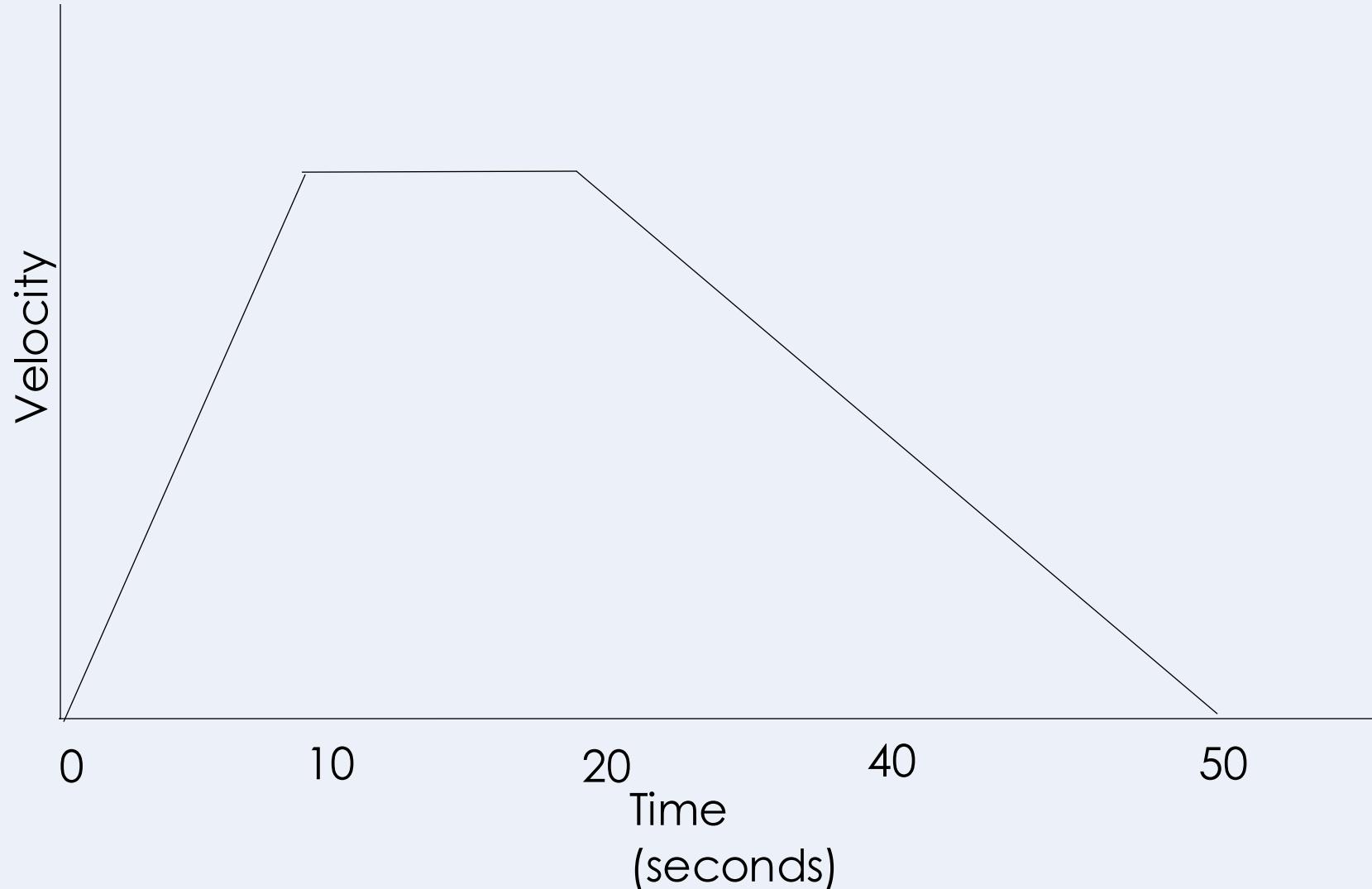
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5c	B
5d	A
6	A
7	B
8	C
9	B
10	C
11	D

Answers

1. distance, speed, mass or energy

2. Displacement is how far an object is from its original position or from a point of reference in a given direction.

3. An object moving in a circle at constant speed is accelerating because acceleration is the change in speed or direction. This means that the object is accelerating because it is constantly changing direction.

Answers

4.

Velocity

Time
(seconds)

0   10   20   40   50

Answer the questions below.

1. Acceleration is …
- ☐ A. An increase in velocity
- ☑ B. A change in speed
- ☑ C. A change in velocity

2. An object that was moving at a constant speed towards the right is acted upon by a resultant force of 50 N right. The object will…
- ☑ A. Accelerate towards the right
- ☐ B. Accelerate towards the left
- ☐ C. Slow down to a stop

3. What is the acceleration of a car that goes from rest to 15 m/s in 10 seconds?
- ☐ A. 0.67 m/s^2
- ☑ B. 1.5 m/s^2
- ☐ C. -1.5 m/s^2

Lesson P3.1.12	
What was good about this lesson?	What can we do to improve this lesson?

Feedback